PROMINENT HILL OPERATION

PEPR Compliance Report 2024

Issue Date:30 **September** 2024

ML 6228 MINERAL LEASE

MPL 91, MPL 96-97, MPL 101 CONCENTRATE EXPORT ROAD

MPL 81-82 VIRGO BOREFIELD

MPL 93-94, MPL 112-117 ARIES BOREFIELD

MPL 83-84 SITE ACCESS ROAD

MPL 119-122 ELECTRICITY TRANSMISSION LINE

EML 6234, EML 6236-6242, EML 6278-6296, EML 6299-6301

EXTRACTIVE MINERALS AREAS

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ACKNOWLEDGEMENTS

Acknowledgements go to all staff across the Prominent Hill Operation for their contributions to the overall report and for undertaking all activities in a safe and effective manner. Prominent Hill operates on the lands of the Antakarinja Matu-Yankunytjatjara Peoples, we acknowledge their ongoing support and assistance.

DOCUMENT CONTROL

Version	Description	Author	Approval	Date
1	PEPR 2024 Compliance Report	Tina Law Principal - Asset Approvals Zac Richardson - Specialist Environment	Josh Allen – Superintendent Environment Operations Jane Hosking Manager Asset Environment Approvals and Sustainability	30/09/2024

EXECUTIVE SUMMARY

BHP Prominent Hill submits this Program for Environment Protection and Rehabilitation (PEPR) Compliance Report for the period July 2023 to June 2024 (Compliance Report); as required by the *Mining Act 1971* (SA) and associated regulations and conditions of the Prominent Hill Mining Lease (ML 6228) and associated Miscellaneous Purposes Licences (MPL) and Extractive Minerals Leases (EML). This Compliance report demonstrates compliance with the ML and MPL conditions, Environmental Outcomes and Outcome Measurement Criteria committed to in the PEPR (MPEPR2022/137). This Compliance Report has been completed in general accordance with the Determination Terms of Reference 009 (TOR009) – Mining Compliance Reports (DEM 2020).

On 2 May 2023 BHP Group Limited completed the acquisition of OZ Minerals Limited. The Prominent Hill site has been integrated into the BHP Copper South Australia (SA) asset's, also incorporating the ex-OZ minerals site Carrapateena mine, BHP's Olympic Dam mine and Oak Dam exploration site. Copper SA falls under the BHP Minerals Australia business portfolio which also incorporates Western Australia Iron Ore, Nickel West, Coal, Mt Arthur Coal and Operations Services.

During the reporting period, the Prominent Hill Operation was compliant to all conditions.

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1 INTRODUCTION

BHP Prominent Hill submits this PEPR Annual Compliance Report as required by the *Mining Act 1971* and *Mining Regulations 2020,* conditions of the Prominent Hill Mining Lease (ML 6228) and associated tenements and as outlined in MG3 *Preparing a mining compliance report* (DEM 2021).

This Compliance Report demonstrates compliance with the ML and MPL conditions and Environmental Outcomes committed to in the approved PEPR for the associated tenements (OZ Minerals 2022). Proponent details are provided in Table 1-1.

Table 1-1: **Proponent details**

Mine Name	Prominent Hill	**PEPR**	MPEPR2022/137 (PEPR 2022)
		Date Approved	Date approved: 01/03/2022
Tenement Holder	OZ Minerals Prominent Hill Operations Pty Ltd		
Operator	OZ Minerals Prominent Hill Operations Pty Ltd		
Mining Lease Approval Date	2 August 2006		
Tenements	Prominent Hill Mining Lease	ML 6228	
	Concentrate Export Road	MPL 91	
		MPL 96	
		MPL 97	
		MPL 101	
	Wellfields (Borefields) and Associated Infrastructure	MPL 81 (Virgo)	
		MPL 82 (Virgo)	
		MPL 93–94 (Aries)	
		MPL 112–117 (Aries)	
	Extractive Minerals Areas	EML 6234	
		EML 6236–6242	
		EML 6278–6296	
		EML 6299–6301	
	Site Access Road	MPL 83–84	
	Electricity Transmission Line	MPL 119–122	
Ministerial determination	The Compliance Report has been completed in general accordance with the Determination Terms of Reference 009 (TOR009) – Mining Compliance Reports (DEM 2020) and associated Mineral Regulatory Guideline (MG3) (DEM 2021)		
Site Contact	Andrew Harris, General Manager, BHP Prominent Hill		
	Email: Andrew.Harris@bhp.com		
	Phone: 0419 843 679		
Registered Mine Manager	Rebecca Roper		
	Email: Rebecca.Roper@bhp.com	Phone: 08 8672 8102	

Site Location	Located approximately 650 km north-north-west of Adelaide, (Figure 1-1)	
Reporting Period	From: 1 July 2023	To: 30 June 2024
Compliance Report Submission Date		30 September 2024

Figure 1.1: Operation location

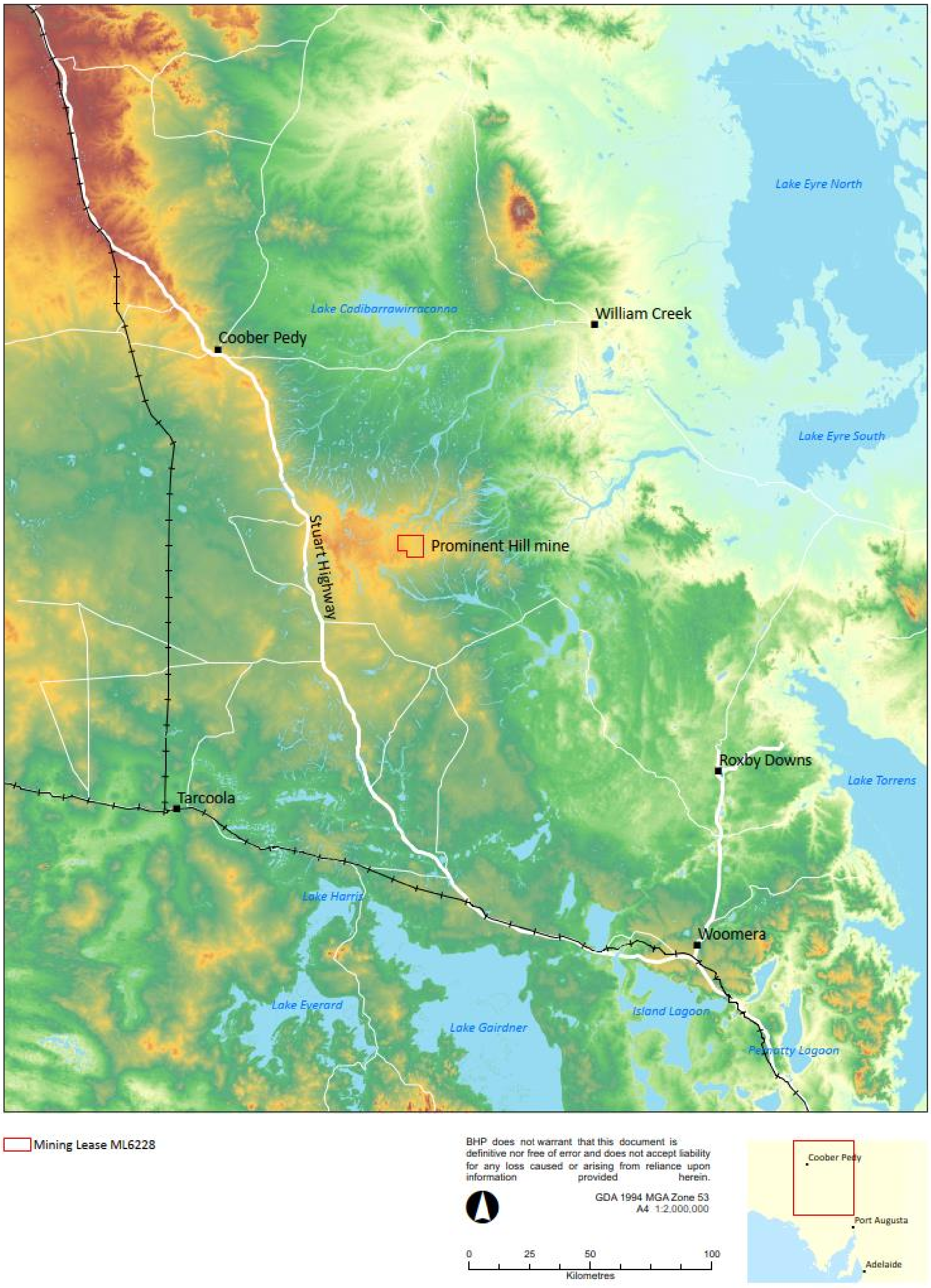


Figure 1.1: Project Location

2 DECLARATION OF ACCURACY

Person responsible for the preparation of the Compliance Report			
This document has been prepared to fulfil the requirement under sub-regulation 77(3)(b) of *Mining Regulations 2020* (SA) for the tenements listed herein. The information contained in this report is to the best of my knowledge a true and accurate record of the mining activities and compliance status for the reporting period.			
Name	**Position or Agent**	**Signature**	**Date**
Andrew Harris	General Manager – Prominent Hill Operation	Andrew Harris Digitally signed by Andrew Harris DN: cn=Andrew Harris, c=AU, o=General Manager, ou=BHP Prominent Hill, email=andrew.harris@bhp.com Date: 2024.09.28 07:59:58 +09'30'	30/09/2024
Company/Agent			
Report prepared by tenement holder			
Summary of steps undertaken to review the compliance report to ensure report accuracy			
This report has been prepared by the Prominent Hill Environment Team. Information and judgment pertaining to compliance in the areas of ecology, groundwater, surface water, geotechnical stability and radiation have been provided by external subject matter experts.			

3 PUBLIC LIABILITY INSURANCE

Details of the public liability insurance for the Prominent Hill Operation are provided in Table 3-1. A copy of the cover note for the public liability insurance and/or a copy of the policy of insurance is included in Appendix A.

Table 3-1: Public liability insurance details

Certificate of currency general liability	
Principal insured	BHP Group Limited and all subsidiaries' companies and all/or related and/or affiliated and/or controlled, managed, administered and associated companies or corporations and/or related joint ventures and/or partnerships and other entities
Start date	1 July 2023
Finish date	30 June 2024
Limits of liability	$20,000,000 USD

4 TENEMENTS

A summary of the existing tenements for the Prominent Hill Operation is provided in Table 4-1. The locations of these tenements are shown on Figure 4.1. The extent of mining lease activities is shown on Figure 4-2

Table 4-1: Tenement Summary

Tenement	Tenement Number	Approval Date	Expiry Date
Prominent Hill Mining Lease	ML 6228	02/08/2006	01/08/2041
Site Access Road	MPL 83–84	20/10/2006	
Concentrate Export Road	MPL 91	21/08/2007	
	MPL 96	22/10/2007	
	MPL 97	22/10/2007	
	MPL 101	05/11/2007	
Wellfields (Borefields) and Associated Infrastructure[1]	MPL 81 (Virgo)	19/09/2006	
	MPL 82 (Virgo)	04/10/2006	
	MPLs 93–94 (Aries)	10/09/2007	
	MPLs 112–117 (Aries)	03/10/2008	
Extractive Minerals Areas	EML 6234	17/10/2006	
	EMLs 6236–6242	09/11/2006	
	EMLs 6278–6296	20/12/2007	
	EMLs 6299–6301	23/01/2008	
Electricity Transmission Line	MPLs 119–122	09/07/2010	

1. NB. Wellfields are referred to as borefields within this report

Any activities associated with Exploration Licences (ELs) in the vicinity of the Prominent Hill operations are managed and reported separately as they are subject to exploration compliance reporting.

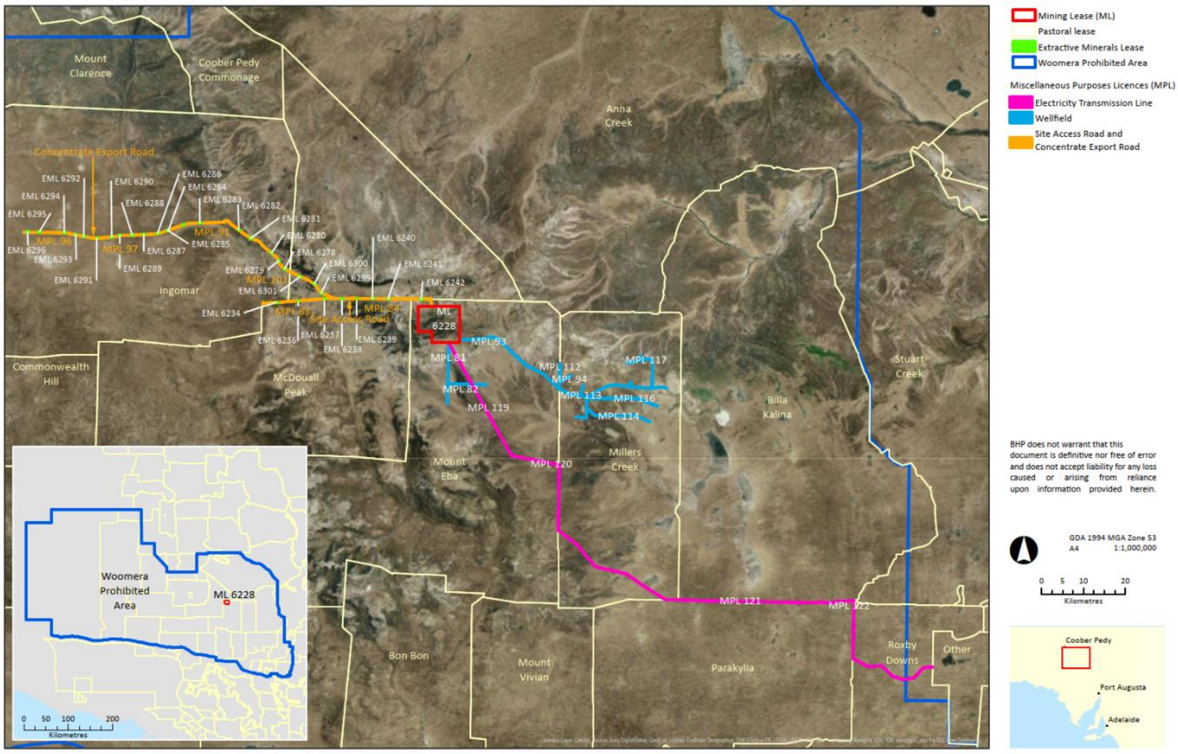


Figure 4.1: Mining Lease Boundary and Associated Tenements

Figure 4.1: Mining lease boundary and associated tenements

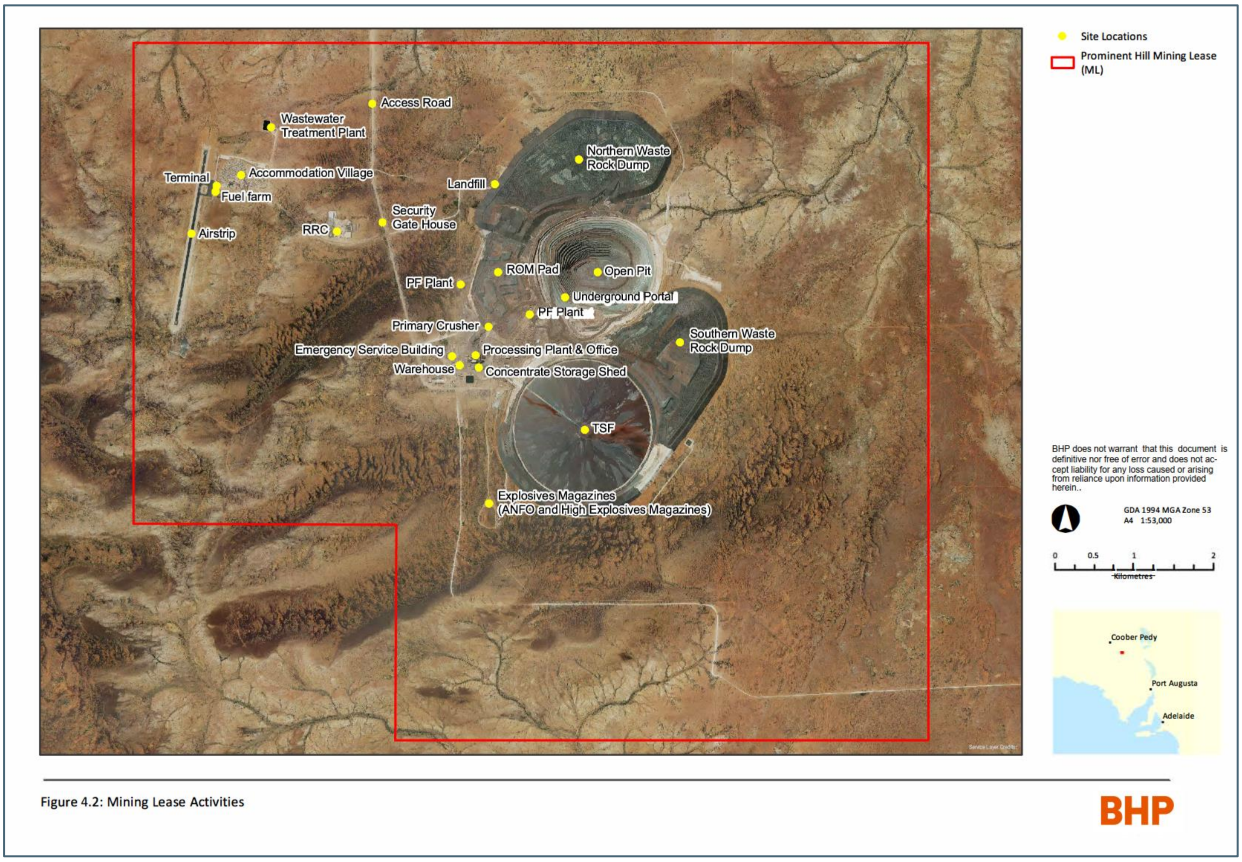


Figure 4-2: Mining lease activities

5 OTHER APPROVALS, LICENCES, PERMITS, WAIVERS, NATIVE TITLE AND AGREEMENTS

Table 5-1: Other Approvals, Licences, Permits, Waivers, Native Title and Agreements

Licence, Permit or Agreement	Regulatory Authority	Supporting Documentation	Relevant Outcome or Tenement Condition	Status of Currency
Government of South Australia's Environment Protection Authority (EPA) Licence to conduct Prescribed Activities (22764) – 2(5) Concrete batching works 2(9) Mineral Works 3(3)(a) Landfill depot 3(4)(b) Wastewater Treatment Works (outside MLR WPA) 8(6a)(b) Desalination plant that discharges wastewater to a wastewater lagoon	EPA	• Waste Management Plan (PH-9999-SEC-PLN-0033) • Wastewater Management Plan (PH-9999-PRO-PLN-0001)		1 Nov 2023 – 3 Oct 2028 Fee paid annually
Government of South Australia's Department for Environment and Water (DEW) Haul Road Maintenance Water Licence No. 396809	DEW	• Water Licence 396809 Monitoring Plan (PH-9999-SEC-PLN-0035)		Expires 30 June 2042 Fee paid annually
Borefields Water Licence No. 396811	DEW	• Water Licence 396811 Monitoring Plan (PH-9999-SEC-PLN-0034)		Expires 30 June 2042 Fee paid annually
Water Effecting Activity – Water Permit to Drill	DEW	• Separate permits for each drilled borehole		Expires upon relinquishment of mining tenement and closure of boreholes
Stuart Highway – Underpass Access Deed of Agreement	DIT	• Traffic Management Plan (PH-ENV-PLN-0001)		Remains in force until cancelled
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) Approval of a controlled action: EPBC 2005/2040	Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Threatened Fauna Management Plan (PH-9999-SEC-PLN-0052) SEB Stage Two Offset Area Management Plan (PH-0000-SEC-REP-0934)		Expires upon relinquishment of mining tenement
Woomera Prohibited Area Deed of Access	DoD	• Agreement (PH-0000-SEC-AGR-0045 – Confidential)		Expires 5 July 2027

Licence, Permit or Agreement	Regulatory Authority	Supporting Documentation	Relevant Outcome or Tenement Condition	Status of Currency
Native Title Mining Agreement	Antakirinja Matu-Yankunytjatjara Land Management Aboriginal Corporation	• Mining Native Title Agreement PH-0000-SEC-AGR-0010 – Confidential • Cultural Heritage Management Plan – Confidential		Expires upon relinquishment of mining tenement
Licence to carry out Mining and Mineral Processing (Lic No. 51429)	EPA	• Radiation Management Plan (PH-9999-SEC-PLN-0021) • Radioactive Waste Management Plan (PH-9999-SEC-PLN-0022)		Expires 30 June 2025 Fee paid annually
Approval for the Cartage and Use of Recycled Water for Dust Suppression (WCS No. 2309)	Government of South Australia, Department for Health and Wellbeing	• Waste Water Management Plan (PH-9999-PRO-PLN-0001)		For the life of the system Fee paid annually
Aerodrome Certificate (1-HOO80)	Australian Government Civil Aviation Safety Authority	• Aerodrome Management Manual (PH-9999-PNP-PLN-0002)		Remains in force until cancelled.
Dangerous Substances Licence No. 366468	Government of South Australia SafeWork SA	• Hazardous Chemicals Management (PH-9999-SEC-PLN-0040)		Expires 27 May 2025
Apparatus licences (various licence numbers)	Australian Government Australian Communications and Media Authority	• NA		Expires upon relinquishment of mining tenement Fee paid annually
Explosives Magazine Licence No. 331741, No. 530014, No. 667094 and No.98484	Government of South Australia SafeWork SA	• Explosives Principal Hazard Management Plan (PH-9999-SEC-PLN-0042)		Expires 31 March 2025
Registration under the *Safe Drinking Water Act 2011*	Government of South Australia, Department for Health and Wellbeing	• Drinking Water Risk Management Plan (PH-9999-SEC-PLN-0051)		For the life of the system
Electricity Transmission Licence (1.5.4LIC001)	Essential Services Commission of South Australia	• NA		For the life of the system Fee paid annually
Waste Water Treatment Plant (WCS No. 2259)	Government of South Australia, Department for Health and Wellbeing	• Waste Water Treatment Plant Management Plan (PH-0000-SEC-PLA-0050)		For the life of the system

Licence, Permit or Agreement	Regulatory Authority	Supporting Documentation	Relevant Outcome or Tenement Condition	Status of Currency
Millers Creek Land Access and Mining Compensation Agreement	Millers Creek Pastoral Lease Holder (2315)	• Agreement (PH-0000-SEC-AGR-0014–Confidential)		Expires upon relinquishment of mining tenement
McDouall Peak Land Access and Mining Compensation Agreement	McDougall Peak Pastoral Lease Holder (2341)	• Agreement (PH-0000-SEC-AGR-0015–Confidential)		Expires upon relinquishment of mining tenement
Billa Kalina Land Access and Compensation Agreement	Billa Kalina Pastoral Lease Holder (2415)	• Agreement (PH-0000-SEC-AGR-0021–Confidential)		Expires upon relinquishment of mining tenement
Parakylia Land Access and Mining Compensation Agreement	Parakylia Pastoral Lease Holder (2197)	• Agreement (PH-0000-SEC-AGR-0049–Confidential)		Expires upon relinquishment of mining tenement
Mount Eba Land Access and Compensation Agreement	Mount Eba Pastoral Lease Holder (2197)	• Agreement (PH-0000-SEC-AGR-0019–Confidential)		Expires upon relinquishment of mining tenement
Ingomar Land Access and Compensation Agreement	Ingomar Pastoral Lease Holder (2153, 2339, 2527)	• Agreement (PH-0000-SEC-AGR-0016–Confidential)		Expires upon relinquishment of mining tenement

6 ORE RESERVES AND MINERAL RESOURCES

6.1 ORE RESERVES

The 2024 Mineral Resources and Ore Reserves can be found in BHP Annual Report 2024, Additional Information; Section 5, which can be found on the BHP website at bhp.com/investors/annual-reporting (BHP 2024).

6.2 ESTIMATED MINE LIFE

A scope of works is underway to determine new estimated Mine life, (LoM) information will be updated when the work has been completed. As of 2023, the estimated life-of-mine (LoM) for the SLC is 20 years. Any expansion works to increase the LoM are subject to regulatory approval.

6.3 EXPLORATION ACTIVITIES

No exploration activities occurred on the mining tenements that overlap with the exploration lease during this reporting period.

7 MINING, PROCESSING AND WASTE STORAGE ACTIVITIES

Table 7-1: Ore mining

Ore mined – mine life (t)	Ore mined – reporting period (t)	Expected quantity of ore to be mined during next reporting period (Mt)	Quantity of ore stockpiled on the tenement at the end of the reporting period (t)
19,333,611	4,494,787	4.65	4,100,000

Table 7-2: Ore processing

Ore processed – mine life (t)	Ore processed – reporting period (t)	Expected quantity to be processed during next reporting period (t)
23,471,350	6,739,015	Refer to BHP Operational Review for FY24 guidance (BHPa 2023) 7,094,861

Table 7-3: Concentrate or other product exported

Concentrate or other product exported – mine life (dmt)	Amount of concentrate or other product exported – reporting period (dmt)	Expected number of ore to be processed during next reporting period (t)
451,633	98,369	Refer to BHP Operational Review for FY24 guidance (BHPa 2023) 88,837

Table 7-4: Overburden / waste

<table>
<tr><th colspan="2">Overburden mined – mine Life (t)</th><th colspan="2">Reporting period – overburden mined (t)</th><th colspan="2">Next reporting period – overburden to be mined (t)</th></tr>
<tr><td colspan="2">12,569,000</td><td colspan="2">1,303,509</td><td colspan="2">1,759,936</td></tr>
<tr><td colspan="6">Production notes:
Overburden is defined as any material that is not processed by the mill. All raise bore waste is trucked to surface to minimise the risk of a potential cutter head through the crusher. Some development waste will be trucked to surface during crusher downtimes (planned/unplanned shuts).</td></tr>
<tr><th colspan="3">Volume of PAF and NAF material mined during reporting period (t)</th><th colspan="3">Remaining capacity of current waste facilities or planned future waste facilities as per approved PEPR</th></tr>
<tr><td colspan="3">Potentially-acid forming (PAF): 0*
Non-acid forming (NAF)1,303,509 t</td><td colspan="3">5.6Mt</td></tr>
<tr><th colspan="6">Will the remaining quantities of overburden to be mined be accommodated in the current or planned waste facilities (WRD, TSF)? If not included, what future work?</th></tr>
<tr><td colspan="6">Yes. Overburden will be used to backfill underground voids and cap the TSF at closure in addition to being placed in the open pit</td></tr>
<tr><th colspan="6">Are your waste facilities sufficient to deal with the volume of PAF material generated annually? If not include what future work is required? (Include any identification of PAF and NAF in the preceding reporting period and strategies to minimise the environmental impacts of this material.)</th></tr>
<tr><td colspan="6">No PAF material is being generated in the mine plan.</td></tr>
</table>

8 COMPLIANCE SUMMARY

No non-compliances were recorded against the Grouped Lease Conditions and no non-compliances to lease conditions were recorded during the reporting period.

Table 8-1: Summary of non-compliances reported in 2024

Licence permit tenement	**Type of non-compliance** ***Notes: e.g. lease condition or OMC***	**Brief description** ***Notes: e.g. Noise limits exceeded on four occasions***	**Status** ***Notes: 'rectified' or 'currently being addressed'***	**Section of report for further detail**
NIL				

9 COMPLIANCE TABLES

Compliance for the 2024 reporting period is summarised from Section **Error! Reference source not found.** to Section **Error! Reference source not found.**8. Regarding the column headings for each table, the following explanations or assessment drivers apply:

- Environmental Outcome: provides a copy of the regulatory outcome provided in the relevant tenement document.
- Tenement, Grouped condition and Impact No: provides the details of which tenement the environmental condition relates to, and the group condition and impact as outlined in the PEPR 2022.
- Regulatory commitment: provides the OMC, Leading Indicator, Strategy or Future Works commitment related to the Environmental Outcome.
- Compliance status: provides the status of the regulatory commitment as one of the following:
  - Compliant (to OMC or Leading Indicator)
  - Non-compliant
  - Unable to determine
  - No longer relevant to risk profile of Operation.
- Evidence:
  - For each criterion, states what measurements have been taken to monitor compliance and provides an interpretation of the results (i.e. compliant or non-compliant).
  - Provides a summary of the key measurements (using a graph to summarise data where possible) and refers to a summary of the detailed/raw data (if necessary) in an appendix but only to the extent necessary to verify the compliance conclusion reached.
  - Where graphs are used to illustrate compliance, the relevant compliance limits are clearly included on the graph.
  - Evidence where applicable document control number of the report or technical memo is included.
- Forward work plan:
  - If non-compliant, Leading Indicator triggered or any alterations to Outcomes or OMC are recommended, with a summary of actions being undertaken to rectify the non-compliance.
  - If unable to demonstrate compliance, states reasons and relevance of the OMC to the current risk profile of the Operation or current stage of the Operation.
  - States whether OMC or lease condition amendments are required.
  - Quantifies the risks associated with the non-compliance if applicable.
  - States whether the Leading Indicator is adequate to pick up the non-compliance or if it needs to be amended.

Table 9-1: Surface water

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to spillage of miscellaneous chemicals or generation of fugitive sediment from activity within the EMLs	All EMLs GC07, IN7	**Outcome Measurement Criteria:** • Annual inspection including photographs taken at four corners of EML and areas in the EML where high runoff is detected. • Records maintained within the incident reporting system (INControl) indicate that all spills of miscellaneous chemicals are managed in accordance with Chemical and hydrocarbon spill procedure (PH-9999- SEC-PRO-0056).	Compliant	Inspections were carried out on all EML sites in May 2024. Photographic records have been captured at each EML and demonstrate some minor erosion at a number of sites, with rilling on the slopes of the EML depression. However, it should be noted that all sediment is flowing into the depression of the EML and is not flowing outside of the EML boundary. There was no evidence of any spills that had not been remediated.
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to generation of fugitive sediment	ML6228 GC15, IN15.1	**Outcome Measurement Criteria:** Concentrations of targeted heavy metals are in the 'low risk (no action)' category identified in the decision tree process in Figure 7-2 and Section 3.5 of the ANZECC/ARMCANZ (2000) sediment quality guidelines (see Figure 7-2). As per this ANZECC/ARMCANZ decision tree approach, the outcome is achieved if: • Concentrations of targeted heavy metals are below Interim Sediment Quality Guideline trigger values (ISQG-Low) identified in the ANZECC/ARMCANZ (2000) sediment quality guidelines, or where no guideline trigger value is specified, concentrations are below an adopted trigger value calculated in accordance with ANZECC/ARMCANZ (2000)) as stated in Table 7-3 to Table 7-7); or • If the ISQG-Low trigger values are exceeded, concentrations of targeted heavy metals are below background concentrations; or • If ISQG-Low trigger values or adopted trigger values (Table 7-3 to Table 7-7) • (where relevant) and background concentrations are exceeded, bioavailable concentrations (analysed as acid extractable metals) are below ISQ-Low trigger values or adopted trigger values (where relevant); or • If bioavailable concentrations exceed ISQ-Low trigger values or adopted trigger values (Table 7-3to Table 7-7), acute and chronic toxicity testing conducted in accordance with ANZECC/ARMCANZ (2000) demonstrates that concentrations are in the 'low risk (no action)' category.	Compliant	**Wattiwarriganna Creek catchment sites WW-1 – WW-3** The arsenic level at WW-3 equaled the lower trigger value (20mg/kg) in May 2024. This is the highest level recorded at this site since monitoring commenced. In line with the decision tree bioavailability analysis results were examined and recorded 1mg/kg. This is below the lower limit and no further action is required. The barium trigger value for WW-2 (240 mg/kg) was exceeded in May 2024. The bioavailable value was 46 mg/kg. There are no ANZECC guidelines for this analyte and the trigger value is based on historical records. As per the flow chart in Figure 2 no further action is required. **Warriner Creek catchment sites WA-2 and WA-3** The lower trigger value for arsenic (20 mg/kg) was exceeded in November 2023 (23 mg/kg) and May 2024 (30mg/kg) at WA-3 although within the historical limits the biologically available value was examined and was less than <1.0 mg/kg for both sample dates. As per the flow chart in Figure 2 no further action is required. As recommended by Golder in 2021 an additional internal monitoring location (WA-1b) was established downstream of WA-1. Monitoring frequency has also been increased to six monthly. A full summary of the results is provided in the Sediment Analysis Report – Prominent Hill 2023 attached as Appendix B.
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to spillages of miscellaneous chemicals	ML6228 GC15, GC18, IN15.2	**Outcome Measurement Criteria:** Records maintained within the incident reporting system (INControl) indicate that all spills of miscellaneous chemicals are managed in accordance with the Chemical and hydrocarbon spill procedure (PH-9999-SEC-PRO-0056).	Compliant	All spills which occur on site are recorded in the InControl risk management database. Records of these can be provided upon request. A review of these records indicates that all spills have been cleaned up and disposed of immediately as per the outcome achievement criteria.
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to altered flow regimes.	ML6228 GC15, GC18, IN15.3	**Outcome Measurement Criteria:** Refer to Section 9.3 Flora and Fauna	Compliant	Refer to Section 9.3 Flora and Fauna Appendix C Prominent Hill Annual Vegetation and Habitat
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to seepage from the TSF or process water dam.	ML6228 GC15, IN15.4	**Outcome Measurement Criteria:** Concentrations of targeted heavy metals are in the 'low risk (no action)' category identified in the decision tree process in Figure 7-2 and Section 3.5 of the ANZECC/ARMCANZ (2000) sediment quality guidelines (see Figure 7-2). As per this ANZECC/ARMCANZ decision tree approach, the outcome is achieved if: • Concentrations of targeted heavy metals are below Interim Sediment Quality Guideline trigger values (ISQG-Low) identified in the ANZECC/ARMCANZ (2000) sediment quality guidelines, or where no guideline trigger value is specified, concentrations are below an adopted trigger value calculated in accordance with ANZECC/ARMCANZ (2000)) as stated in Table 7-3 to Table 7-7); or • If the ISQG-Low trigger values are exceeded, concentrations of targeted heavy metals are below background concentrations; or • If ISQG-Low trigger values or adopted trigger values (Table 7-3 to Table 7-7)	Compliant	Annual audit completed by WSP (2024) indicates there was no evidence of erosion on the perimeter of the TSF during the reporting period. The WSP Annual TSF review report has been provided as Appendix D, Tailings Storage Facility 2023 Operational Review Prominent Hill (WSP 2024)

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
		• (where relevant) and background concentrations are exceeded, bioavailable concentrations (analysed as acid extractable metals) are below ISQ-Low trigger values or adopted trigger values (where relevant); or If bioavailable concentrations exceed ISQ-Low trigger values or adopted trigger values (Table 7-3 to Table 7-7), acute and chronic toxicity testing conducted in accordance with ANZECC/ARMCANZ (2000) demonstrates that concentrations are in the 'low risk (no action)' category. **Leading Indicator Criteria Summary:** Annual external third-party audit of operational TSF that that includes but is not limited to: • visual inspection of structural integrity, i.e. no seepage or cracks in perimeter • review of operational surveillance records and piezometer monitoring data		
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to ARD.	ML6228	**Outcome Measurement Criteria:** Concentrations of targeted heavy metals are in the 'low risk (no action)' category identified in the decision tree process in Figure 7-2 and Section 3.5 of the ANZECC/ARMCANZ (2000) sediment quality guidelines (see Figure 7-2). As per this ANZECC/ARMCANZ decision tree approach, the outcome is achieved if: • Concentrations of targeted heavy metals are below Interim Sediment Quality Guideline trigger values (ISQG-Low) identified in the ANZECC/ARMCANZ (2000) sediment quality guidelines, or where no guideline trigger value is specified, concentrations are below an adopted trigger value calculated in accordance with ANZECC/ARMCANZ (2000)) as stated in Table 7-3 to Table 7-7); or • If the ISQG-Low trigger values are exceeded, concentrations of targeted heavy metals are below background concentrations; or • If ISQG-Low trigger values or adopted trigger values (Table 7-3 to Table 7-7) • (where relevant) and background concentrations are exceeded, bioavailable concentrations (analysed as acid extractable metals) are below ISQ-Low trigger values or adopted trigger values (where relevant); or If bioavailable concentrations exceed ISQ-Low trigger values or adopted trigger values (Table 7-3 to Table 7-7), acute and chronic toxicity testing conducted in accordance with ANZECC/ARMCANZ (2000) demonstrates that concentrations are in the 'low risk (no action)' category. **Leading Indicator Criteria:** Review of records undertaken annually while WRDs operational confirm that NAF thicknesses of 10 m minimum surrounding PAF material has been maintained during operation.	Compliant	A review of annual aerial photography data and visual inspection completed by the onsite geotechnical team showed no indication that PAF cover was compromised. Please also refer to GC15, IN15.1 above. Appendix E Prominent Hill Aerial Imagery 2024
No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to water from open pit and underground operations.	ML6228 GC15, IN15.6	**Outcome Measurement Criteria:** Compliance with measurement criteria (sediment quality) detailed for Impact 15.1. If leading indicator is triggered, further investigation (e.g. additional sampling, modelling of seepage extent and targeted inspections for indications of seepage (e.g. surface salinity, vegetation changes) indicates that seepage has not or is not likely to adversely affect aquatic fauna and habitat biodiversity (incl. riparian vegetation). In the event that an emergency (controlled) discharge of pit water and/ or underground water needs to occur, records to demonstrate that approval was obtained from DEM, and that pit water quality data was collected.	Compliant	A review of the InControl and Borealis databases demonstrates there has been no emergency discharge of pit water to the environment during the reporting period.

Table 9-2: Groundwater

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No reduction in groundwater flows and/or quality to the Great Artesian Basin springs due to project water extraction.	ML6228, MPL81, MPL82, MPL91, MPL96, MPL97, MPL101, MPLs112-117 GC16, IN16	**Outcome Measurement Criteria:** Groundwater pressure results to be within historical variation (i.e., 90-115 kPa) and show no decreasing trend that is attributable to Prominent Hill operations. Water quality results (pH and salinity) are within baseline (+/-10%).	Compliant	The Margaret Creek Bore reported pressure readings of 112 kPa and 103 kPa during this reporting period. Note the pressure gauge has been replaced. Salinity and pH readings were within baseline. Appendix F 2024 Compliance Report Water Resource Works Approval 396907 (EcoLogical, 2024)
No reduction in groundwater quantity and/or quality to existing third-party users of the Boorthanna Formation aquifer resulting in a loss of ability to operate pastoral station due to project water abstraction. No reduction in groundwater quantity and/or quality to existing third-party users of the Eromanga Formation aquifer due to project water abstraction.	ML6228, MPL81, MPL82, MPL91, MPL96, MPL97, MPL101, MPLs112-117	**Outcome Measurement Criteria:** This outcome is achieved by demonstrating that there has been no reduction in overall water supply access to the landholder to meet the demand of pastoral operations as a result of drawdown of the Boorthanna Formation & Eromanga Formation. This can be demonstrated by: • Hydrographs which show no declining trend in standing water level or a drawdown of less than 2 m. • In an instance where there is more than 2 m of drawdown within a third party well that is used for water supply purposes OZ Minerals must undertake a make good agreement to replace or renew lost water supply. This must be implemented before there is less than 2 m of available drawdown above the pump inlet. Evidence of any replacement/ renew water supply strategies and acceptance of these by the landholder must be provided to DEM. Water quality results (salinity) are within baseline (+/- 20% as agreed with landholders). **Leading Indicator Criteria Summary:** Standing water levels measured against model outputs to confirm if levels are trending in accordance with model predictions, or to confirm when a well will soon become unusable and thus engagement with the landholder is required for replacement/ renew water supply strategies.	Compliant	Monitoring conducted during July 23 – June 24 demonstrates no reduction in the water quality or standing water levels that has resulted in a loss of ability to operate their pastoral station and, no reduction in water quality in the non-artesian Eromanga. Groundwater monitoring results will be submitted to the Department for the Environment and Water in line with the requirements of BHP's Water Licence requirements. Appendix F 2024 Compliance Report Water Resource Works Approval 396907 (EcoLogical, 2024)
No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL.	ML6228 GC17, IN17.2	**Outcome Measurement Criteria:** Water sampling and laboratory analysis of bulldog shale wells (shallow wells) and non-Artesian Eromanga aquifer wells (deep wells) (Figure 7-5) and analysis of pH, EC and metals demonstrates water quality is within the rolling two-year statistical analysis over the preceding two years for all samples. **Leading Indicator Criteria:** Review of records undertaken annually while WRDs operational confirm that NAF thicknesses of 10 m minimum surrounding PAF material has been maintained during operation. Annual external third-party audit of operational TSF that includes but is not limited to: • visual inspection of structural integrity, i.e., no seepage or cracks in perimeter • review of operational surveillance records and piezometer monitoring data	Compliant	Following the outcomes of the statistical assessment, based on the available results, concentrations of indicator analytes in groundwater sampled from shallow groundwater wells (targeting the Bulldog Shale which is not used as a regional source of water) were considered to be either stable or decreasing with the exception of a small number of analytes from some shallow groundwater wells which were observed to be potentially increasing. These potentially increasing concentrations were not considered to be reflective of contamination, rather they were considered reflective of changes in groundwater level (from recent above average rainfall) and/ or general background regional conditions, other than chromium which is an outlier in water from TSF-A and the reason for the increase is unclear. A verification round is required, and this will occur in September. Concentrations of indicator analytes in groundwater sampled from deep groundwater wells (targeting the non-artesian Eromanga Aquifer which is utilised regionally as a water source outside of the Mine Lease area) were considered to be generally stable and did not exhibit significant increasing trends. Further, the assessment of results for the shallower groundwater wells did not identify the need to expand the monitoring program for the deeper groundwater wells. Based on the outcomes of this assessment, noting the observed stable conditions of the deeper non-artesian Eromanga Aquifer, it is considered that there has been no non-trivial reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from the TSF or acid rock drainage from the IWL. Appendix G Groundwater Quality Assessment – Prominent Hill Mine, SA (Land & Water Consulting, 2024)

Table 9-3: Flora and fauna

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
Environmental offsets are approved and in place for all clearance of native vegetation	All tenements GC13, GC14, IN13	**Outcome Measurement Criteria:** Habitat Quality Indicators including vegetation and soils (representing broader ecosystem function) 100 x 100m VEGETATION QUADRATS (Biol. Survey Method) • identification of all species present (species diversity/richness, inclusive of annuals) • cover (%) of individual species • species identified as recruiting. 10 x 2m SUB PLOT within VEGETATION QUAD RAT. For each 1 x 1 m unit of sub-plot: • estimate of% grass cover (ephemerals, annuals) • estimate of% bare ground • estimate of% litter cover within the plot • estimate of% surface crust • counts of recruits (all shrubs) to provide recruitment score • long lived perennials (over and under storey) via species abundance counts (density) for both juveniles and adults. Panoramic photographs collected to aid in assessment of vegetation cover for recruitment. Observational data to be collected at all sites including (but not limited to) vehicle tracks, erosion, vegetation clearing, distance to mine site, light, dust, inappropriate access, feral animals and weeds. GIS output of approved clearance boundary and actual clearance boundary. **Leading Indicator Criteria:** Reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. An increase in bare ground and/or scald/erosion % cover at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. If leading indicator triggered, further assessment of detected impacts vs pre-mine condition by comparison with sites outside of SEB area required to determine non-compliance with lease condition. Annual review of vegetation clearance confirms all clearance has been approved	Compliant	EcoLogical Associated were engaged to conduct the annual vegetation survey that was completed in May 2024. The following is a summary of their findings. The full report is provided as an Appendix to this document. Statement addressing achievement of outcome measurement criteria: The species diversity, vegetation cover and the percentage of species recruiting in 2024 remains high, compared to the historical data (2017-2023). Mallee Woodland had higher diversity at control sites than impact sites, and the opposite was true for Acacia Woodlands and Chenopod Shrublands in 2024. The percentage of vegetation cover was higher at control than impact sites for Acacia Woodland and Chenopod Shrublands. The percentage of native perennial species recruiting was higher for control sites than impact sites for Acacia Woodland and Chenopod Shrublands in 2024. Greater amounts of rabbit activity were observed at impact sites compared to control sites for all three vegetation types. Statement addressing leading indicators: 1. The average total species diversity increased in 2024 compared to 2023. Native vegetation cover (abundance) has remained constant over the 2021-2024 period. 2. The proportion of species recruiting is higher at impact than control sites across all three vegetation types. 3. The amount of grass cover at all sites (except Mallee Woodland control site) has increased compared to 2023. 4. Bare ground cover has reduced in 2024 at all sites except for Acacia Woodland impact site. Appendix C Prominent Hill Annual Vegetation and Habitat Compliance Monitoring 2024 (EcoLogical, 2024)
No loss of abundance or diversity of native vegetation, or reduction in habitat quality, on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities unless prior approval under relevant legislation is obtained and environmental offsets are approved and in place.	All tenements GC12, IN12	**Outcome Measurement Criteria:** As per GC13 above. **Leading Indicator Criteria:** Indicators of habitat degradation, including: Reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. An increase in bare ground and/or scald/erosion % cover at impact sites without a corresponding increase at control sites over three consecutive monitoring periods. If leading indicator triggered, implement targeted threatened bird surveys to confirm ongoing presence of Thick-billed Grass wren and Chestnut- breasted Whiteface within impacted sites.	Compliant	As provided for Grouped Conditions: GC13, GC14, IN13 above.
No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or pest species in the licence area compared to adjoining land as a result of mining operations.	All tenements GC64, IN64	**Outcome Measurement Criteria:** Weed infestations are recorded, treated and monitored for ongoing management requirements. Pest animal sightings are recorded and will result in the initiation of a trapping/baiting program and subsequent monitoring. **Leading Indicator Criteria:**	Compliant	EcoLogical Associated were engaged to conduct the annual vegetation survey which was conducted in May 2024. The following is a summary of their findings. The full report is provided as an Appendices to this document. Statement addressing achievement of outcome measurement criteria:

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
		Annual review of the weed survey and management register (results of field monitoring and visual observations) considering trends that could indicate population increase or new weed species. Quarterly review of cat sightings and trapping register considering trends that could indicate population increase and requirement for increase in trapping program		Weed monitoring was completed in and outside of the ML. No new weed species were detected in the 2024 monitoring period across the five weed monitoring sites or at the 20 permanent vegetation monitoring sites. The abundance of *Malvastrum americanum* var *americanum* has reduced in abundance at all sites with no statistical difference observed. Remote cameras observed rabbit and cat activity at 2 of the 3 sites. Statement addressing leading indicators: As determined by EcoLogical Associates no new weed species have been detected in the reporting period. An increase in the abundance or distribution of existing species in 2024 has occurred, though only by one site, in comparison to last year. However, cover has decreased by one hundred percent at all other sites in 2024 though this is expected as *Malvastrum americanum* var *americanum* (*Malvastrum*) is known to be sensitive to rainfall. A regular weeding campaign is undertaken by the village contractors to ensure this is controlled. A regular feral cat trapping program is undertaken by the environment team prompted by reports of sightings by site personnel. During the 2023-24 reporting period 25 feral cats were captured and euthanised. The environment team also undertake a six-monthly wild dog baiting program to meet our obligations under the Landscape South Australia Act 2019. Appendix C Prominent Hill Annual Vegetation and Habitat Compliance Monitoring 2024 (EcoLogical, 2024)

Table 9-4: Radiation and air quality measurement

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No adverse impacts on flora and fauna due to the release or accumulation of radionuclides into the environment.	ML6228 GC46, IN46	**Outcome Measurement Criteria:** Record review - compliance reporting under the *Radiation and Protection Control Act 1982* and associated facilities licence Reporting demonstrates compliance with facilities licence.	Compliant	The Environmental Radiation Monitoring Report (BHP 2024) has been submitted to the EPA demonstrating compliance with the facilities licence and is provided as Appendix H.
No significant nuisance impacts due to dust as a result of project activities. (A significant nuisance impact is considered to be one that generates a complaint that is attributable to project activities and cannot be addressed within the time frames specified in the measurement criteria.)	MPL81, MPL82, MPLs119-122, MPL93, MPL94, MPLs112-117, MPL91, MPL96, MPL97, MPL101. All EML tenements GC11, IN11	**Outcome Measurement Criteria:** Annual review of complaints register demonstrates that in respect of complaints relating to dust impacts from project activities: complaint initially responded to within 5 business days issues underlying complaint are currently/have been investigated, causes identified, complaint closed, and corrective actions implemented within a reasonable period or other time frame agreed by DPC and/or complainant.	Compliant	A review of the Borealis Stakeholder Compliance Management System shows no complaints have been received relating to dust over this reporting period.

Table 9-5: Land use

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No long-term soil contamination that would compromise agreed future land uses.	ML6228 MPL81, MPL82, MPLs119-122, MPL93, MPL94, MPLs112-117, MPL91, MPL96, MPL97, MPL101. EML 6234, EMLs 6236-6242 GC06, IN06	**Outcome Measurement Criteria:** Investigation and corrective actions triggered as a result of an accidental spill report demonstrate that all spillage to soil have been remediated as per Chemical and hydrocarbon spill procedure (PH-9999-SEC-PRO-0056).	Compliant	All spills which occur on site are recorded in the InControl risk management database. Records of these can be provided upon request. A review of these records indicates that all spills have been cleaned up and disposed of immediately as per the outcome achievement criteria.
No adverse impacts to Department of Defence operations within the WPA.	All tenements GC65, IN65	**Outcome Measurement Criteria:** Quarterly review of records demonstrates there has been no breaches of the deed with DoD or if a breach has occurred that it was notified within 24 hours and corrective actions are closed out within 14 days or other time frame agreed by Department of Defence (or other authorised officer) in accordance with PH- 9999-SEC-PRO-0052 Enquiry, Complaint and Grievance Management Procedure.	Compliant	A review of the Borealis stakeholder communications database shows there were no breaches of the deed with DoD during the reporting period.

Table 9-6: Roads, traffic and other infrastructure

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No significant adverse impacts on pastoral roads, public roads, traffic and other infrastructure.	ML6228 MPL81, MPL82, MPLs119-122, MPL93, MPL94, MPLs112-117, MPL91, MPL96, MPL97, MPL101. EMLs 6278-6296, EMLs 6299-6301, EML 6234, EMLs 6236-6242 GC19, GC20, IN19	**Outcome Measurement Criteria:** Complaint initially responded to within 24 hours. Issues underlying complaint are/ have been investigated, causes identified, complaint closed, and corrective actions implemented within 14 days. Reporting demonstrates all complaints regarding roads, traffic and other infrastructure related to mining activities have been responded to within 24 hours and corrective actions are closed out within 14 days or other time frame agreed by Director of Mines (or other authorised officer) in accordance with PH-9999-SEC-PRO- 0052 Enquiry, Complaint and Grievance Management Procedure.	Compliant	A review of the Borealis stakeholder communications database demonstrates that one complaint was received in relation to cattle being provided water by mine personnel. The complaint was received on the 9 December 2023 and responded to by the Senior Social Performance Advisor within the required 24-hour response time. Follow up investigation resulted in the resolution by BHP and the relevant contractor.

Table 9-7: Indigenous and non-indigenous cultural heritage management

Environmental Outcome	Tenement, Grouped Condition and Impact No.	Regulatory commitment	Compliance status	Evidence and forward work plan
No disturbance to indigenous and non-indigenous artefacts or sites of significance unless it is authorised under the relevant legislation (Aboriginal Heritage Act 1988 or Heritage Places Act 1993).	ML6228 MPL81, MPL82, MPLs119-122, MPL93, MPL94, MPLs112-117, MPL91, MPL96, MPL97, MPL101. EMLs 6278-6296, EMLs 6299-6301, EML 6234, EMLs 6236-6242	**Outcome Measurement Criteria:** Land disturbance is within areas subject to cultural heritage clearance. No disturbance to identified sites attributable to project operations. Records demonstrate that work ceased in the immediate area of discovery, appropriate authorities were advised, and work recommenced only after necessary authorisation under the Aboriginal Heritage Act 1988 was obtained.	Compliant	Cultural heritage inspections have been completed and recorded (with photographs) on the cultural heritage database located on the BHP server. Due to cultural sensitivities these images are not provided. Please contact BHP if you require further clarification.

10 SUMMARY OF GROUPED LEASE CONDITIONS WITH CORRESPONDING ENVIRIONMENTAL OUTCOMES

This section reports against all grouped lease conditions.

Table 1010-1 Summary of grouped lease conditions and corresponding environmental outcomes

Grouped Condition No.	Grouped Lease condition	Corresponding Environmental Outcome (refer to Table 7-21 in PEPR 2022 for details)	Compliance status	Evidence
GC05	The Lessee muse ensure that all fuel and liquid chemical storage areas are bunded and lined in accordance with current EPA (South Australia) guidelines	No long-term soil contamination that would compromise agreed future land uses	Compliant	Refer to Table 9.5
GC06	The Lessee must, in constructing, operating and post mine closure ensure there is no post-closure soil contamination.	No long-term soil contamination that would compromise agreed future land uses	Compliant	Contaminated site register holds all contamination information, possible subsequent investigation to be managed at closure.
GC07	The Lessee of active Extractive Mineral Leases (EMLs) must ensure that all water borne silt (or any other mining related contaminants) be contained on the mining lease EMLs.	Water borne silt (or any other mining related contaminants) is contained on the mining lease EMLs.	Compliant	As for GC07 in Table 9-1
GC08	The Lessee/Licensee must, in constructing, operating the lease/licence, ensure there is no disturbance to indigenous and non-indigenous artefacts or sites of significance unless prior approval under the relevant legislation (Aboriginal Heritage Act 1988 or Heritage Places Act 1993) is obtained.	No disturbance to indigenous and non-indigenous artefacts or sites of significance unless it is authorised under the relevant legislation (*Aboriginal Heritage Act 1988* or *Heritage Places Act 1993*).	Compliant	As for GC08 in Table 9-7
GC9	The Lessee/Licensee must ensure that all employees and contractors on-site are properly advised of the significance of Aboriginal heritage and culture and are to take due care to preserve all Aboriginal Sites and Objects as defined by the Aboriginal Heritage Act 7988.	As for GC08	Compliant	As for GC08 in Table 9-7
GC11	The Lessee/Licensee must ensure that dust from the operation be effectively controlled and managed.	No significant nuisance impacts due to dust as a result of project activities.	Compliant	As for GC11 in Table 9-4
GC12	The Lessee/Licensee must, in constructing, operating the lease/licence, and post mine closure, ensure there is no significant adverse impact to the abundance and diversity of threatened or non-threatened native fauna species.	No loss of abundance or diversity of native vegetation, or reduction in habitat quality, on or off the Mining and or miscellaneous purposes lease areas during construction, operation and post mine completion through: ▪ land clearance, ▪ dust/contaminant deposition, ▪ fire, ▪ reduction in, or introduction of, water supply, or ▪ other damage, unless prior approval under relevant legislation is obtained and environmental offsets are approved and in place.	Compliant	As for GC14 in 9-3
GC13	The Lessee must, in constructing, operating and post mine closure ensure there is no avoidable disturbance to vegetation.	As above	Compliant	As for GC14 in Table 9-3 and as for GC08 in Table 9-7
GC14	The Lessee/Licensee must, in constructing, operating and lease/licence, and post mine closure, ensure there is no significant adverse impact on the abundance and diversity of threatened or non-threatened native flora species or communities.	As above	Compliant	As for GC12 in Table 9-3
GC15	The Lessee must, in constructing, operating and post mine closure ensure no long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to: ▪ generation of fugitive sediment ▪ miscellaneous chemicals ▪ altered flow regime ▪ seepage from Tailings Storage Facility ▪ seepage from the process water dam ▪ acid Rock Drainage pit water.	No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to generation of fugitive sediment No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to spillages of miscellaneous chemicals No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to seepage from the TSF No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to ARD No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to water from open pit and underground operations.	Compliant	As for GC15 in Table 9-1

Grouped Condition No.	Grouped Lease condition	Corresponding Environmental Outcome (refer to Table 7-21 in PEPR 2022 for details)	Compliance status	Evidence
GC16	The Lessee must, in constructing, operating and post mine ensure there is no reduction in groundwater flows to Great Artesian Basin springs due to project water extraction.	No reduction in groundwater flows to Great Artesian Basin springs due to project water extraction.	Compliant	As for GC 16 in Table 9-2
GC17	The Lessee must, in constructing, operating and post mine closure ensure that is no reduction in the quantity and quality of water for existing users.	No reduction in groundwater quantity and/or quality to existing third-party users of the Boorthanna Formation aquifer resulting in a loss of ability to operate pastoral station due to project water abstraction. No reduction in groundwater quantity and/or quality to existing third-party users of the non-artesian Eromanga aquifer due to project water abstraction. No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL.	Compliant	As for GC17 and 18 detailed in Table 9-2
GC18	The Licensee must, in constructing and operating the Miscellaneous Purposes Licences, ensure that there is no adverse impact to the quality and quantity of groundwater and or surface water caused by mining operations to existing users and water dependent ecosystems.	No reduction in groundwater quantity and/or quality to existing third-party users of the Boorthanna Formation aquifer resulting in a loss of ability to operate pastoral station due to project water abstraction. No reduction in groundwater quantity and/or quality to existing third-party users of the non-artesian Eromanga aquifer due to project water abstraction.	Compliant	As for GC17 and 18 detailed in Table 9-2
GC19	The Lessee must, in constructing, operating and post mine closure ensure no significant adverse impacts on public roads, traffic and power supplies.	No significant adverse impacts on pastoral roads, public roads, traffic and other infrastructure	Compliant	As per GC 19 detailed in Table 9-6
GC20	The Licensee must, in constructing and operating the licence, ensure that there is no unauthorised damage to adjacent public or private infrastructure.	As above	Compliant	As per GC 19 detailed in Table 9-6
GC22	The Lessee must control erosion on the external slopes of the Integrated Waste Landform	No long-term soil contamination that would compromise agreed future land uses.	Compliant	As per GC 22 detailed in Table 9.5
GC27	Adjacent land use: The Licensee must in constructing and operating the Licence, ensure that there are no adverse impacts to adjacent land use.	No significant adverse impacts on pastoral roads, public roads, traffic and other infrastructure. No adverse impacts to Department of Defence operations within the Woomera Prohibited Area.	Compliant	As per GC27 details in Table 9.6
GC45	The Lessee must, in constructing, operating and post mine closure ensure there is no adverse impact on pastoralists' incomes.	No reduction in groundwater quantity and/or quality to existing third-party users of the Boorthanna Formation aquifer resulting in a loss of ability to operate pastoral station due to project water abstraction. Other relevant impacts are discussed, addressed and managed if the arise. No reduction in groundwater quantity and/or quality to existing third-party users of the non-artesian Eromanga aquifer due to project water abstraction.	Compliant	As for GC45 detailed in Table 9.2
GC46	The Lessee must, in constructing, operating and post mine closure ensure there is no adverse impacts on flora and fauna due to the release or accumulation of radionuclides into the environment.	No adverse impacts on flora and fauna due to the release or accumulation of radionuclides into the environment.	Compliant	As for GC46 detailed in Table 9-4
GC61	The Lessee/Licensee must ensure that all affected topsoil is removed and stockpiled prior to carrying out any activity, and minimise the mixing and erosion of topsoil and overburden stockpiles	No loss of abundance or diversity of native vegetation, or reduction in habitat quality, on or off the Mining and or miscellaneous purposes lease areas during construction, operation and post mine completion through: • land clearance • dust/contaminant deposition • fire • reduction in, or introduction of, water supply or • other damage unless prior approval under relevant legislation is obtained and environmental offsets are approved and in place	Compliant	As for GC61 detailed in Table 9.3
GC64	The Lessee/Licensee must in constructing, operating the lease/licence and post mine closure ensure no introduction of new weeds, plant pathogens or pests (including feral animals), nor increase in abundance or distribution of existing weed or pest species in the lease/licence area and adjacent areas caused by mining operations. The Lessee/Licensee must ensure that all employees and contractors on-site are fully aware of the requirement to operate in a manner that will minimise the spread of weeds and plant pathogens. Weeds are defined in this condition as any invasive plant that threatens native vegetation in the local area, or any species recognised as invasive in SA.	No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or pest species in the licence area compared to adjoining land as a result of mining operations.	Compliant	As for GC64 in Table 9-3 The general onsite induction informs any new personnel coming onto site of their environmental obligations including those relating to weeds.

Grouped Condition No.	Grouped Lease condition	Corresponding Environmental Outcome (refer to Table 7-21 in PEPR 2022 for details)	Compliance status	Evidence
GC65	The Lessee of Mining Lease 6228 must, in constructing, operating and post mine closure ensure there is no adverse impacts to Department of Defence operations within the Woomera Prohibited Area.	No adverse impacts to Department of Defence operations within the Woomera Prohibited Area (WPA).	Compliant	As for GC46 detailed in Table 9-5

11 SUMMARY OF GROUPED LEASE CONDITIONS WITH NOR CORRESPONDING ENVIRONMENTAL OUTCOME

This section reports against all non-outcome based Second Schedule lease conditions.

Table 11-1 Summary of grouped lease conditions with no corresponding environmental outcomes

Grouped Condition No.	Grouped Lease Condition	Comment	Compliance Status	Evidence
GC05	The Lessee must ensure that all fuel and liquid chemical storage areas on Mining Lease ML 6228 are bunded and lined in accordance with current EPA (South Australia) guidelines.	This is a control strategy, not an outcome, and has been incorporated into the control measures for Impact 6 / lease condition GC06.	Compliant	BHP undertake site inspections which investigate the storage of liquid chemicals and fuels. Records of these inspections are maintained within the InControl risk management system database on the Prominent Hill server. No chemicals are stored onsite within natural surface water runoff zones.
GC09	The Lessee/Licensee must ensure that all employees and contractors on-site are properly advised of the significance of Aboriginal heritage and culture and are to take due care to preserve all Aboriginal Sites and Objects as defined by the *Aboriginal Heritage Act, 1988.*	This is a control strategy, not an outcome, and has been incorporated into the control measures for Impact 8 / lease condition GC08.	Compliant	The Cultural Heritage Management Plan Confidential (PH-0000-SEC-PRO-0001) is in place.
GC10	The Licensee of Miscellaneous Purposes Licence (MPL) 91 must enter into a formal agreement with the Department of Transport, Energy and Infrastructure for construction, maintenance works and technical and operational issues regarding the Stuart Highway underpass. A copy of this formal agreement must be supplied to the Director of Mines and registered against the Miscellaneous Purposes Licence, prior to construction of the underpass	Deed of agreement with the Department of Transport, Energy and Infrastructure is in place. This deed is in place until 2023.	Compliant	Deed of agreement with the Department for Infrastructure and Transport Infrastructure (PH-0000-SEC-AGR-0048) is in place. On 27 October 2022 DIT advised OZ Minerals that a structural inspection will be completed by their department in FY2025/26 and there is no requirement BHP to provide any further information at this point in time.
GC22	The Lessee must control erosion on the external slopes of the Integrated Waste Landform (IWL).	This is a control strategy, not an outcome, and has been incorporated into the control measures for Impact 15.1 / lease condition GC15.	Compliant	The majority of the IWL has been fully rock armoured during the course of mining operations. Only a portion of the TSF and southern waste rock dump require additional rock armour. This criterion will be able to be assessed on completion of the operation.
GC26	The Integrated Waste Landform (IWL) must be designed, constructed, operated and decommissioned in accordance with Tailings Management Guidelines as approved from time to time by the Chief Inspector of Mines in consultation with the Environment Protection Authority.	This is a control strategy, not an outcome, and has been incorporated into the control measures for Impact 15.4 / lease condition GC15.	Compliant	Tailings Storage Facility Operational Review 2023 (WSP 2024) completed in January 2024 demonstrates the TSF Meets ANCOLD 1999 requirements. Next audit due late 2024 or early 2023. Audit report provided as Appendix 4.
GC27	The Licensee must in constructing and operating the Licence, ensure that there are no adverse impacts to adjacent land use.	This lease condition applies only to the Electricity Transmission Line (MPL 119-122). There is no identified impact in and no corresponding outcome in the original MARP. Impacts to adjacent land use are not a credible impact for an operating transmission line in this environment, and consequently an impact event and outcome have not been specified in this PEPR. The outcome is considered to be achieved unless there are specific unresolved complaints relating to land use adjacent to the Electricity Transmission Line.	Compliant	Compliant with all deeds and agreements. No complaints in this reporting period, refer to Section 14.
GC56	Significant Environmental Benefit (SEB) Vegetation Offset Area: The Lessee of Mining Lease 6228 must submit a detailed Significant Environmental Benefit Offset Area Management Plan (OZ Minerals 2016b) to the satisfaction of the Chief Inspector of Mines within 12 months from the grant of the lease. This must include an inventory of the flora and fauna within the offset site and a plan for the long-term future management and monitoring activities.	SEB Offset Area Stage 2 Management Plan (PH-ENV-REP-0005) has been submitted and approved.	Compliant	Refer to Section 12 of this report for SEB Offset Area compliance.

12 RECTIFICATION OF NON-COMPLIANCE

Table 12-1: Rectification of Non-Compliances

Tenement	Date of incident	Detected by operator or DEM	Reportable under Regulation 79?	Date reported to Minister	Date written report to Minister	Non-compliance Environmental outcome or tenement condition breached	Cause of non-compliance, OMC or lease condition breach	Status	Further Work Planned	
									Actions to rectify non-compliance and prevent reoccurrence	Action Status
N/A										
N/A										

13 DISTURBANCE AND REHABILITATION ACTIVITIES

During this reporting period, an area of 1.19 ha was disturbed within ML 6228 (Table 11-1). In line with requirements of the PEPR, all disturbance was approved by DEM and the Native Vegetation Council.

As outlined in the Significant Environmental Benefit Stage Two Offset Area Management Plan (2022) the Prominent Hill Operation has a credit balance of 24.96 ha remaining with the Native Vegetation Council for future vegetation clearance activities before additional funds must be paid.

Table 13-1 Summary of disturbance and rehabilitation activities

Area where disturbance and rehabilitation activity occurred	Description of activities carried out in the reporting period	Amount of land disturbed during the reporting period (ha)	Estimated amount of land to be rehabilitated in the next reporting period (ha)	Total amount of land where rehabilitation works are completed (ha)
ML 6228	Eastern village carpark extension Installation of new potable water line TSF Geotech testing	1.19	0	0
Access/Haul Road	-	-	-	-
Transmission Line	-	-	-	-
Aries Wellfield	-	-	-	-
Virgo Wellfield	-	-	-	-
EMLs		-	-	-
TOTAL		**1.19**		**0**

13.1 STRATEGIES IMPLEMENTED TO AVOID OR MINIMISE DISTURBANCE

The Land Disturbance Permitting process ensures work areas are minimised, and where possible any new activities are located within already disturbed land. Land disturbance areas are surveyed and pegged to ensure no disturbance occurs outside of the permitted area.

13.2 SUMMARY OF ANY POTENTIAL IMPROVEMENTS LEARNED FROM PREVIOUS REHABILITATION ACTIVITIES

The establishment of new rehabilitation sites will be monitored going forward utilising the Landscape Function Analysis methodology to determine the suitability of current rehabilitation processes.

14 *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* (EPBC)

In April 2005, the Federal Environment Department made a controlled action decision under the EPBC Act against the Prominent Hill operation, based on the assumption that the project would have a significant environmental impact on listed threatened species and communities. Six environmental approval conditions were subsequently issued and have been reported against on an annual basis.

In December 2017, the DoEE as part of an internal audit process, reviewed the project approval, and in June 2018 issued a variation to the existing project conditions, superseding the previous conditions.

Table 14-1 shows the revised conditions and evidence of compliance for this reporting period.

Table 14-1 Summary of compliance against EPBC conditions

Condition No.	Condition	Compliance status	Evidence demonstrating compliance with condition
1	To mitigate impacts to the thick-billed grass wren (*Amytornis modestus indulkanna*) and the plains rat (*Pseudomys australis*), the person taking the action must, prior to 1 July 2018, submit an Environment Management Plan (EMP) for the approval of the Minister. The EMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines and include, but not be limited to: a) Management measures to maintain or improve habitat condition including: I. Measures to prevent and control human and stock access to species habitat; and ii. The control of feral predator and weed species; and b) Feral predator, weed and habitat condition monitoring, triggers for management intervention and correction actions. The person taking the action must implement the approved EMP.	Compliant	EcoLogical Associates (ELA) completed annual vegetation and habitat monitoring in Autumn 2024 (EcoLogical Associates 2024), Appendix 3. ELA found no sustained significant difference between the control and impact sites, including mean perennial species abundance, richness and total diversity, mean recruitment scores and mean soil/ecosystem function scores. This demonstrates success in meeting the requirements of the outcome measurement criteria for this environmental outcome. ELA completed weed monitoring as part of the Autumn 2024 Flora Survey. ELA detected no new weed species and no significant increase in abundance of existing species. Feral animal control occurred as needed based on sighting reports. Records show the capture and euthanasia of 25 cats during the reporting period.
2	The person taking the action must, unless otherwise agreed by the Minister, submit by 30 September of each year (beginning in 2019) written advice to the Minister demonstrating how the person taking the action has complied with the conditions of the approval.	Compliant	Report submitted to DoEE on 30 September 2023
3	The person taking the action may choose to revise the plan approved by the Minister under condition 1 without submitting it for approval under section 143A of the EPBC Act, if the taking of the section in accordance with the revised plan would not be likely to have a new or increased impact. If the person taking the action makes this choice they must notify the Department in writing that the approved plan has been revised and provide the Department, at least four weeks before implementing the revised plan, with: i. An electronic copy of the revised plan; ii. An explanation of the differences between the revised plan and the approved plan; and iii. The reasons the person taking the action considers that the taking of the action in accordance with the revised plan would not be likely to have a new or increased impact.	Compliant	N/A
4	The person taking the action may revoke its choice under condition 3 at any time by giving written notice to the Department. If the person taking the action revokes the choice to implement the revised plan, without approval	Compliant	N/A

Condition No.	Condition	Compliance status	Evidence demonstrating compliance with condition
	under section 143A of the EPBC Act, the plan approved by the Minister must be implemented.		
5	If the Minister give a notice to the person taking the action that the Minister is satisfied that the taking of the action in accordance with the revised plan would be likely to have a new or increased impact, then: i. Condition 3 does not apply, or ceases to apply, in relation to the revised plan, and ii. The person taking the action must implement the plan approved by the Minister. To avoid any doubt, this condition does not affect any operation of conditions 3 and 4 in the period before the day the notice is given. At the time of giving the notice, the Minister may also notify that for a specified period of time condition 3 does not apply for the plan required under the approval. Conditions 3, 4 and 5 are not intended to limit the operation of section 143A of the EPBC Act which allows the person taking the action to submit a revised plan to the Minister for approval.	Compliant	N/A

15 EXEMPT LAND

There are no parcels of exempt land applicable to Prominent Hill Operations.

16 COMPLAINTS

Records show Prominent Hill received two queries from a community member during the reporting period. Details of the queries are provided in Table 16-1.

Table 16-1 Summary of community queries

Date of complaint	Nature of complaint	Complaint related to non-compliance	What action was taken to address the complaint	Resolution date
9/12/2023	Employees providing water to cattle on access road	No	Communication to personnel who use the access road regarding stock interaction	19/1/2024
1/3/2024	Cattle perished for lack of water on the fenceline adjacent to the access road	No	TARP and inspection report drafted to advise staff on process when distressed cattle identified	27/3/2024

17 MANAGEMENT SYSTEM REVIEWS

Table 17-1 outlines the management system reviews undertaken at Prominent Hill for the reporting period.

Table 17-1 Summary of management system reviews at Prominent Hill

Date of Review	Auditor	Recommendation	Status	Corrective Action / Response from BHP
2021 annual operational review	Golder	Undertake a study to commence 'closing the gap ' for compliance with GISTM, as OZ Minerals aim to comply with the standard. This would continue on from the preliminary gap analysis that was undertaken in mid-2021. A key aspect of this study would be scoping studies required to support a change in consequence category. Other work by WSP has recommended that a 'Low' consequence category could be adopted based on there being no credible failure modes for catastrophic release of tailings. However, the basis for there being no credible failure modes could have improved confidence with a quantitative risk assessment that estimates the probability of failure (and release of tailings) by overtopping, piping erosion and embankment instability (slope failure).	Open	Preliminary gap analysis conducted. Further work to be conducted in 2022 and 2023. Expected compliance in 2024-2025.
2021 annual operational review	Golder	OZ Minerals indicated that it has actioned installing a flow meter on the flushing pump. WSP recommends considering alternative locations to pump the excess thickener overflow water.	Closed	Flow meter installation complete.
2022 mid-year operational review	Golder	OZ Minerals to consider an assessment of the remaining life of the geomembrane in the raw water and environment dams. Golder to provide proposal in 2023.	Open	Accepted. Testing of membrane will occur in 2024.
2022 mid-year operational review	Golder	The frequency of testing for monitoring bores TSF-A, B, C, D, E 1 and 2 should be changed from quarterly to biannually as per requested by OZ Minerals environment team. Monitoring bores TSF-D and E will no longer be tested for dissolved sodium and copper concentrations.	Closed	Accepted. Testing regime has been revised.

Date of Review	Auditor	Recommendation	Status	Corrective Action / Response from BHP
2022 annual operational review	WSP Golder	The parameter values used in the water balance and rate of rise estimation should be regularly revisited and updated based on up-to-date measurements and laboratory test results. WSP recommends that laboratory testing before solids specific gravity, particle density and dry density be undertaken and will provide OZ Minerals with a scope of work for this.	Open	An updated water balance using Goldsim is being prepared in 2024 to assist with GISTM compliance. The project also includes a climate change assessment and adaptive management plan.
2022 annual operational review	WSP Golder	Stop manual survey pick up to assess deformation of the TSF embankment and reinstate monitoring prisms at the TSF.	Closed	Monitoring prisms are functional. No further action required.
2022 annual operational review	WSP Golder	Continue to monitor the cracking development on the decant causeway.	Open	Accepted. Monitoring in daily inspections. No notable changes.
2023 mid-year operational review	WSP Golder	Further interrogation of aerial survey in Q3 or Q4 of 2023 to review beach slope of southern side of the TSF and estimate the remaining storage life of Stage 5 with improved confidence.	Closed. Refer to Section 5.5 of Appendix 6 TSF Operational Review (WSP 2024)	No additional actions
2023 mid-year operational review	WSP Golder	Water balance is to be actioned	Open	Refer to action above regarding parameter values used in the water balance.
2023 annual operational review	WSP Golder	Undertake a geotechnical investigation to improve estimates of factor of safety for slope stability	Accepted	Works to be undertaken in first half of 2024.
2023 annual operational review	WSP Golder	Complete the installation of flow meters on the horizontal bores to monitor flow on individual drains and reconcile the flow against deposition records from spigots in the TSF.	Accepted	No additional actions
2023 annual operational review	WSP Golder	Prepare an internal BHP work instruction for tailings test work to be undertaken two-yearly. The next test work program should be undertaken in 2025.	Accepted	Next tailings sample to be provided in January 2025 alongside the 2024 annual review.
2023 annual operational review	WSP Golder	Follow up on groundwater well TSF-A to understand the cause of erratic sodium and copper concentrations, and the high groundwater level.	Accepted	WSP will prepare a proposal for BHP to address this recommendation.

18 VERIFICATION OF UNCERTAINTIES

Table 18-1 provides a description and status of works undertaken during the reporting period to address the verification of uncertainties identified in Table 11-1 of the PEPR (2022).

Table 18-1 Status of works to address verifications or uncertainties

Description of assumption or uncertainty	Estimated date to resolve	Progress in reporting period	Confirmed	Forward work plan
Closure Strategy Review **Develop and document a closure vision, principles, objectives and post closure land uses.** A closure vision will be established to articulate aspirations for what will be achieved with mine closure, compatible with the Mining Lease outcomes. The vision will incorporate and overview of the post closure land use and will evolve as more information becomes available. Closure principles will be stablished to outline the common precepts that will guide the basis of the closure plan, such as promoting physical and chemical stability, meeting regulatory obligations, and facilitating social transition. Closure objectives will be established to the articulate what is to be achieved through implementation of the closure activities. Post-closure land uses (or possible uses) and required land capabilities will be identified and documented to aid closure planning activities and stakeholder engagements. This will inform all aspects of the closure plan, particularly the definition of both the closure vision and objectives.	2025	A gap analysis was completed by the BHP Global Closure Team in Q4 2023 to determine how the existing Prominent Hill closure strategy aligns with BHP standards. A program of works is to be scheduled to ensure that Prominent Hill Operations align with BHP's Closure and Legacy Management performance requirements.		
Closure Risk Assessment Undertake and document a closure risk assessment A risk assessment will be performed to identify and assess threats and opportunities associated with closure, including physical, social, economic and ecological considerations. The risk assessment at a minimum will consider all potential failure models of the IWL (WRD and TSF) via a Failure Modes and Effects Analysis (FMEA). Formal identification and evaluation of threats and opportunities will help to set priorities and shape many aspects of the Closure Plan, including identification and selection of closure activities (controls) that will feed into the Closure Execution Plan, improving the knowledge base and inform final landform design.	2025	With the transition to BHP, a program of works is scheduled to ensure that Prominent Hill Operations align with BHP's Closure and Legacy Management performance requirements. This work is likely to occur in 2025.		
Closure Execution Plan **Develop a Closure Execution Plan** A CEP will be developed to identify specific actions (controls) that will be implemented during the mine life in support of closure planning and implementation of closure activities. The actions included in the CEP will be informed by the closure risk assessment process. Controls that will be included into the CEP to increase the knowledge base include: • Determining net percolation rates within the IWL • An integrated hydrological and seepage assessment • An erosion assessment. This should include validation of the IWL cover design through modelling – such as landform evolution modelling, net percolation modelling and sensitivity analysis • Audit of as built WRD (completed) • Investigation options for tailings re-treatment Draft controls that will be included into the CEP to inform the Closure plan include: • Detailed design of the final landform IWL (WRD and tailings) • Abandonment bund detailed design • Determination if revegetation is required for the TSF cover design for a safe and stable landform The CEP will be provided to DEM for review	To be completed	With the transition to BHP, a program of works is scheduled to ensure that Prominent Hill Operations align with BHP's Closure and Legacy Management performance requirements. This work is likely to occur in 2025.		
Government Engagement of CEP Undertaken Consultation with the DEM on the Development of the CEP Engagement with DEM is critical to demonstrate and provide confidence that the actions (controls) identified in the CEP will reduce uncertainty relating to closure outcomes identified in the PEPR	Ongoing			

Description of assumption or uncertainty	Estimated date to resolve	Progress in reporting period	Confirmed	Forward work plan
Ongoing	Ongoing			
Update the Rehabilitation Liability Update the Rehabilitation Liability to incorporate the outcomes of the CEP The rehabilitation liability calculator will be updated to reflect the scope of the new PEPR/Mine Closure Plan	Ongoing			
Stakeholder Engagement Undertaken and document stakeholder engagement with pastoralist, local communities and Antakirinja Matu-Yankunytjatjara Aboriginal community. Engagement with stakeholders to take place throughout the closure planning process, with insight that engagement used to shape key elements of the closure plan.	Ongoing	Details of stakeholder engagement in the reporting period are provided in Section 23.		

19 FORWARD WORKS PLAN

Table 19-1 summarises the actions raised throughout this Compliance Report. These actions will form the basis of the forward work plan for BHP Prominent Hill during the 2024–2025 reporting period.

Table 19-1 Forward works plan

Action No.	Action	Action Description	Proposed Completion Date	Compliance Report Reference	Responsible Department
1	Update mine closure strategy	As per FWP in the PEPR 2022. Review and update the mine closure strategy for Prominent Hill including stakeholder engagement.	2025	Section 16	HSE Operations Mining
2	Annual TSF review recommendations	As per the findings of the Annual TSF review conducted in 2023 all recommended actions were accepted and will be put into the FWP for 2024-25 reporting period	Q2 2025	Section 15	Operations

20 CHANGES TO MINING OPERATIONS

Description of change to existing mining operation	Significance level (1–4)	Date submitted to DEM	Date endorsed by DEM	Current status at the end of the reporting period

Provide a description of any new or emerging environmental hazards that apply, or appear to be arising, in relation to mining operations
No new or emerging environmental hazards have been identified that relate to mining operations

21 TECHNICAL REPORTS

The following table lists all technical data, studies and report generated during the reporting period that support the achievement of tenement conditions and environmental outcomes in the approved PEPR.

Report Title	Authors
Compliance Report 2024 Works Approval 396907 – Prominent Hill	Eco Logical Australia
Environmental Radiation Monitoring Report 2024	BHP
Prominent Hill Annual Vegetation and Habitat Compliance Monitoring 2024	Eco Logical Australia
Sediment Analysis Report 2024	BHP
TSF Groundwater Chemistry Analysis 2024Sediment Analysis Report 2024	Land Water Consulting BHP
Tailings Storage Facility Operational Review 2023TSF Groundwater Chemistry Analysis 2024	WSP Golder Land Water Consulting
Water Licence 396811 Prominent Hill Compliance Report 2024Tailings Storage Facility Operational Review 2023	EcoLogical Australia WSP Golder
Water Licence 396811 Prominent Hill Compliance Report 2024	EcoLogical Australia

22 VOLUNTARY INFORMATION

Item	Description
Operation footprint	2,044 ha
Greenhouse gas emissions	BHP triggers reporting thresholds for greenhouse gas emissions under the *National Greenhouse and Energy Reporting (NGER) Act 2007* (Cth). Prominent Hill's energy and emissions are included in the total emissions and energy published for BHP, available at Corporate emissions and energy data (cleanenergyregulator.gov.au)
No. of employees (company and contractors)	Average personnel on site per day for the 2024 reporting period totalled 844 employees and contractors.
Resource development	The 2024 Mineral Resources and Ore Reserves are reported in the BHP Annual Report 2023, Additional Information; Section 5, which can be found on the BHP website at bhp.com/investors/annual-reporting (BHP 2023)
Community or wider environment support activities	BHP works closely with the Antakarinja Matu-Yankunytjatjara Aboriginal Corporation (AMYAC), and as part of our NTMA obligations to oversee education, employment and training, business development and culture and heritage. This is done via the Tjunguringanyi (Working Together) Steering Committee, Scholarship Trust Committee, Health Check and other partnering workshops and attendance at AMYAC board meetings when required. BHP provides extensive sponsorship opportunities for local community groups, particularly for those with an educational and/or sustainable focus. A partnering agreement has been in place with the Coober Pedy Area School, that, amongst other activities, promotes opportunities for employment at the mine and in the region, engagement with a variety of staff at BHP to enrich the school curriculum and strategic financial investment in STEM related materials and excursions. Engagement has increased also at Port Augusta Secondary School and Coober Pedy Area School, where a range of VET pathway options have been explored and direct employment into Traineeships has been successful. BHP is running a Resource Industry Pathways Program with Port Augusta Secondary School in 2023, after an aware program in 2021. Additionally, BHP sponsors and actively participates in a number of community event important to members of the regional communities and pastoral lessees in the project area. BHP is represented on numerous government, industry and community groups within the area including the Kingoonya Landscapes Group .
Community engagement activities	The operation has immediate neighbours on Pastoral Land and has ongoing communication with them.
Environmental research information	Activities have been ongoing at site as part of our monitoring to improve our understanding of the natural environment. We continue to collect data around air quality, flora, surface water sediments and groundwater. This will further support our understanding of the environment and further expand on the baseline data collected in previous years.

23 COMMUNITY ENGAGEMENT

The following table summarises community engagement activities during the reporting period.

Community or wider environment support activities	Description
NAIDOC Week 2023 4-5 July	Smoking Ceremony and Art Workshop events held at Prominent Hill
AMYAC Board Meeting Coober Pedy 12 September	Discuss Cultural Heritage Management and the new Cultural Training Format for site
TACTIC Conference 15-17 August	Attended along with other BHP Representatives in Port Augusta
Port Augusta Pathways Site Visit 20-21 September	Pathways Students from Port Augusta Secondary School visited and stayed overnight at Prominent Hill
AMYAC Health Check 24-25 October	Bi yearly catch up with AMYAC people and key BHP Corporate and Management team members to discuss progress and priorities and initiatives for the native title mining agreement
Pastoralist Xmas Dinner Port Augusta 5 December	Gathering with Carrapateena and Prominent Hill land connected Pastoralists for end of year dinner
Short Hospitality Skill set course for Coober Pedy Area School/ Block 1 13th - 15th February 2024	Delivery of block one training for Australian Institute of Hospitality Short Skill Set in Cookery
Willam Creek Gymkhana 9th March 2024	Annual William Creek Horse and Motorbike races. Prominent Hill sent four volunteers.
Mt Eba and General Manger Annual Meeting 12th March 2024	Annual meeting with station and General Manager
Prominent Hill supplier visit to Coober Pedy 14th March	Supplier tour with Prominent Hill camp services to Coober Pedy
Ex-PASS student site visit 15th March 2024	Site visit for Ex Pass/ Clontarf site visit/tour
Short Hospitality Skill set course for Coober Pedy Area School/ Block 2 19th - 21st March 2024	Delivery of block two training for Australian Institute of Hospitality Short Skill Set in Cookery
Coober Pedy SLT visit 2nd -4th April 2024	Senior Leadership Team visit to Coober Pedy to engage with stakeholders
Coober Pedy Area School Yarning Circle Opening 9th April 2024	Official opening of the Coober Pedy Area School Yarning circle with school and stakeholder
Mt Eba Shearing Day 17th April 2024	Mount Eba station hold shearing day for Prominent Hill employees to visit and be educated on station life
AMY Nominees ROM Visit	Hosted a visit of AMYAC and AMY Nominees Managers and Consultants to review the future contract options of the Run of Mine (ROM) Operation
AMYAC Scholarship Trust Meeting 10th May 2024	Attend a scholarship trust meeting in Coober Pedy with the AMYAC Board
Oodnadatta Gymkhana 11th May 2024	Annual Oodnadatta Horse and Motorbike races. Prominent Hill sent four volunteers.
Prominent Hill New Cross-Cultural Immersion Day Training Trial 15th May 2024	Hosted a trial of the new AMYAC delivered cultural immersion training program
PASS Pathways Block Training 13th -17th May 2024	PASS Pathways in Resource and Infrastructure Block Training
PASS Pathways Block Training 20th -24th May 2024	PASS Pathways in Resource and Infrastructure Block Training
Ingomar and General Manger Annual Meeting 22nd May 2024	Annual meeting with station and General Manager

Community or wider environment support activities	Description
Tjunguringanyi Steering Committee 29th May 2024	Meeting to discuss operation of the mining agreement with the AMY Traditional Owners
Coober Pedy International Women's Day 1st June 2024	Provided catering, guest speaker and a few attended to the Coober Pedy International Women's Day
Reconciliation Week 3rd June 2024	Provided a BBQ onsite and speech from General Manger
Coober Pedy Breakaways Marathon 9th June 2024	Annual Coober Pedy Marathon held at the Breakaways. Prominent Hill had 25 employees compete on the day.
Coober Pedy Uni Hub and Copper SA visit 11-12th June 2024	Meeting to discuss pathway opportunities for higher education in Coober Pedy
Coober Pedy Opal Festival 15th June 2024	Annual Coober Pedy Opal festival. Prominent Hill had several employees volunteer on the day with stalls, security, and community game support.
Purple House Coober Pedy 18th June 2024	Opening of Coober Pedy Purple House, Prominent Hill donated $100,000

24 MINISTERIAL DETERMINATION CHECKLIST

Section	Included? Or N/A
1. Public liability insurance	
Provide a copy of the cover note	Section 3
2. Identification	
Tenement number(s)	Section 4
Name of the mine operation	Section 1
General location details	Section 1
Name(s) of the mine owner and mine operator(s)	Section 1
Site Contact	Section 1
Reference and approved date of relevant PEPR being reported against	Section 1
Dates of the reporting period for the report	Section 1
Date of preparation of the report.	Section 1
3. Tenements	
Summary table of all tenements including ML, MPL, EML etc.	Section 4
Plan of the mining operations showing all tenement boundaries covered by the approved PEPR	Section 4
4. Other Licences, Permits, Waivers, Native Title and Agreements	
Summary table of all licences, permits, waivers, native title and other agreements relevant to the PEPR.	Section 5
5. Ore reserves and mineral resources	
Summary of mineral resource and ore reserves	Section 6
New delineation or exploration drilling activities on or off the lease (if required)	Section 6
Estimated mine life	Section 6
***6.* Mining processing and waste storage activities**	
Quantity of ore mined and stockpiled	Section 7
Amount of overburden / waste	Section 7
Volumes of concentrate produced	Section 7
7. Compliance with environmental outcomes and leading indicators	
Provide a summary of compliance for each environmental outcome specified in the tenement conditions or approved PEPR	Section 8/Section 9
Summarise data relating to any leading indicator criteria in the approved PEPR	Section 8/Section 9
8. Compliance with non-outcome based tenement conditions	
If you have any lease conditions which do not have an outcome measurement criteria relating to it please list the compliance status and evidence against each condition in a summary table	Section **Error! Reference source not found.**
9. Rectification of non-compliance	
If a ‘not complied’ is recorded, the following must be included:	Section 12
Date of the incident	Section 12
What environmental outcome or tenement condition was breached	Section 12

Section	Included? Or N/A
The date of incident was reported under Regulation 87 of the Mining Regulation	Section 12
The cause of non-compliance	Section 12
Actions taken to rectify the non-compliance	Section 12
Where non-compliance under Regulation 86 or initial incident reports under Regulation 87 of the Mining Regulations have previously been reported in compliance reports and not fully rectified at the time of reporting, a progress report must be included to assess the effectiveness of rectification	Section 12
10. Disturbance and rehabilitation activities	
The amount of land disturbed and activity that created disturbance in the reporting period	Section 13
Rehabilitation worked carried out in the reporting period	Section 13
The amount of land where rehabilitation works are completed	Section 13
An estimated amount of land to be rehabilitated in the next reporting period	Section 13
Any potential improvements learned from previous rehabilitation activities	Section 13
11. Reconciliation of native vegetation clearance	
Where the PEPR includes an approved native vegetation management plan for clearance of native vegetation under the Native Vegetation Act 1991, include:	Section **Error! Reference source not found.**
The approved maximum vegetation clearance	Section **Error! Reference source not found.**
The amount of native vegetation cleared in the reporting period	Section **Error! Reference source not found.**
The total amount cleared to date	Section **Error! Reference source not found.**
An estimated amount proposed to be cleared in the next reported period	Section **Error! Reference source not found.**
Provision of information, including annual monitoring and progress reports to demonstrate compliance with the NVMP where Significant Environmental Benefit (SEB) is being provided	Section **Error! Reference source not found.**
12. Environment Protection and Biodiversity Conservation Act 1999 reporting	
Demonstration of compliance with EPBC conditions (if required)	Section 14
13. Exempt land	
Provide a statement that waivers for land relevant to the mining operation are in place and compliance with exempt land provisions in accordance with Section 9 of the Mining Act	Section 15
The status of exempt land, including name of person entitled to exemption, certificate of title, reason for exemption, area of exemption, date waiver registered and any relevant conditions	Section 15
A plan showing all exempt land relevant to the mining operations	Section 15
14. Complaints	
Summary table of complaints made by members of the public during the reporting period and include: • the date of complaint • the nature of complaint • whether or not it related to non-compliance • what action was taken to address the complaint • the date the complaint was resolved	Section 16

Section	Included? Or N/A
15. Management system reviews	
Provide a summary of any management system review undertaken during the reporting period in order to ensure compliance with relevant tenement conditions and environmental outcomes, including:	Section 17
When the audit ore review was undertaken	Section 17
Who undertook the audit or review	Section 17
What aspect(s) of the management system was/were audited/reviewed	Section 17
What issues, or recommendations for improvement, were noted	Section 17
An assessment of the potential for any issues identified in the audit/ review to lead to a noncompliance with approved environmental outcomes	Section 17
What corrective action that has or will be taken to address any issues.	Section 17
16. Verification of uncertainties	
Provide a description and status of works undertaken during the reporting period or proposed undertaken to address any identified uncertainties made in the approved PEPR (or any additional uncertainties or assumptions identified since PEPR approval)	Section 18
17. Technical Reports	
Summary of technical data studies and reports generated in reporting period	Section 21

25 REFERENCES

ABBREVIATIONS AND UNITS OF MEASURE

DEFINITION OF ACRONYMS

Acronym	Expansion
ASX	Australian Stock Exchange
AMYAC	Antakarinja Matu-Yankynytjatjara Aboriginal Corporation
DEW	Department for Environment and Water
DPTI	Department of Planning, Transport and Infrastructure
DEM	Department for Energy and Mining
EC	Electrical Conductivity
EML	Extractive Mineral Lease
EPBC	Environmental Protection and Biodiversity Conservation
FIFO	Fly-in, fly-out
ha	hectare
kVa	Kilovolt-amp
LFA	Landscape Function Analysis
ML/d	Mega litre per day
MPL	Miscellaneous Purposes License
NEPM	National Environment Protection Measure
NRM	Natural Resource Management
NTMA	Native Title Mining Agreement
OMC	Outcome Measurement
pH	Measure of acidity or basicity
PAF	Potentially acid forming
PEPR	Program for Environment Protection and Rehabilitation
RFDS	Royal Flying Doctor Service
RIMS	Risk Information Management Systems
RO	Reverse Osmosis
SA EPA	South Australian Environment Protection Authority
SWL	Standing Water Level
TSP	Total Suspended Particulates
WRD	Waste Rock Dump
WWTP	Wastewater Treatment Plant

UNITS OF MEASURE

Abbreviation	Expansion of Unit
$	Australian dollars(s)
%	percent
µGy	microgray
µS	microsiemen
cm	centimetre
d	day
dmt	dry metric tonne
g	gram
h	hour
ha	hectare
kg	kilogram
kL	kilolitre
km	kilometre
m	metre
mAHD	metres Australian Height Datum
mBGL	metres below ground level
mTOC	metres below top of casing
mg	milligram
ML	megalitre
m^2	square metre
m^3	cubic metres
mm	millimetre
mSv	microsieverts
Mt	million tonnes
pH	measure of acidity or basicity
s	second
t	tonnes
W	watts

APPENDICES

Appendix A. Public liability insurance

A copy of the certificate of currency for the public liability insurance and/or a copy of the policy of insurance is attached on the following page.

STEIN INSURANCE COMPANY LIMITED

PO Box 230
Heritage Hall
Le Marchant Street
St Peter Port
Guernsey GY1 4JH
Telephone +44 (0) 1481 737100
Fax +44 (0) 1481 729046

29 June 2023

To Whom It May Concern

Certificate of Placement – Public & Products Liability

This certificate is issued as a matter of information only and confers no rights upon the holder. It does not amend, extend or alter the coverage afforded by the policy/policies listed. It is issued as a summary only of the cover provided and is current only at the date of issue. For full particulars reference should be made to the current policy wording.

Named Insured:	BHP Group Limited and all subsidiary companies and all related and/or affiliated and/or controlled, managed, administered and associated companies or corporations (now existing or hereinafter acquired, formed or incorporated) and/or related joint ventures and/or partnerships and other entities named or described herein for their respective rights and interests.
Insurer(s):	Stein Insurance Co. – a Captive Insurance Company and wholly owned subsidiary of BHP Group Ltd currently rated A- by Standard & Poor's
Policy Number:	PL/0001/23
Period of Insurance:	1st July 2023 to 30th June 2024, both days inclusive, local standard time at the location of the property, operations or activities insured.

STEIN INSURANCE COMPANY LIMITED

Interest Insured:	The Insurers will indemnify the Insured up to the Limit of Liability for all amounts which the Insured shall become legally liable to pay by way of compensation (including claimants' costs and expenses) for and/or arising out of Personal Injury and/or Property Damage occurring during the Period of Insurance in connection with the Business of the Insured and/or the Insured's Products and/or Completed Operations.
Situation and/or Premises:	Anywhere in the world but the Insurers shall not be liable to pay any claim or indemnity hereunder to the extent that payment of such would expose the Insurers to any sanction, prohibition or restriction under any United Nations resolutions or any trade or economic sanctions, laws or regulations of any applicable jurisdiction.
Limit of Liability:	US$20,000,000 any one occurrence in respect of Public Liability US$20,000,000 any one occurrence and in the annual aggregate in respect of Products Liability US$20,000,000 any one occurrence and in the annual aggregate in respect of Medical Malpractice US$20,000,000 any one occurrence and in the annual aggregate in respect of Professional Indemnity
Notice of Occurrence:	The Insured shall promptly furnish the Insurers with all information available respecting any Claim, and the Insurers shall have the right to appoint adjusters, assessors or surveyors and to control all negotiations, adjustments and settlements in connection with such Claim, subject always to the terms and conditions of the policy wording.

All other terms and conditions as per the full policy wording.

Signed for and on behalf of
Stein Insurance Company
J. Stewart - Manager

Appendix B. Sediment Analysis – Prominent Hill 2024 (BHP 2024)

Sediment Analysis Report Prominent Hill Mine 2024

Contents

Introduction

To meet the requirements of the Prominent Hill Program for Environment Protection and Rehabilitation (OZ Minerals, 2022), an annual sediment monitoring program has been designed to ensure that water borne silt (or any other mining related contaminants) are contained on the mining lease.

Table 1 provides a summary of the Environmental Outcomes and Measurement Criteria detailed in the Program for Environment Protection and Rehabilitation (PEPR) that are associated with this monitoring program.

This report provides a summary of the findings for the 2023/2024 sediment sampling program completed within the ephemeral creek lines in the vicinity of the Prominent Hill mine lease.

Table 1 Environmental outcomes and outcome measurement criteria summary table (PEPR, 2022)

Impact Event	**Environmental Outcome**	**Outcome Measurement Criteria Summary**	**What is measured**	**Outcome Achievement**
Adverse effects on aquatic fauna and habitats in Warriner and Wattiwarriganna creeks due to the generation of fugitive sediment from the site (principally from the IWL and ROM pad)	No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to generation of fugitive sediment.	Annual sediment sampling at monitoring sites: WA-2, WA-3, WW-1, WW-2, WW-3 and MI-1 demonstrate that concentrations of targeted heavy metals are in the 'low risk (no action)' category identified in the decision tree process in Figure 3.5.1 and Section 3.5 (of the PEPR, 2017) of the ANZECC/ARMCANZ (2000) sediment quality guidelines. (Note: Site WA-1 in the ML is also monitored as an internal lead indicator but is not a lead indicator or compliance site for the purpose of this PEPR).	Concentrations of targeted heavy metals will be measured in sediment through laboratory analysis of total metals (and analysis of acid extractable metals if assessment of bioavailability is required). The targeted metals comprise: Aluminium, Arsenic, Barium, Beryllium, Cadmium, Copper, Lead and Uranium (total only).	Concentrations of targeted heavy metals are in the 'low risk (no action)' category identified in the decision tree process in Figure 7-2 of the PEPR (2022) and Section 3.5 of the ANZECC/ARMCANZ (2000) sediment quality guidelines. As per this decision tree approach, the outcome is achieved if: • Concentrations of targeted heavy metals are below Interim Sediment Quality Guideline trigger values (ISQG-Low) identified in the ANZECC/ARMCANZ (2000) sediment quality guidelines, or where no guideline trigger value is specified, concentrations are below an adopted trigger value calculated in accordance with ANZECC/ARMCANZ (2000) or • If the ISQG-Low trigger values are exceeded, concentrations of targeted heavy metals are below background concentrations; or
	No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to seepage from the TSF.			
	No long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to ARD.			

Impact Event	Environmental Outcome	Outcome Measurement Criteria Summary	What is measured	Outcome Achievement
				• If ISQG-Low trigger values or adopted trigger values (where relevant) and background concentrations are exceeded, bioavailable concentrations (analysed as acid extractable metals) are below ISQG-Low trigger values or adopted trigger values (where relevant); or • If bioavailable concentrations exceed ISQG-Low trigger values or adopted trigger values, acute and chronic toxicity testing conducted in accordance with ANZECC/ARMCANZ (2000) demonstrates that concentrations are in the 'low risk (no action)' category.

Sampling Method

Collection method

Sediment samples are collected bi-annually from three creek lines within the following seven sites (refer to Attachment A):

- Warriner Creek (sites WA-1*, WA-1b*, WA-2 and WA-3)
- Wattiwarriganna Creek (sites WW-1, WW-2 and WW-3) and
- Millers Creek (site MI-1).

On the 17 November 2023 and 2 May 2024 composite samples of four sub samples was collected for each site and submitted to Australian Laboratory Services (a NATA accredited laboratory) for analysis. Refer to Figure 1 for sampling procedure.

* Note that data collected for WA-1 and WA-1b is for internal monitoring purposes only.

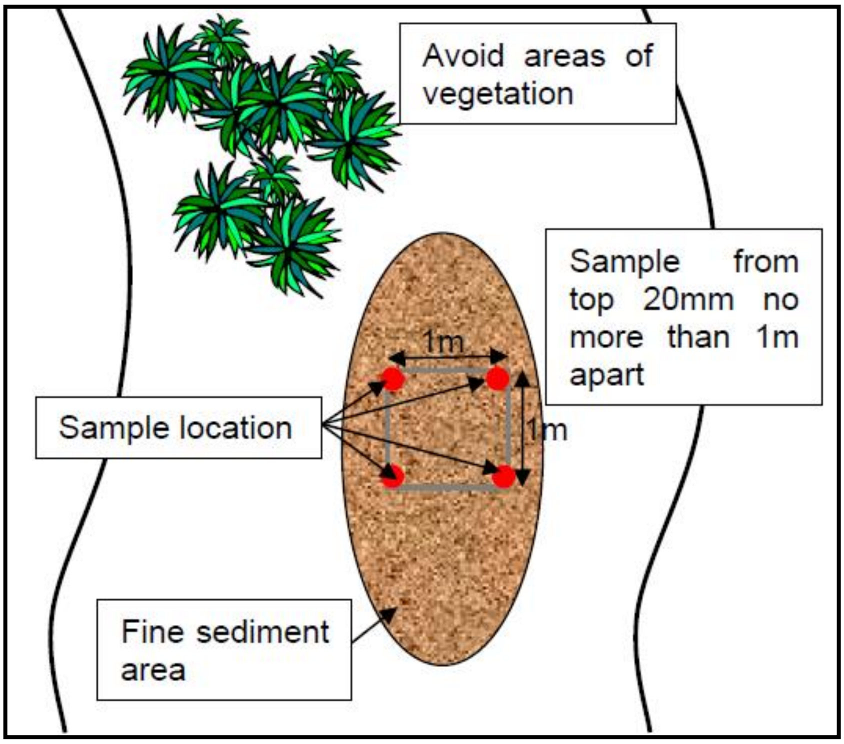


Figure 1 Sediment sampling procedure (OZL, 2016)

Lab samples were analysed for the following**:**

- Soil moisture content (%)
- Total metals (mg/kg) and acid extractable (mg/kg) of the following elements:
- Aluminium
- Arsenic
- Barium
- Beryllium
- Cadmium
- Copper
- Lead
- Uranium

Trigger values and assessment guidelines

Attachment B presents the relevant Australian and New Zealand Environment and Conservation Council (ANZECC) (2000) guidelines available for each analyte tested and, for analytes where ANZECC criteria is not available, Eco Logical Australia (ELA) used baseline data (pre-mining) to develop guidelines values (ELA, 2017).

No baseline data was collected for the Millers Creek sampling site (MI-1), hence no site-specific trigger guidelines values have been developed for analytes that do not have ANZECC (2000) criteria, i.e. total aluminium, total barium, total beryllium and total uranium).

Trigger guidelines values have not been provided for total beryllium as no baseline data was collected for this analyte.

As per the ANZECC decision tree approach (Figure 2) the outcome criteria is achieved if:

- Concentrations of targeted heavy metals are below Interim Sediment Quality Guideline trigger values (ISQG-Low) identified in the ANZECC (2000) sediment quality guidelines, or where no guideline trigger value is specified, concentrations are below an adopted trigger value calculated in accordance with ANZECC (2000)) as stated in Tables B1 – B4); or
- If the ISQG-Low trigger values are exceeded, concentrations of targeted heavy metals are below background concentrations; or
- If ISQG-Low trigger values or adopted trigger values (Tables B1 to B4) (where relevant) and background concentrations are exceeded, bioavailable concentrations (analysed as acid extractable metals) are below ISQ-Low trigger values or adopted trigger values (where relevant); or

If bioavailable concentrations exceed ISQ-Low trigger values or adopted trigger values (Tables B1 to B4), acute and chronic toxicity testing conducted in accordance with ANZECC/ARMCANZ (2000) demonstrates that concentrations are in the 'low risk (no action)' category.

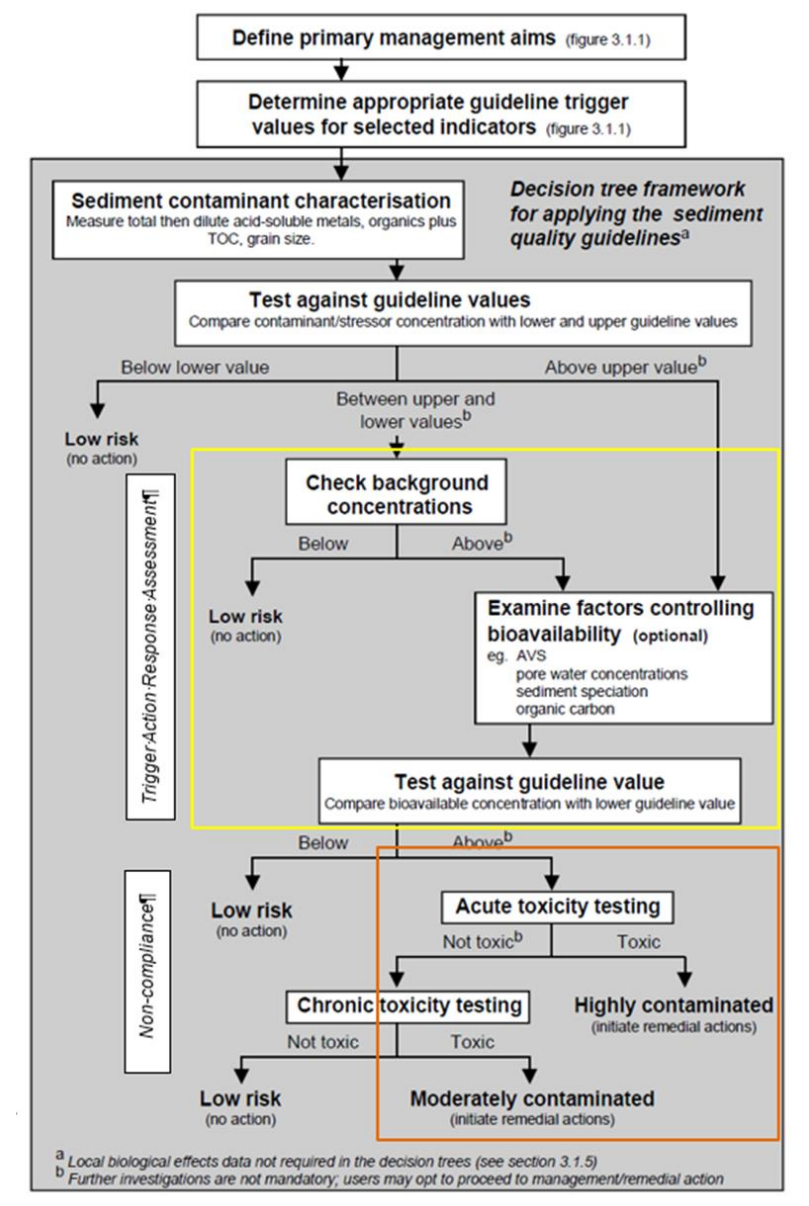


Figure 2 Decision tree for the assessment of contaminated sediments (ANZECC, 2000)

Results

The results from the reporting period have been plotted with data from previous years and are presented in Attachment C.

Compliance Sites

The summarised results for the reporting period are as follows:

Warriner Creek Catchment sites WA2 – WA3

Arsenic levels exceeded the lower trigger value of 20mg/kg at site WA-3 for both samples this reporting period with values of 23mg/kg and 30mg/kg respectively. As per the Decision Tree (Figure 2) bioavailability (dilute acid extraction for metals) was examined with the result (1mg/kg) below the trigger value.

All other analytes tested, Aluminium, Barium, Beryllium, Cadmium, Copper, Lead and Uranium were below limits for all WA2-WA3 sites.

Wattiwarriganna Creek catchment sites WW1 – WW3

Arsenic levels equaled the lower trigger value of 20mg/kg at site WW-3 for the May sample. The other two sites had elevations less than 5mg/kg and were below the lower trigger value. As per the Decision Tree (Figure 2) bioavailability (dilute acid extraction for metals) was examined with the result (1mg/kg) below the trigger value.

Barium levels exceeded the trigger value (240mg/kg) at WW-2 for the May sample with a result of 280mg/kg. Bioavailability analysis returned a result of 46mg/kg, below the trigger value.

All other analytes tested, Aluminium, Beryllium, Cadmium, Copper, Lead and Uranium were below limits for all WW1-WW3 sites.

Millers Creek catchment site MI1

All analytes tested were below limits for site MI1 this reporting period.

Internal monitoring sites

Warriner Creek catchment sites WA-1 – WA1b

The summarized results for the reporting period are as follows:

Aluminium, Arsenic, Barium, Beryllium, Cadmium and Lead were all below limits.

Copper levels exceeded the lower trigger value (65mg/kg) at WA-1 a maximum of 253mg/kg.

Uranium levels at WA-1 exceed the trigger value of 1mg/kg with values of 3 mg/kg and 2.3mg/kg respectively.

It should be noted that WA-1 and WA-1b are used for internal monitoring purposes only and elevated copper and uranium were not detected outside of the mine lease.

Discussion

Compliance Sites

Laboratory results of sediment samples for the 2024 reporting period were compared against the ANZECC/ARMCANZ (2000) sediment quality guidelines and internal trigger limits. None of the constituents analysed have exceeded upper trigger levels where a range is provided.

Wattiwarriganna Creek catchment sites WW-1 – WW-3

The arsenic level at WW-3 equaled the lower trigger value (20mg/kg) in May 2024. This is the highest level recorded at this site since monitoring commenced. In line with the decision tree bioavailability analysis results were examined and recorded 1mg/kg. This is below the lower limit and no further action is required.

The barium trigger value for WW-2 (240 mg/kg) was exceeded in May 2024. The bioavailable value was 46 mg/kg. There are no ANZECC guidelines for this analyte and the trigger value is based on historical records. As per the flow chart in Figure 2 no further action is required.

Warriner Creek catchment sites WA-2 and WA-3

The lower trigger value for arsenic (20 mg/kg) was exceeded in November 2023 (23 mg/kg) and May 2024 (30mg/kg) at WA-3 although within the historical limits the biologically available value was examined and was less than <1.0 mg/kg for both sample dates. As per the flow chart in Figure 2 no further action is required.

Internal monitoring sites

Copper levels exceeded the lower trigger value (65mg/kg) at WA-1 a maximum of 253mg/kg. As per the Decision Tree (Figure 2) bioavailability analysis (dilute acid extraction for metals) was completed, although the levels were reduced, they still exceeded the lower trigger value.

Uranium levels were exceeded at WA-1 for both samples as previously investigated with the Prominent Hill Radiation Safety Officer, while the uranium level has exceeded the WA-1 trigger limit the result is below the regulatory environmental thresholds for both South Australia and Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and is there considered non-radioactive under all jurisdictions.

References

ANZECC (2000) National Water Quality Management Strategy Paper No. 4, Volume 1, The Guidelines (Chapters 1 to 7). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council / Agriculture and Resource Management Council of Australia and New Zealand.

ELA (2017b) Surface Water monitoring and sediment sampling recommendations. Letter prepared for OZ Minerals Limited, 28 March 2017.

Golder (2021) Investigation and Risk Assessment of Elevated Metals in Warriner Creek – Prominent Hill Mine, 12 July 2021.

OZL (2016) Sediment sampling safe operating procedure. 6.2.4SOP012.

OZL (2022) Program for Environment Protection and Rehabilitation – Prominent Hill.

Abbreviations

Abbreviation	Description
ANZECC	Australian and New Zealand Environment Conservation Council
ARD	Acid rock drainage
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealancd
ELA	Eco Logical Australia
ISQG	Interim sediment quality guidelines
IWL	Integrated waste landform
ML	Mine lease
NATA	National Association of Testing Authorities
PEPR	Program for Environment Protection and Rehabilitation
ROM	Run of Mine
TSF	Tailing storage facility

Attachment A – Locations of Sediment Sampling Sites

OZ Minerals does not warrant that this document is definitive nor free of error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

GDA 1994 MGA Zone 53
A4 1:166,345

Appendix A | Sediment Sampling Sites

Attachment B – Trigger value guidelines

Table B-1 ANZECC (2000) trigger guidelines

Constituent	Unit	ANZECC (2000) Lower Trigger	ANZECC (2000): Upper Trigger
Total Aluminium	mg/kg	No guideline	No guideline
Total Arsenic	mg/kg	20	70
Total Barium	mg/kg	No guideline	No guideline
Total Beryllium	mg/kg	No guideline	No guideline
Total Cadmium	mg/kg	1.5	10
Total Copper	mg/kg	65	270
Total Lead	mg/kg	50	220
Total Uranium	mg/kg	No guideline	No guideline

Table B-2 Constituent guideline established on baseline data: Total Aluminium

Sample site	Baseline data (mg/kg)	Date	Trigger level (mg/kg)*
WA-1	14,300	27/06/2010	28,600
WA-2	18,600	27/06/2010	37,200
WA-3	19,300	27/06/2010	38,600
WW-1	10,700	27/06/2010	21,400
WW-2	7,020	27/06/2010	14,040
WW-3	16,400	27/06/2010	32,800

* Trigger level at 2 x baseline data

Table B-3 Constituent guideline established on baseline data: Total Uranium

Sample site	Baseline data (mg/kg)	Date	Trigger level (mg/kg)*
WA-1	0.5	27/06/2010	1.0
WA-2	0.4	27/06/2010	0.8
WA-3	1.1	27/06/2010	2.2
WW-1	0.3	27/06/2010	0.6
WW-2	0.3	27/06/2010	0.6
WW-3	0.8	27/06/2010	1.6

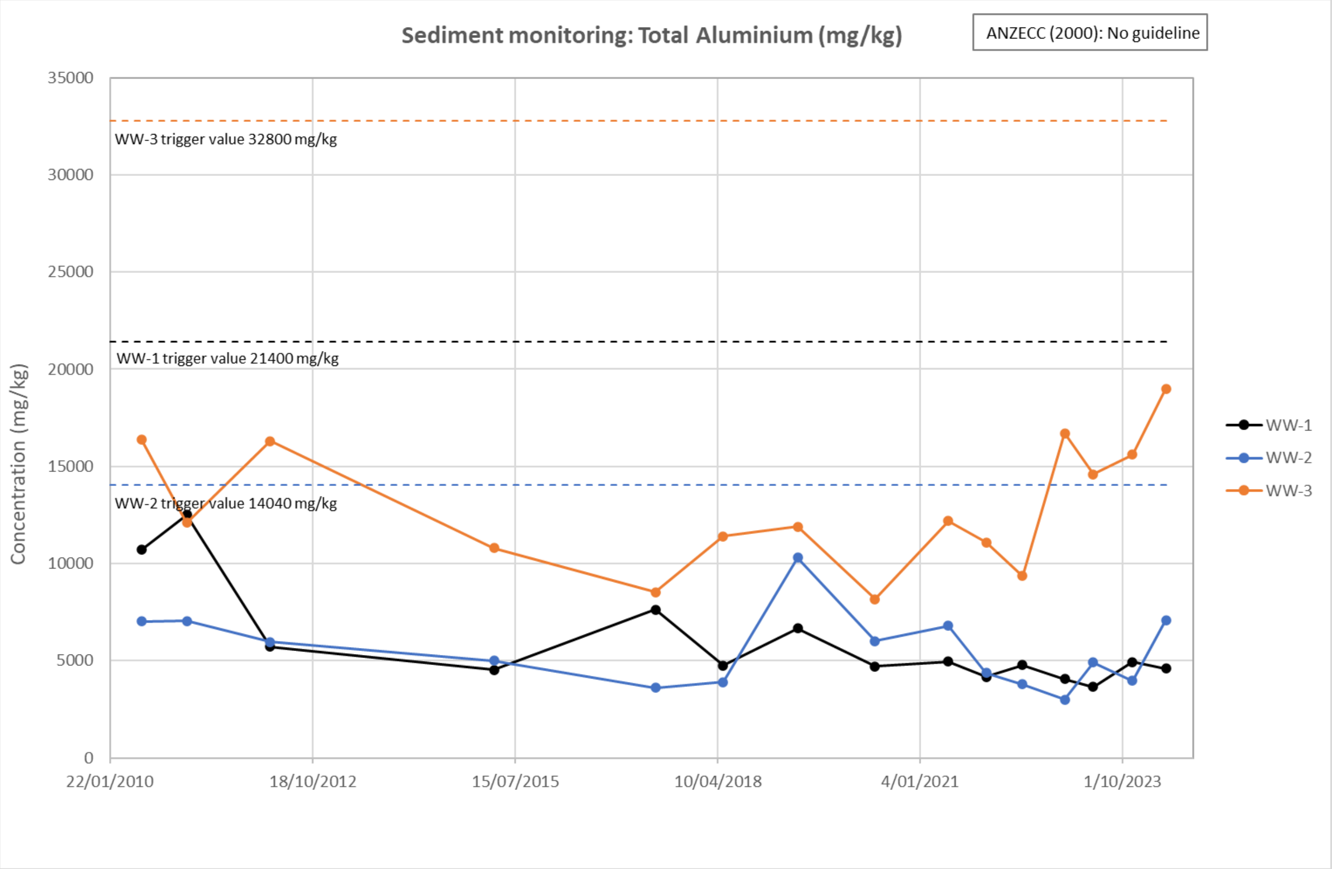
* Trigger level at 2 x baseline data

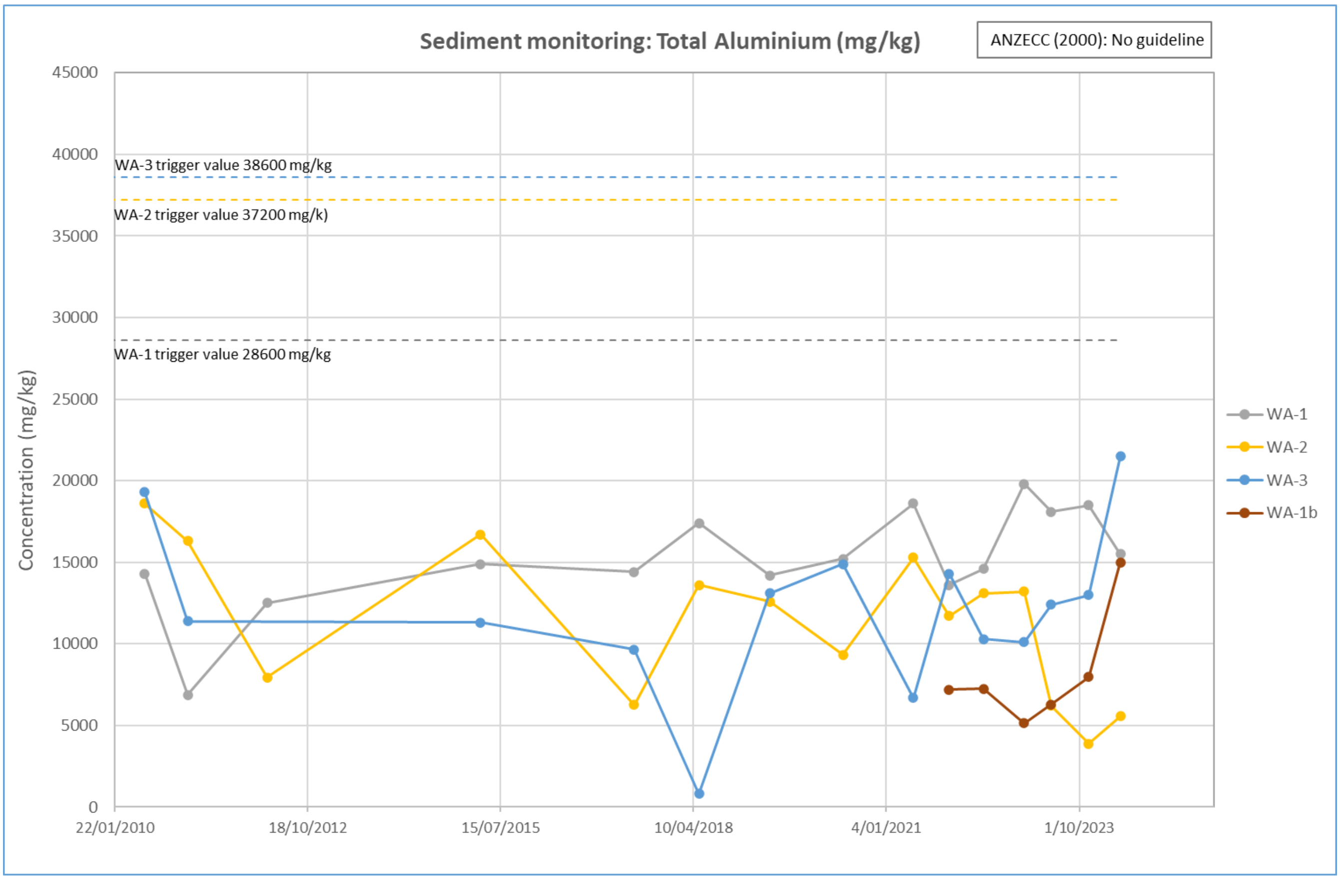
Table B-4 Constituent guideline established on baseline data: Total Barium

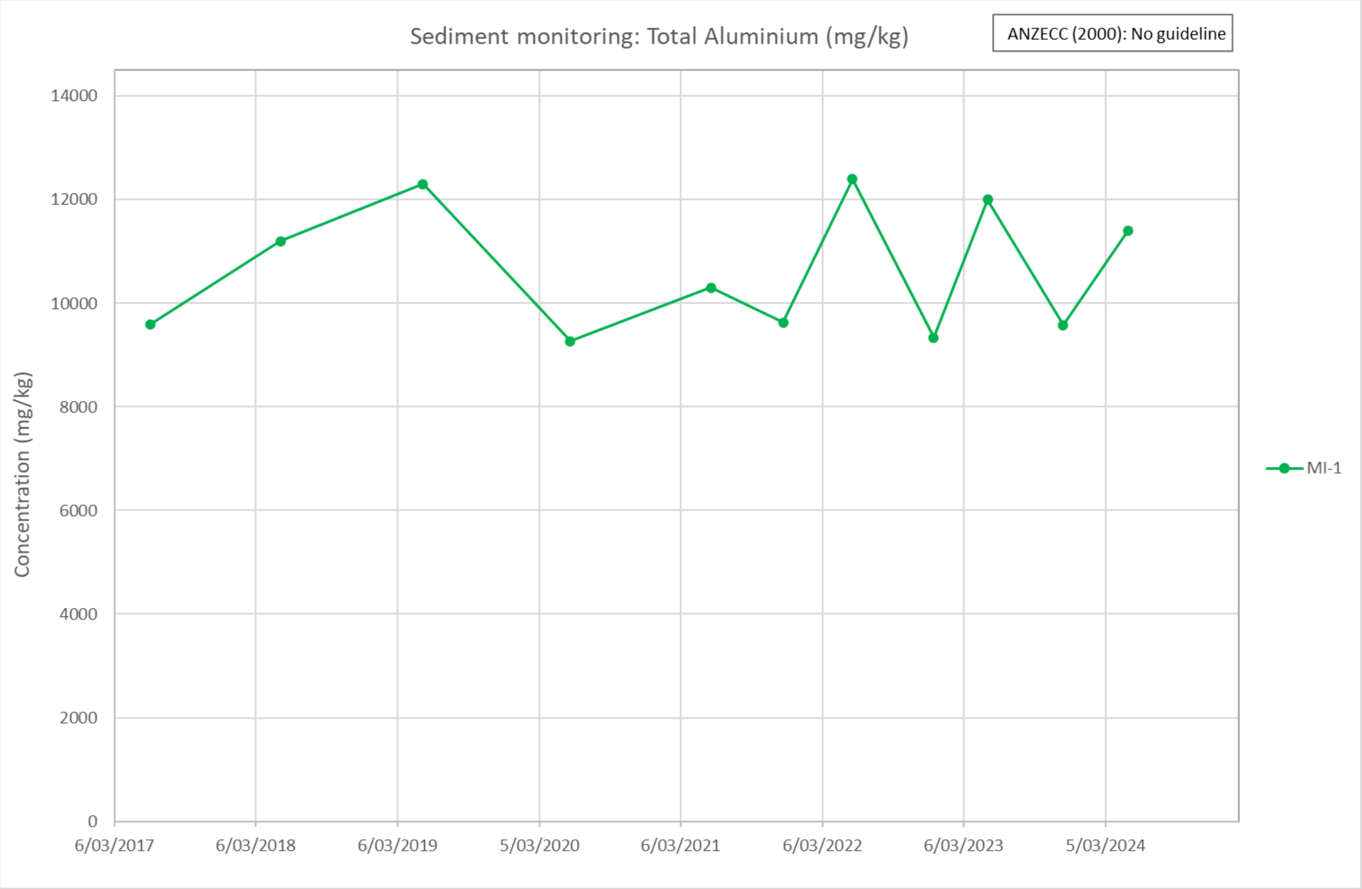
Sample site	Baseline data (mg/kg)	Date	Trigger level (mg/kg)*
WA-1	350	27/06/2010	700
WA-2	580	27/06/2010	1160
WA-3	230	27/06/2010	460
WW-1	100	27/06/2010	200
WW-2	120	27/06/2010	240
WW-3	300	27/06/2010	600

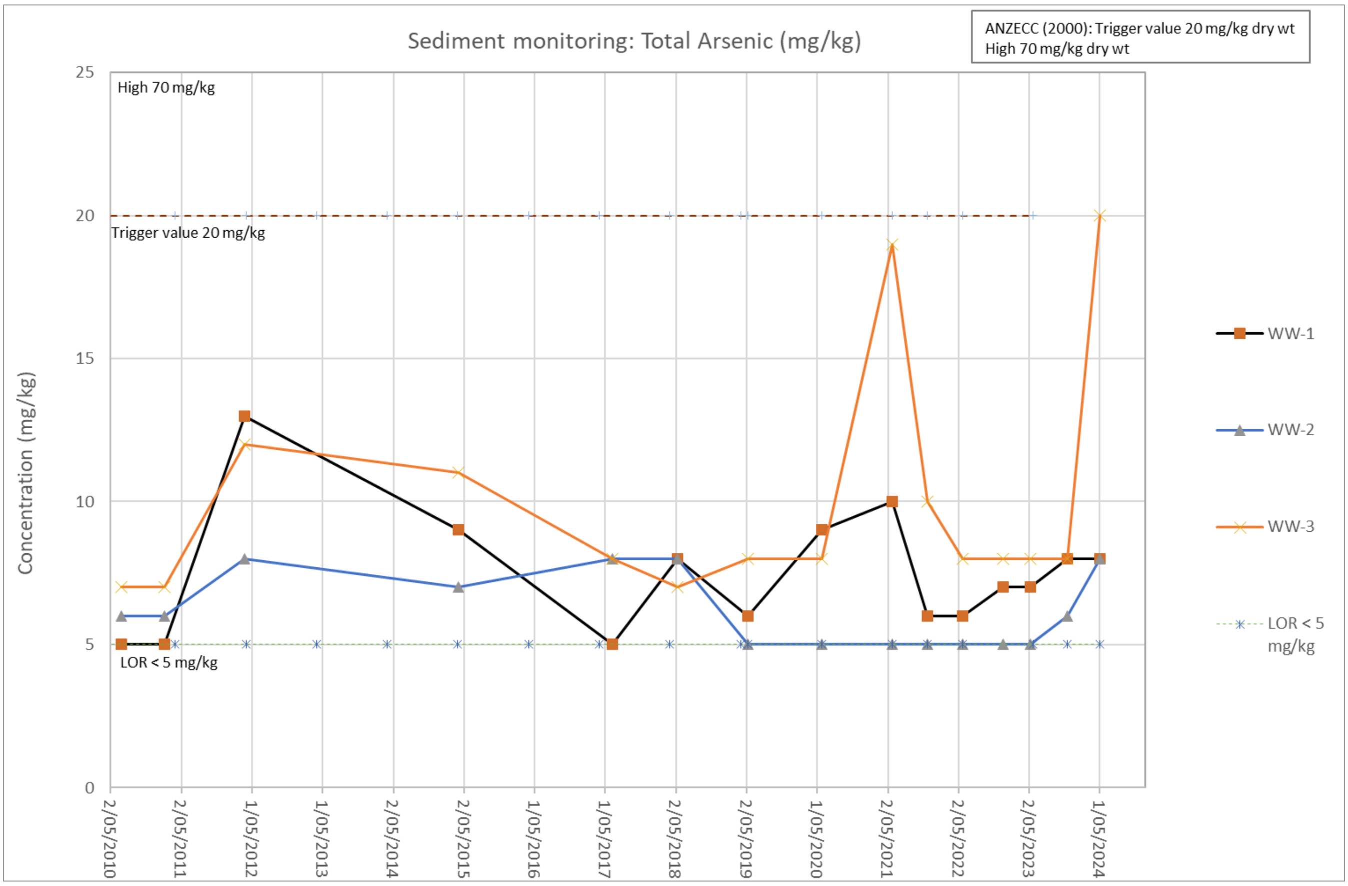
* Trigger level at 2 x baseline data

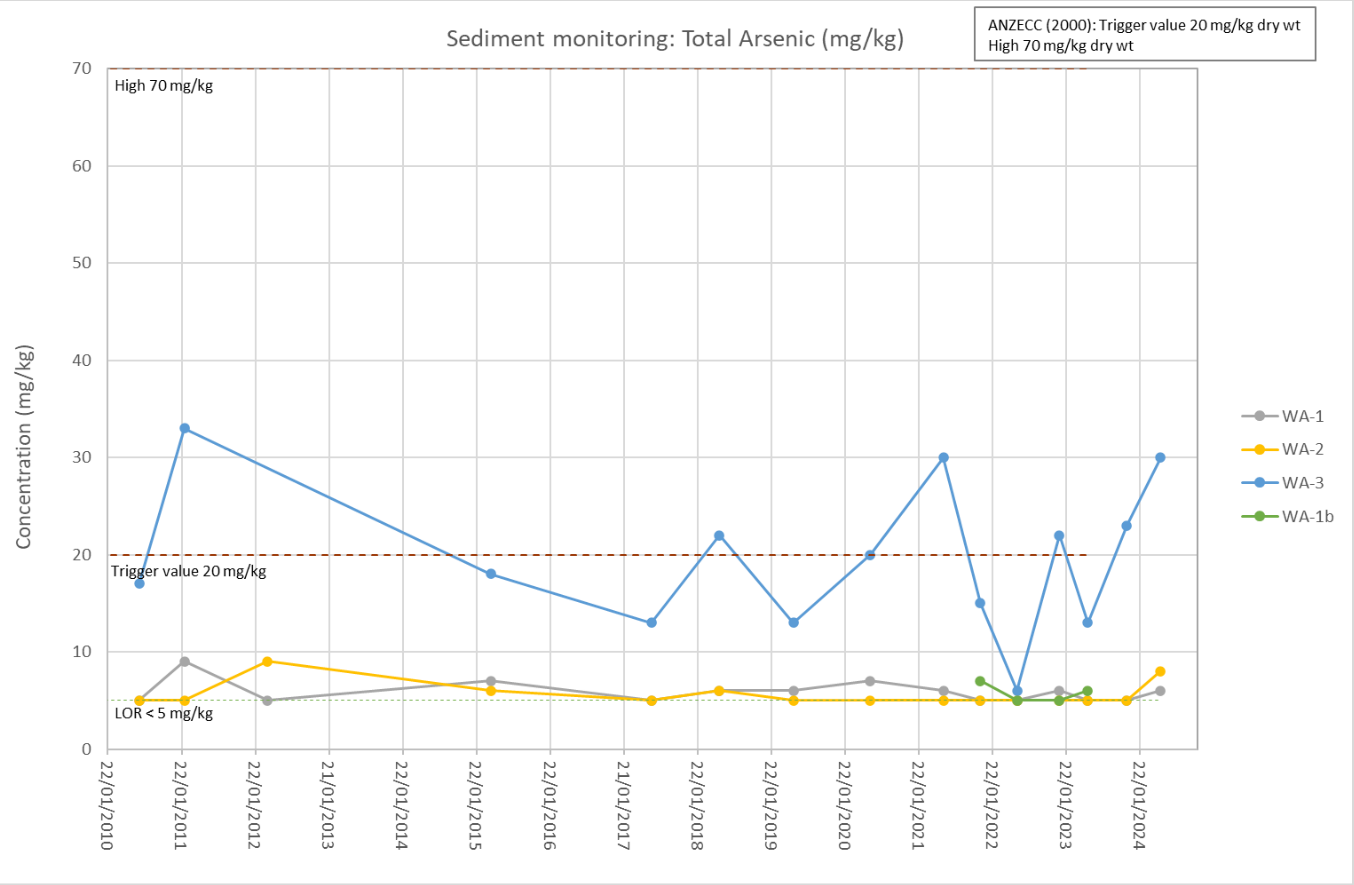
Attachment C – Time Series Graphs

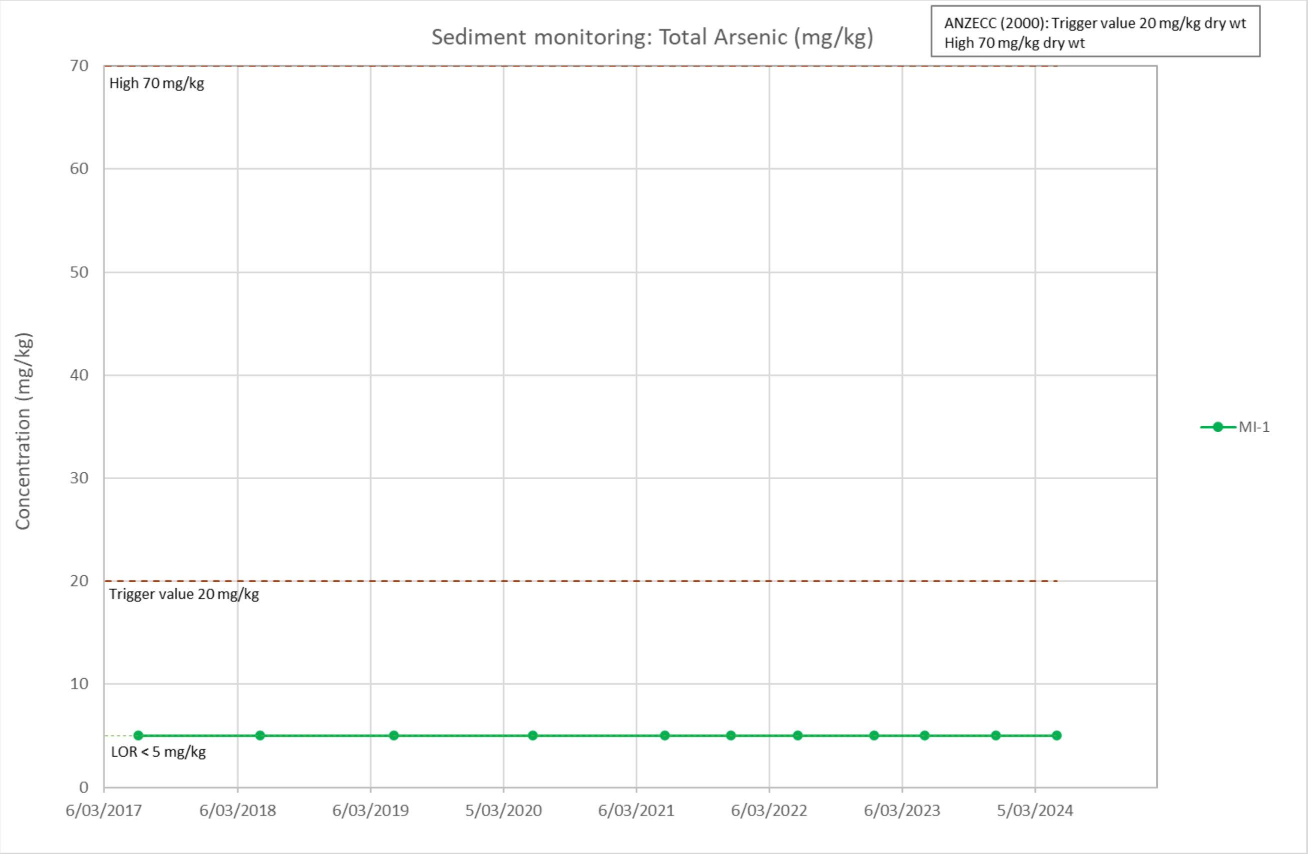

Sediment monitoring: Total Aluminium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
35000
30000
25000
20000
15000
10000
5000
0
WW-3 trigger value 32800 mg/kg
WW-1 trigger value 21400 mg/kg
WW-2 trigger value 14040 mg/kg
22/01/2010
18/10/2012
15/07/2015
10/04/2018
4/01/2021
1/10/2023
WW-1
WW-2
WW-3

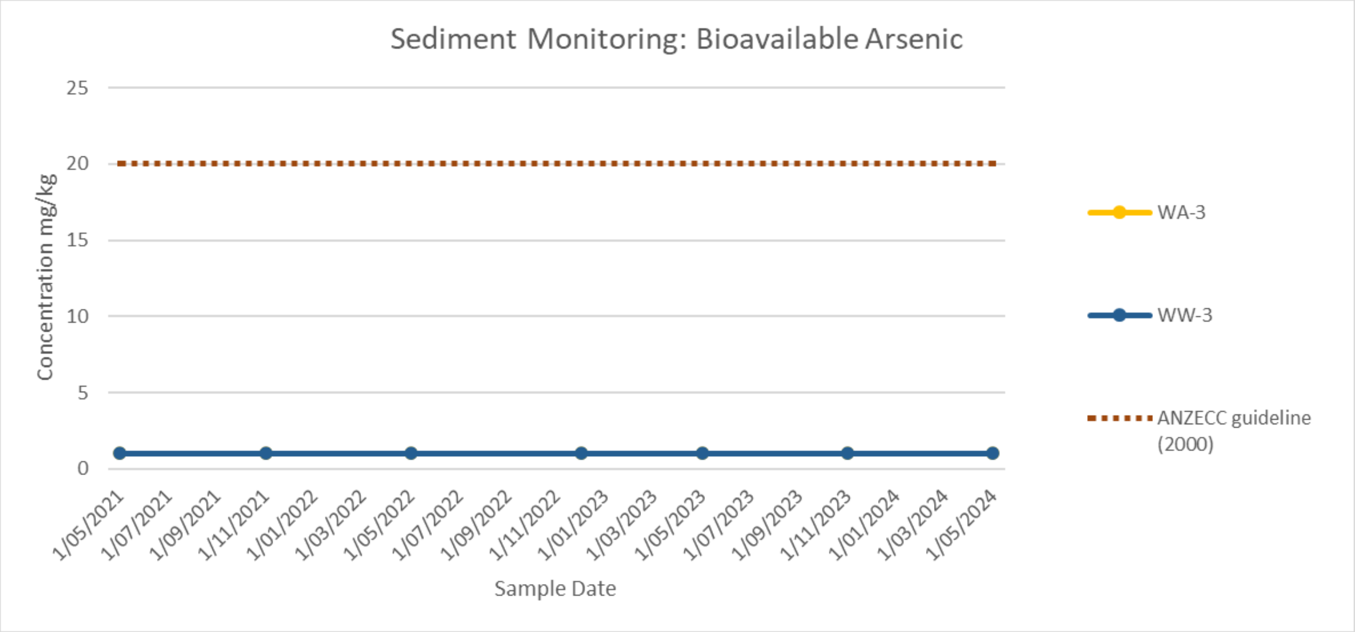

Sediment monitoring: Total Aluminium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
WA-3 trigger value 38600 mg/kg
WA-2 trigger value 37200 mg/k)
WA-1 trigger value 28600 mg/kg
22/01/2010
18/10/2012
15/07/2015
10/04/2018
4/01/2021
1/10/2023
WA-1
WA-2
WA-3
WA-1b

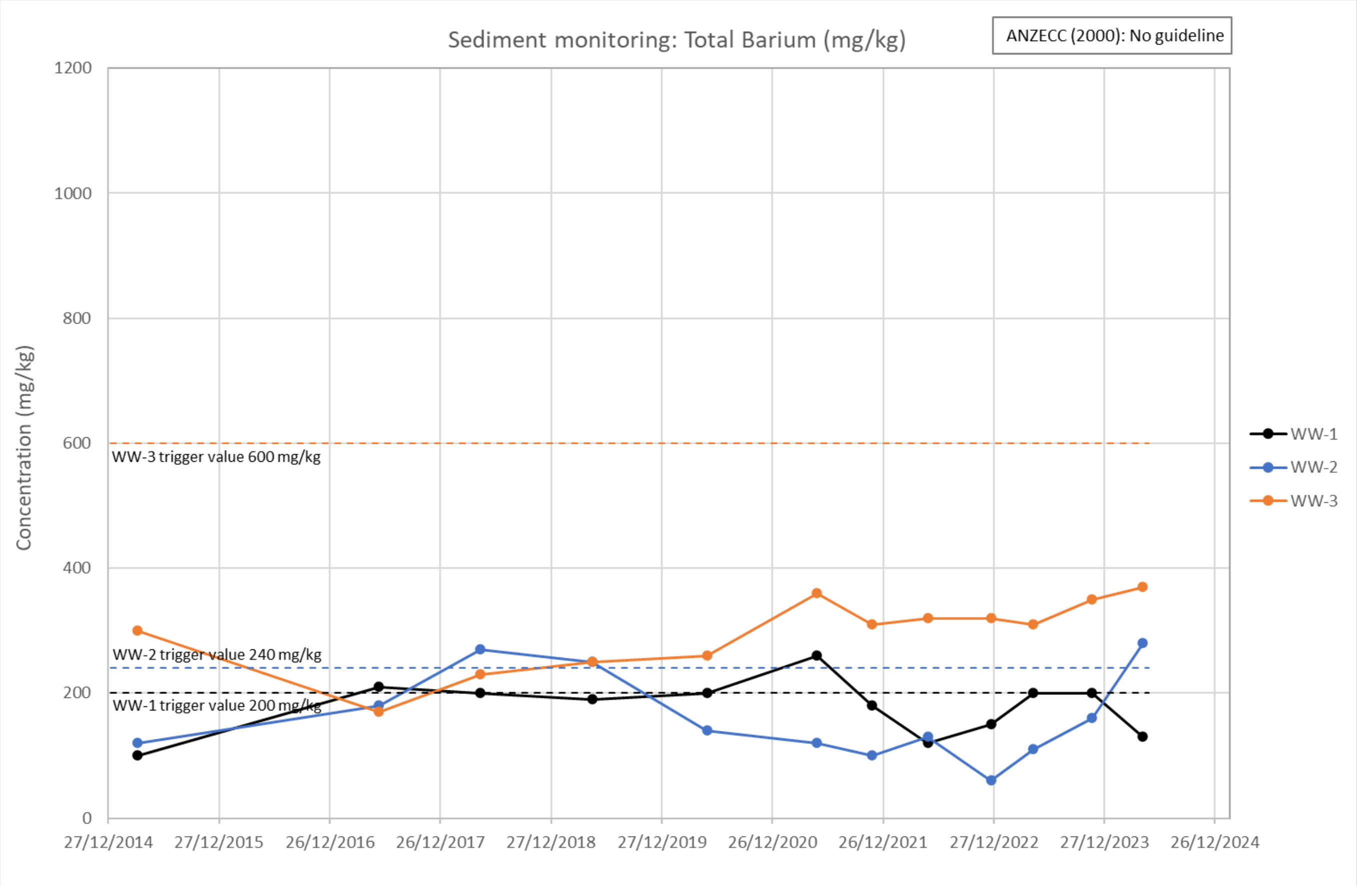

Sediment monitoring: Total Aluminium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
14000
12000
10000
8000
6000
4000
2000
0
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
MI-1

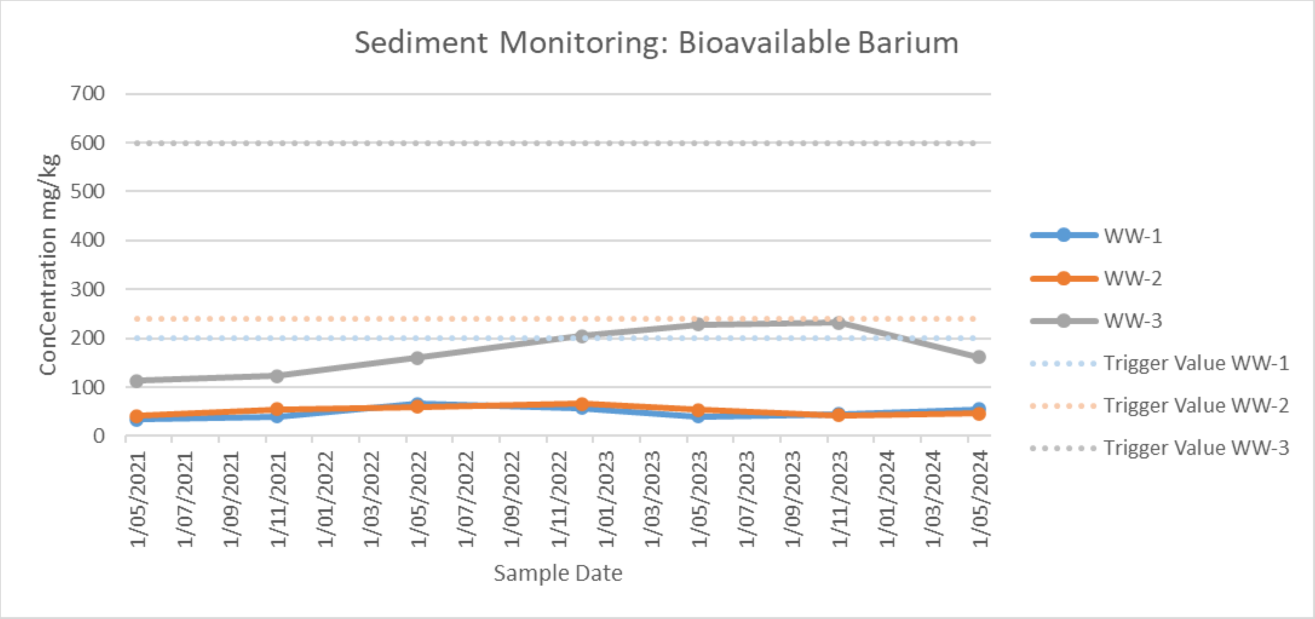

Sediment monitoring: Total Arsenic (mg/kg)
ANZECC (2000): Trigger value 20 mg/kg dry wt
High 70 mg/kg dry wt
Concentration (mg/kg)
25
20
15
10
5
0
High 70 mg/kg
Trigger value 20 mg/kg
LOR < 5 mg/kg
2/05/2010
2/05/2011
1/05/2012
1/05/2013
2/05/2014
2/05/2015
1/05/2016
1/05/2017
2/05/2018
2/05/2019
1/05/2020
2/05/2021
2/05/2022
2/05/2023
1/05/2024
WW-1
WW-2
WW-3
LOR < 5 mg/kg

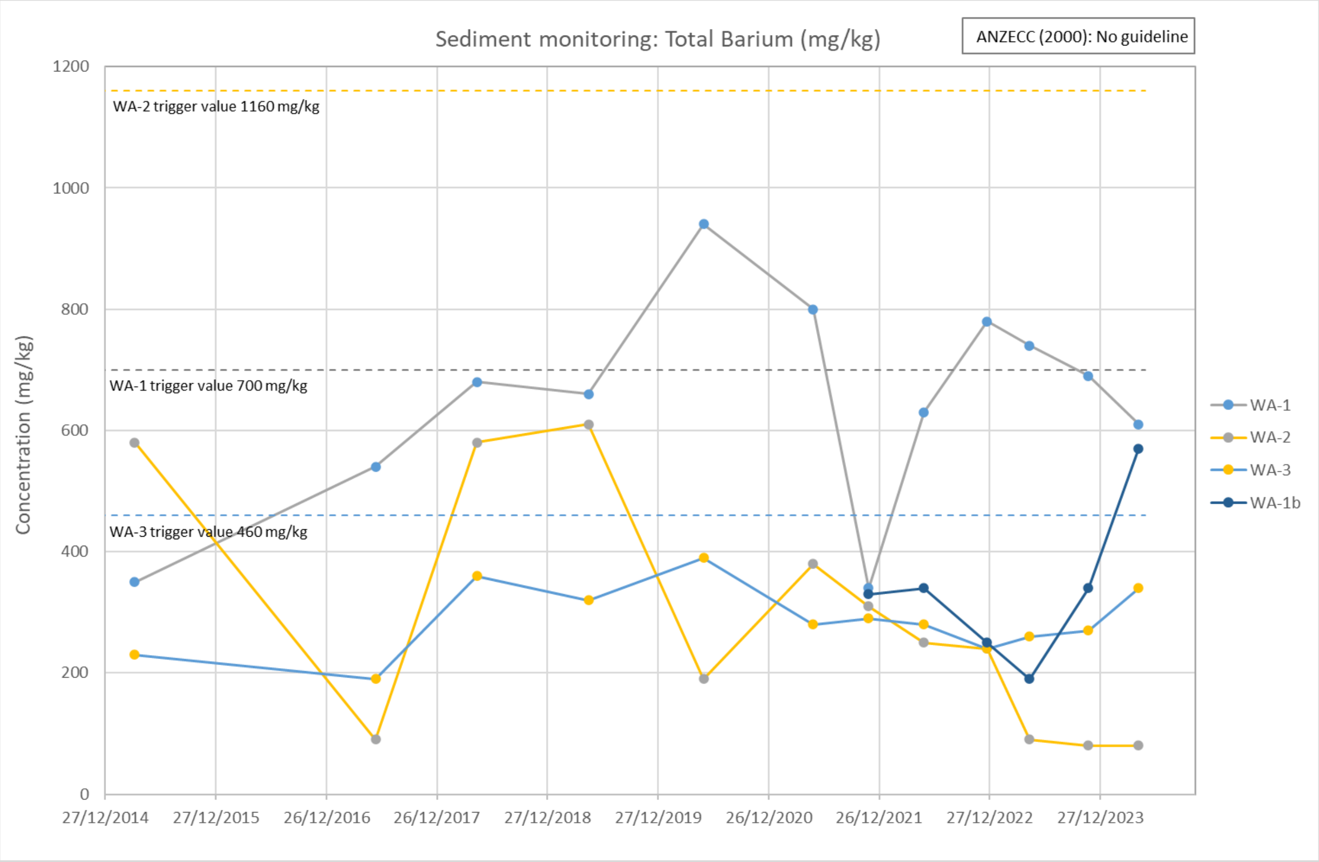

Sediment monitoring: Total Arsenic (mg/kg)
ANZECC (2000): Trigger value 20 mg/kg dry wt
High 70 mg/kg dry wt
High 70 mg/kg
Trigger value 20 mg/kg
LOR < 5 mg/kg
Concentration (mg/kg)
0
10
20
30
40
50
60
70
22/01/2010
22/01/2011
22/01/2012
21/01/2013
22/01/2014
22/01/2015
22/01/2016
21/01/2017
22/01/2018
22/01/2019
22/01/2020
22/01/2021
22/01/2022
22/01/2023
22/01/2024
WA-1
WA-2
WA-3
WA-1b

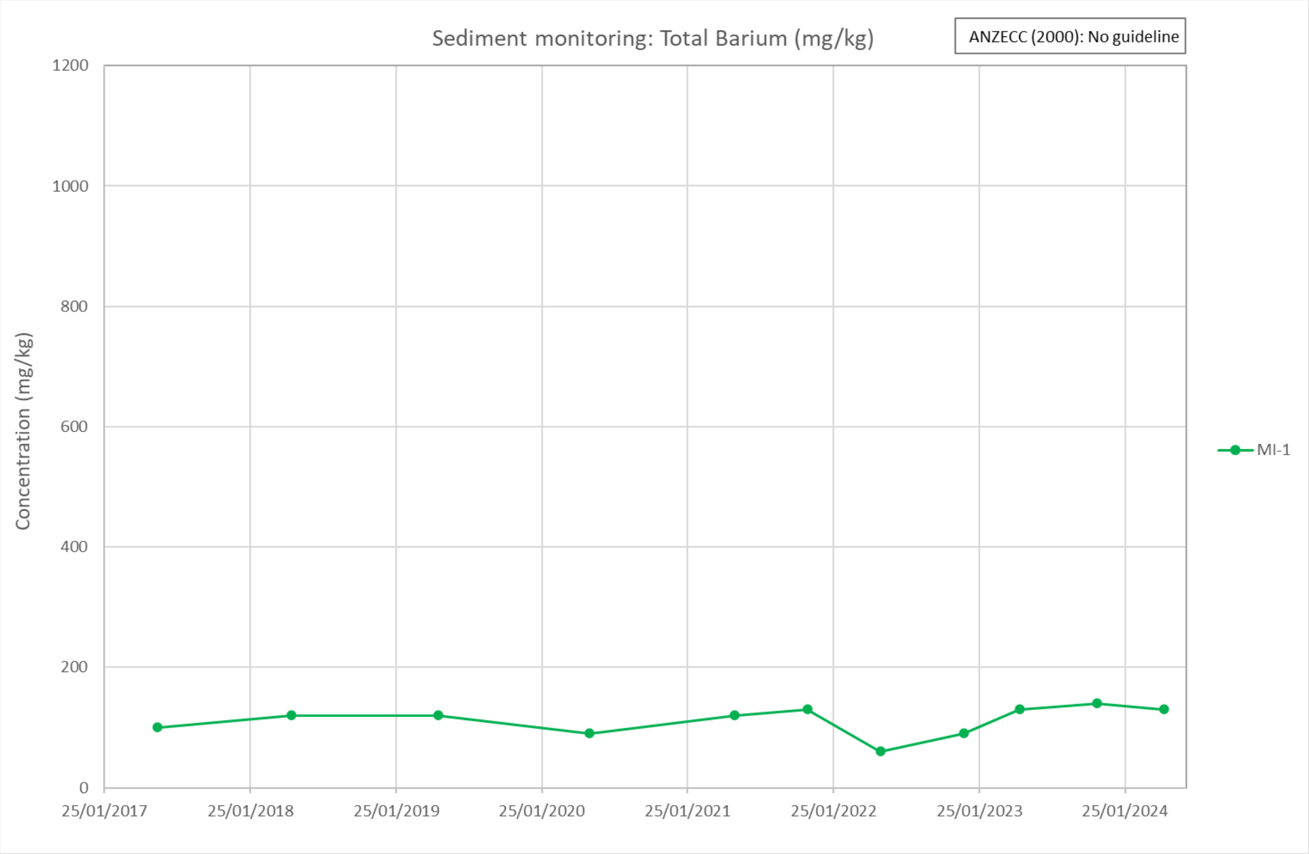

Sediment monitoring: Total Arsenic (mg/kg)
ANZECC (2000): Trigger value 20 mg/kg dry wt
High 70 mg/kg dry wt
High 70 mg/kg
Trigger value 20 mg/kg
LOR < 5 mg/kg
Concentration (mg/kg)
0
10
20
30
40
50
60
70
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
MI-1

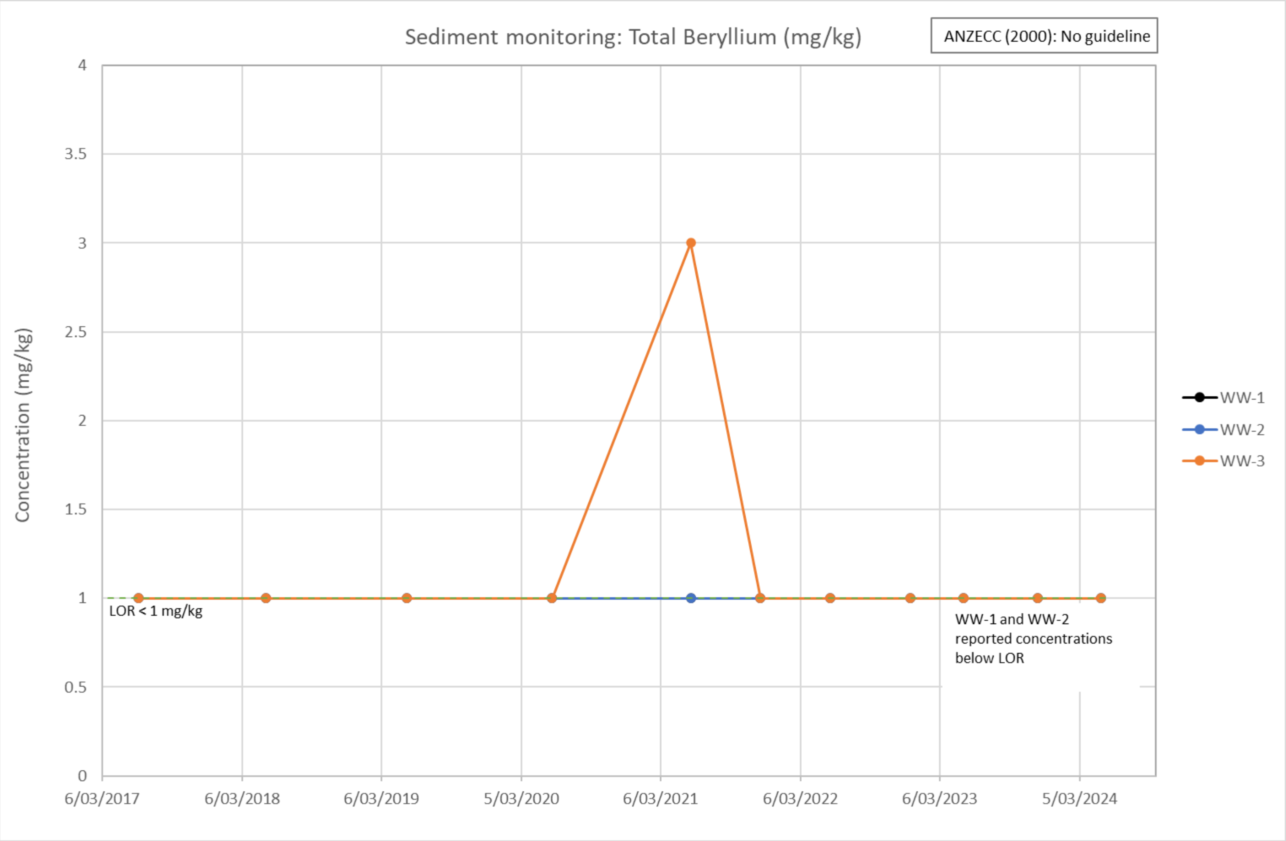

Sediment Monitoring: Bioavailable Arsenic
Concentration mg/kg
25
20
15
10
5
0
1/05/2021
1/07/2021
1/09/2021
1/11/2021
1/01/2022
1/03/2022
1/05/2022
1/07/2022
1/09/2022
1/11/2022
1/01/2023
1/03/2023
1/05/2023
1/07/2023
1/09/2023
1/11/2023
1/01/2024
1/03/2024
1/05/2024
Sample Date
WA-3
WW-3
ANZECC guideline (2000)

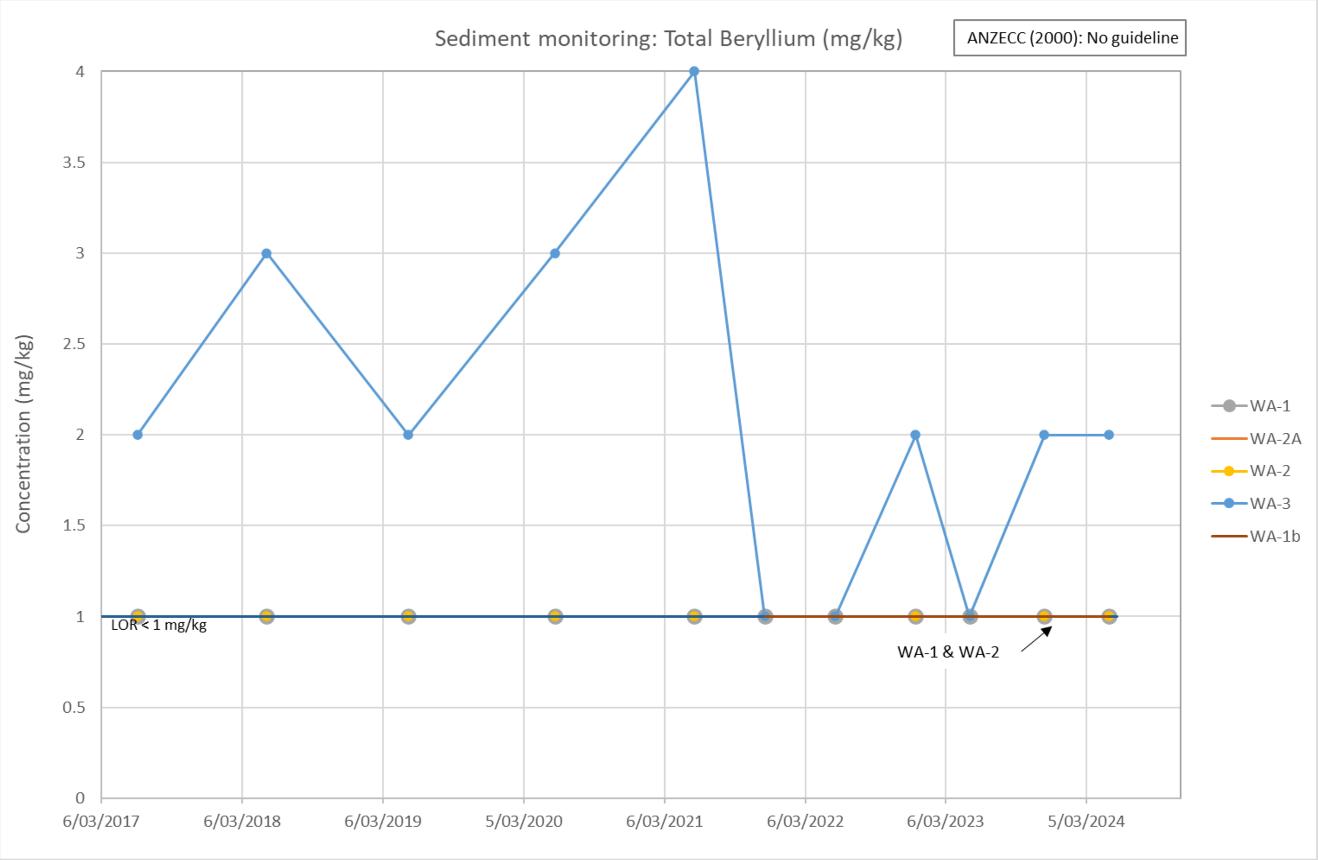

Sediment monitoring: Total Barium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
1200
1000
800
600
400
200
0
WW-3 trigger value 600 mg/kg
WW-2 trigger value 240 mg/kg
WW-1 trigger value 200 mg/kg
27/12/2014
27/12/2015
26/12/2016
26/12/2017
27/12/2018
27/12/2019
26/12/2020
26/12/2021
27/12/2022
27/12/2023
26/12/2024
WW-1
WW-2
WW-3

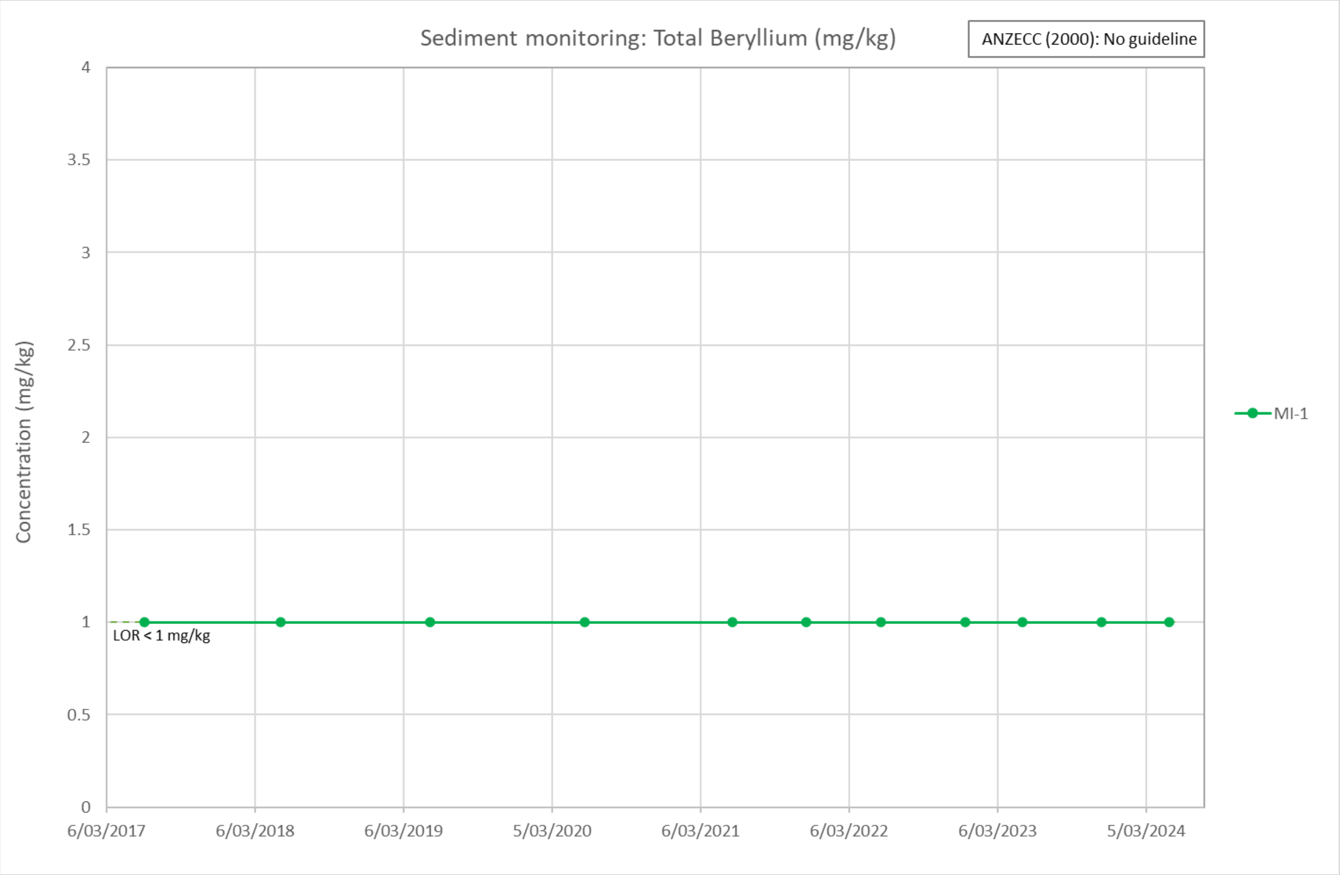

Sediment Monitoring: Bioavailable Barium
ConCentration mg/kg
700
600
500
400
300
200
100
0
1/05/2021
1/07/2021
1/09/2021
1/11/2021
1/01/2022
1/03/2022
1/05/2022
1/07/2022
1/09/2022
1/11/2022
1/01/2023
1/03/2023
1/05/2023
1/07/2023
1/09/2023
1/11/2023
1/01/2024
1/03/2024
1/05/2024
Sample Date
WW-1
WW-2
WW-3
Trigger Value WW-1
Trigger Value WW-2
Trigger Value WW-3

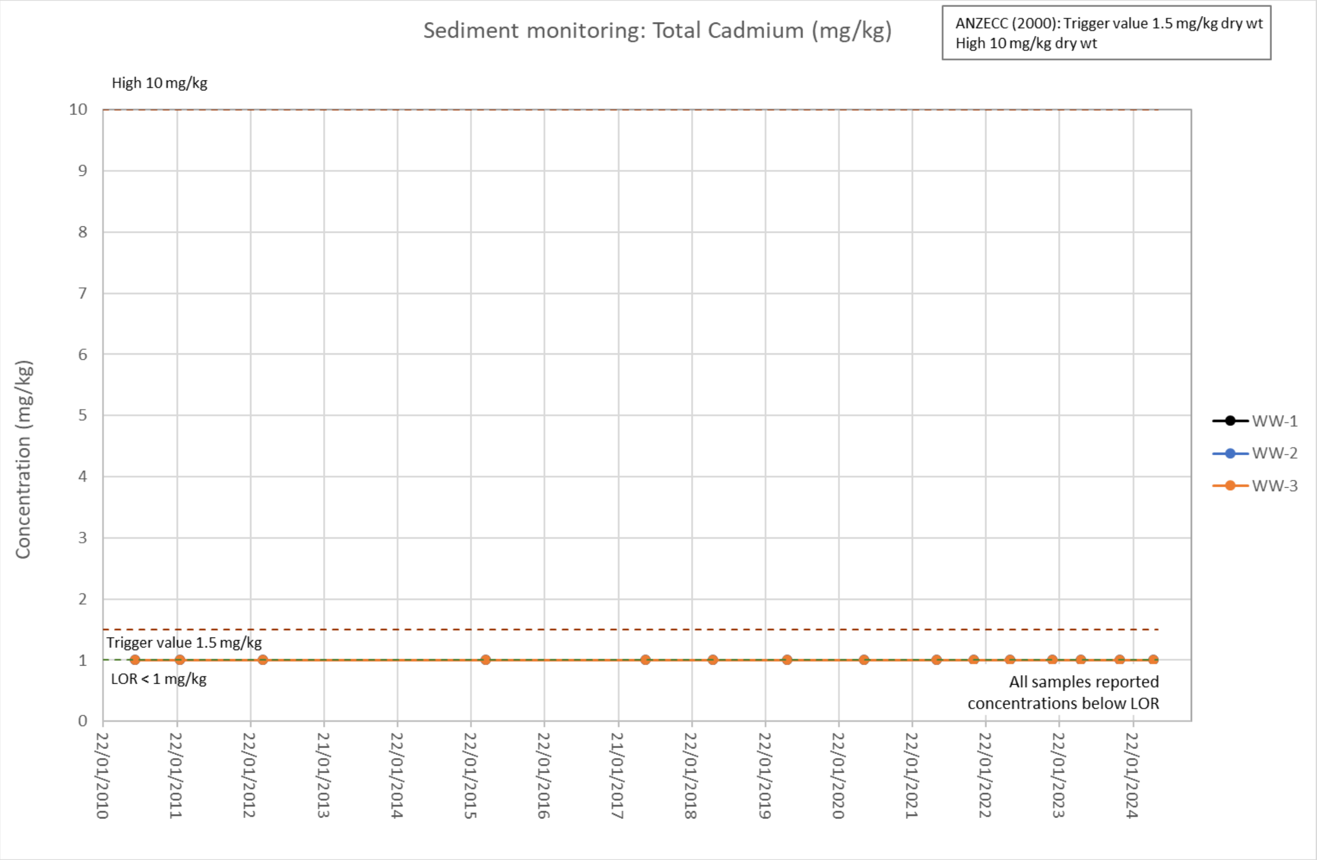

Sediment monitoring: Total Barium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
1200
1000
800
600
400
200
0
WA-2 trigger value 1160 mg/kg
WA-1 trigger value 700 mg/kg
WA-3 trigger value 460 mg/kg
27/12/2014
27/12/2015
26/12/2016
26/12/2017
27/12/2018
27/12/2019
26/12/2020
26/12/2021
27/12/2022
27/12/2023
WA-1
WA-2
WA-3
WA-1b

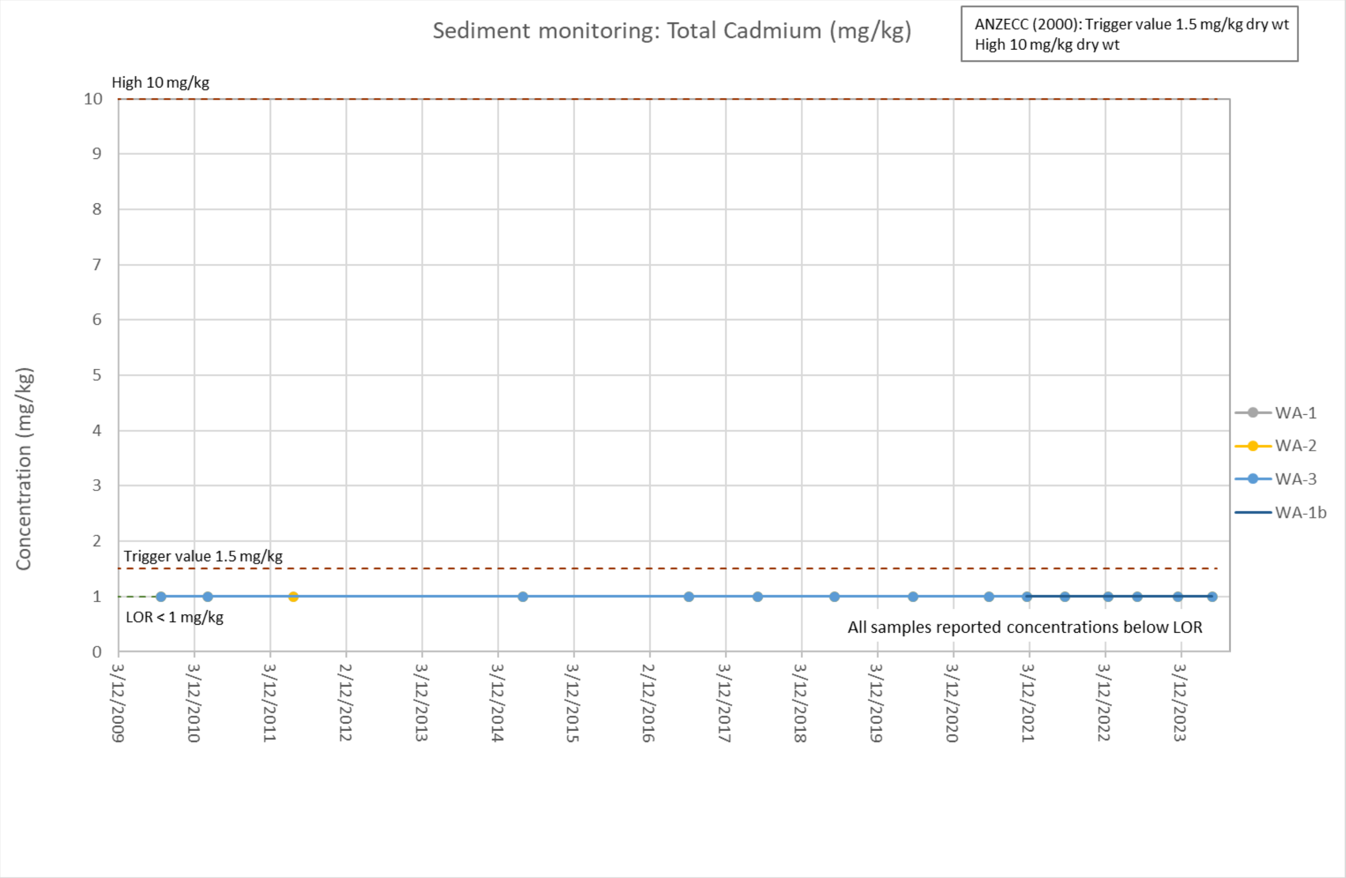

Sediment monitoring: Total Barium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
1200
1000
800
600
400
200
0
25/01/2017
25/01/2018
25/01/2019
25/01/2020
25/01/2021
25/01/2022
25/01/2023
25/01/2024
MI-1

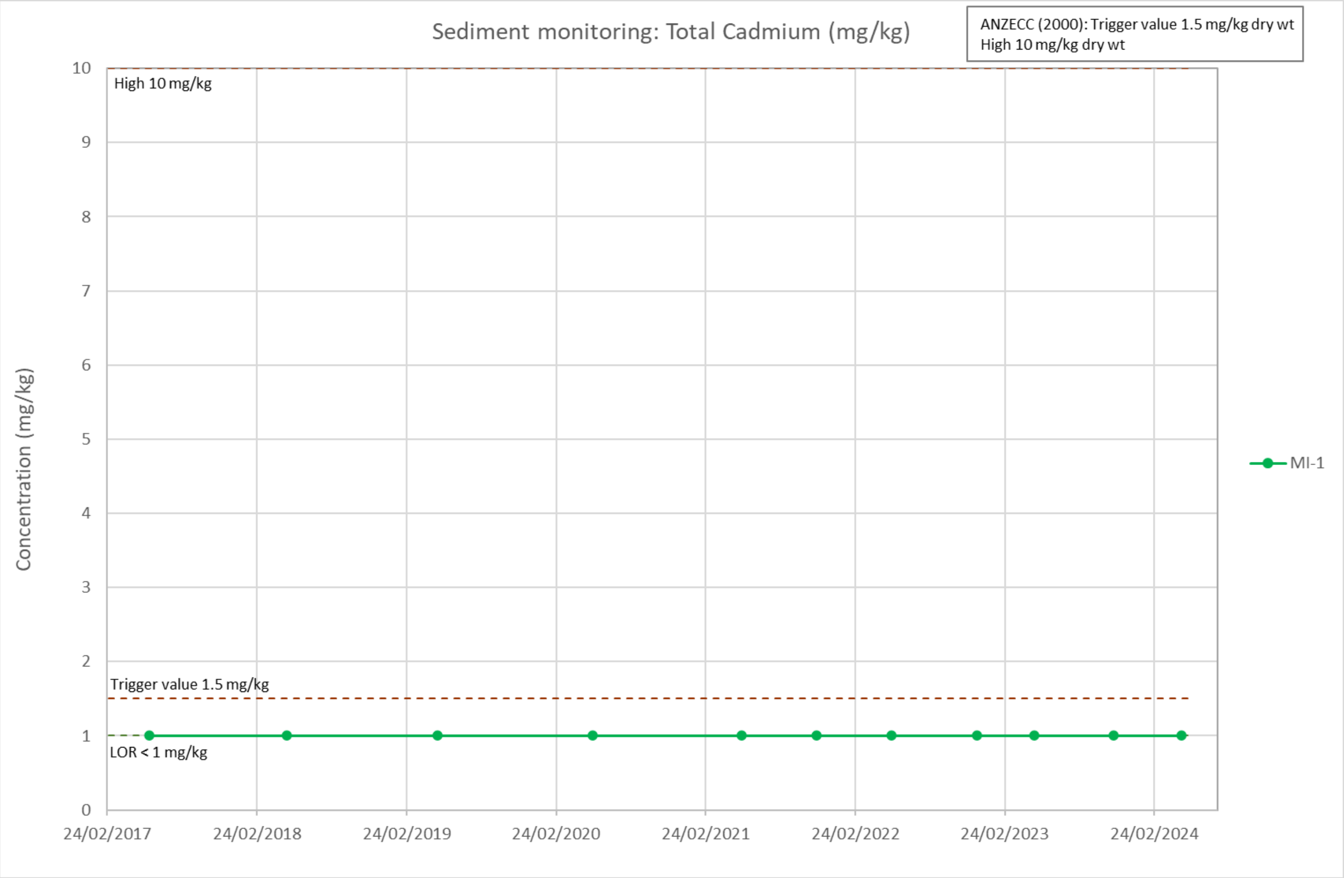

Sediment monitoring: Total Beryllium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
4
3.5
3
2.5
2
1.5
1
0.5
0
LOR < 1 mg/kg
WW-1 and WW-2 reported concentrations below LOR
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
WW-1
WW-2
WW-3

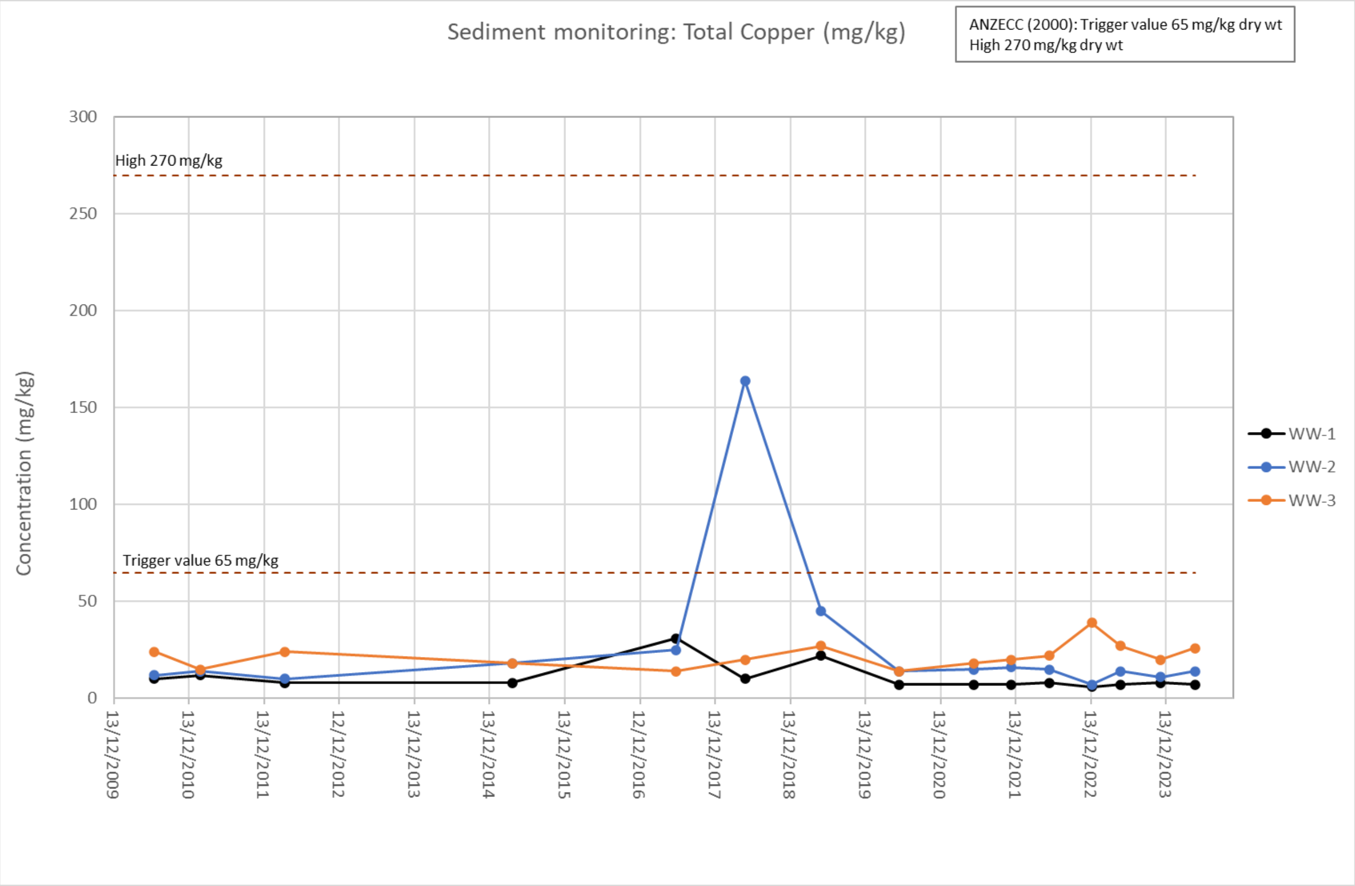

Sediment monitoring: Total Beryllium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
4
3.5
3
2.5
2
1.5
1
0.5
0
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
LOR < 1 mg/kg
WA-1 & WA-2
WA-1
WA-2A
WA-2
WA-3
WA-1b

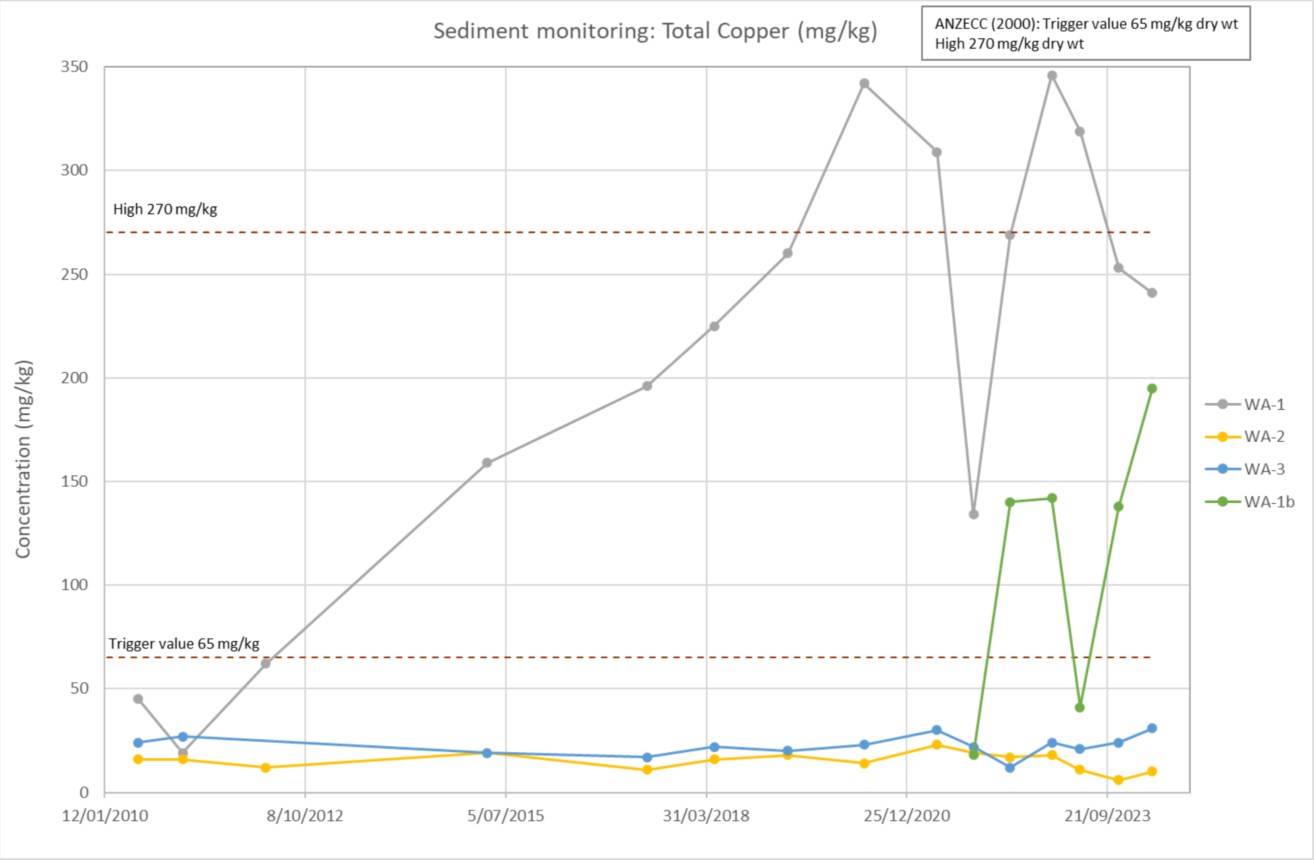

Sediment monitoring: Total Beryllium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
4
3.5
3
2.5
2
1.5
1
0.5
0
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
LOR < 1 mg/kg
MI-1

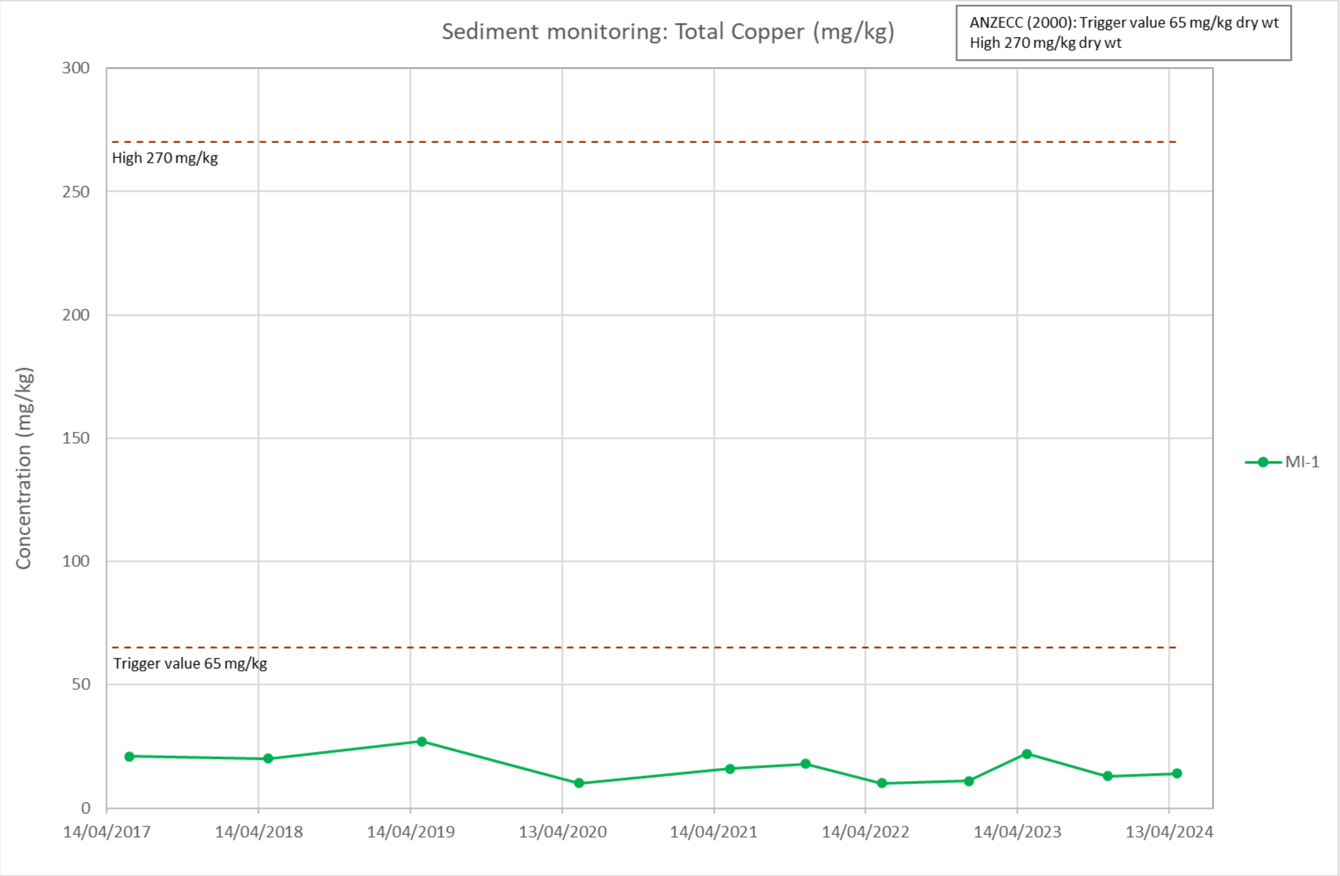

Sediment monitoring: Total Cadmium (mg/kg)
ANZECC (2000): Trigger value 1.5 mg/kg dry wt
High 10 mg/kg dry wt
High 10 mg/kg
Trigger value 1.5 mg/kg
LOR < 1 mg/kg
All samples reported concentrations below LOR
Concentration (mg/kg)
0
1
2
3
4
5
6
7
8
9
10
22/01/2010
22/01/2011
22/01/2012
21/01/2013
22/01/2014
22/01/2015
22/01/2016
21/01/2017
22/01/2018
22/01/2019
22/01/2020
22/01/2021
22/01/2022
22/01/2023
22/01/2024
WW-1
WW-2
WW-3

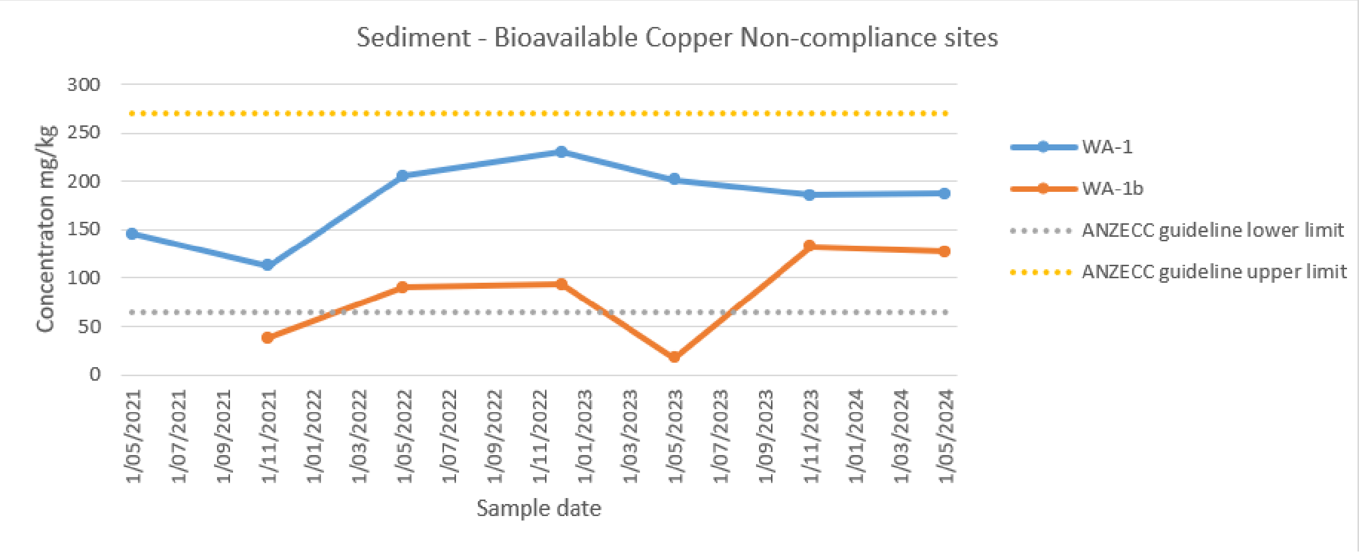

Sediment monitoring: Total Cadmium (mg/kg)
ANZECC (2000): Trigger value 1.5 mg/kg dry wt
High 10 mg/kg dry wt
High 10 mg/kg
Trigger value 1.5 mg/kg
LOR < 1 mg/kg
All samples reported concentrations below LOR
Concentration (mg/kg)
0
1
2
3
4
5
6
7
8
9
10
3/12/2009
3/12/2010
3/12/2011
2/12/2012
3/12/2013
3/12/2014
3/12/2015
2/12/2016
3/12/2017
3/12/2018
3/12/2019
3/12/2020
3/12/2021
3/12/2022
3/12/2023
WA-1
WA-2
WA-3
WA-1b

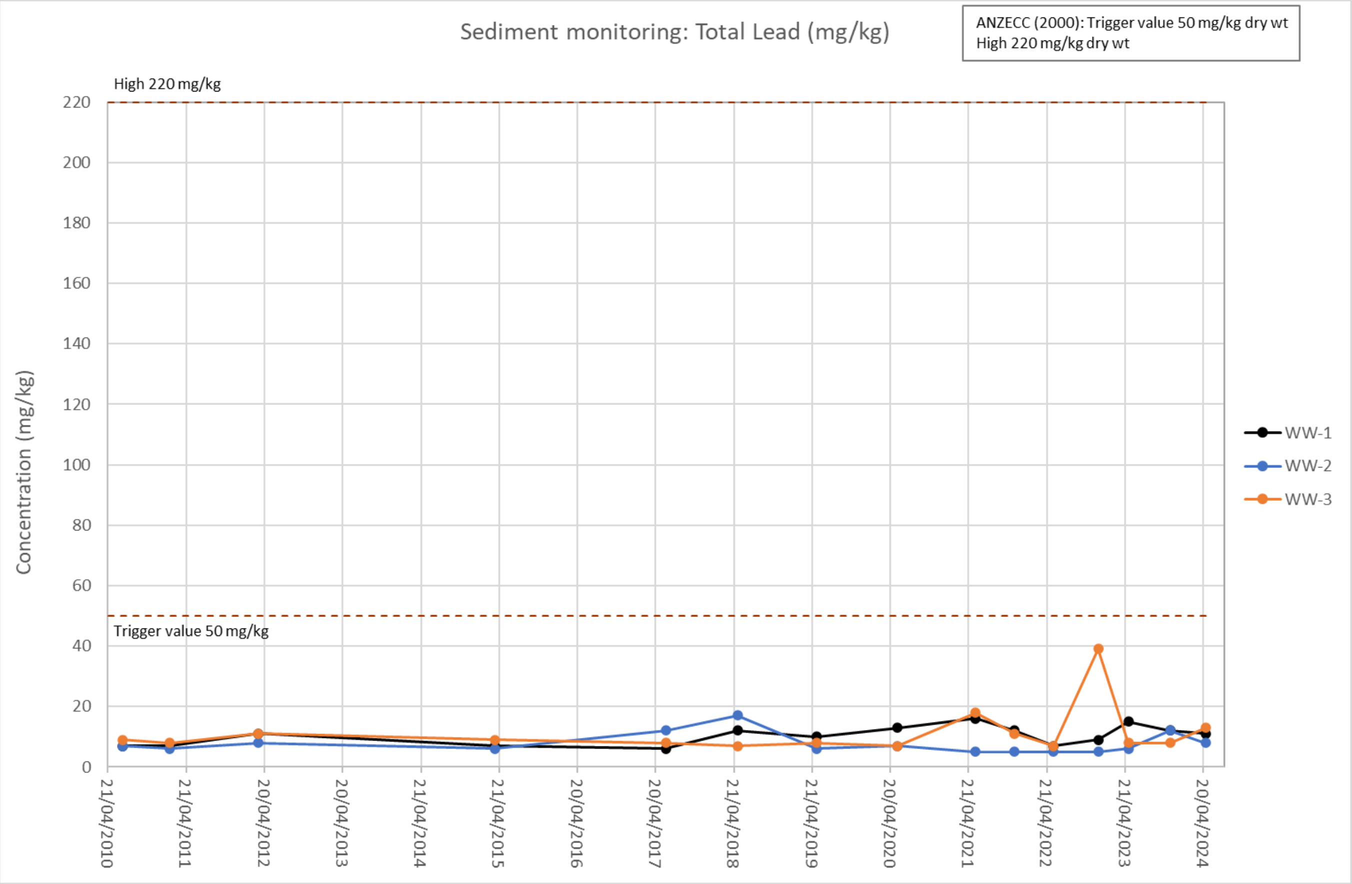

Sediment monitoring: Total Cadmium (mg/kg)
ANZECC (2000): Trigger value 1.5 mg/kg dry wt
High 10 mg/kg dry wt
Concentration (mg/kg)
High 10 mg/kg
Trigger value 1.5 mg/kg
LOR < 1 mg/kg
MI-1
0
1
2
3
4
5
6
7
8
9
10
24/02/2017
24/02/2018
24/02/2019
24/02/2020
24/02/2021
24/02/2022
24/02/2023
24/02/2024

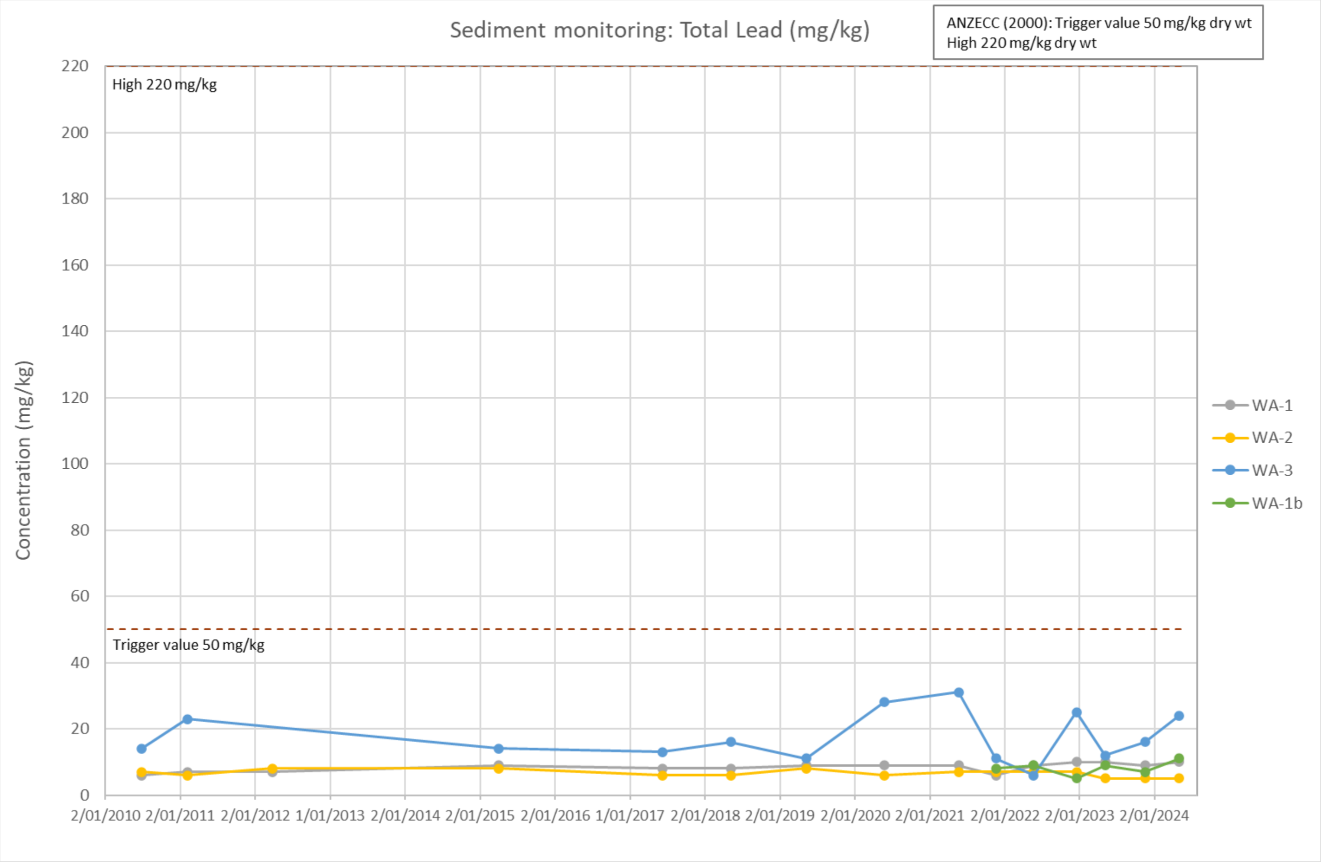

Sediment monitoring: Total Copper (mg/kg)
ANZECC (2000): Trigger value 65 mg/kg dry wt
High 270 mg/kg dry wt
Concentration (mg/kg)
High 270 mg/kg
Trigger value 65 mg/kg
WW-1
WW-2
WW-3
0
50
100
150
200
250
300
13/12/2009
13/12/2010
13/12/2011
12/12/2012
13/12/2013
13/12/2014
13/12/2015
12/12/2016
13/12/2017
13/12/2018
13/12/2019
13/12/2020
13/12/2021
13/12/2022
13/12/2023

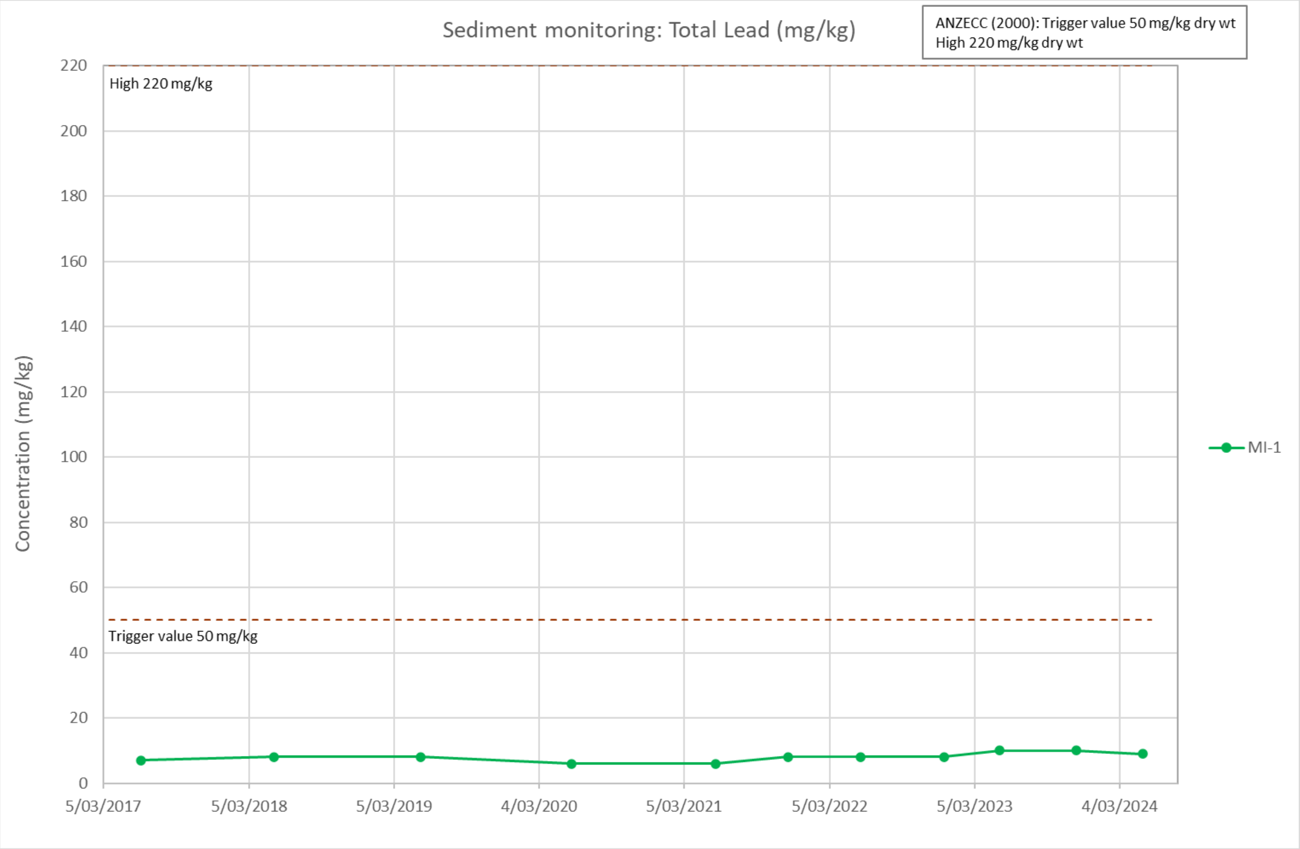

Sediment monitoring: Total Copper (mg/kg)
ANZECC (2000): Trigger value 65 mg/kg dry wt
High 270 mg/kg dry wt
High 270 mg/kg
Trigger value 65 mg/kg
Concentration (mg/kg)
350
300
250
200
150
100
50
0
12/01/2010
8/10/2012
5/07/2015
31/03/2018
25/12/2020
21/09/2023
WA-1
WA-2
WA-3
WA-1b

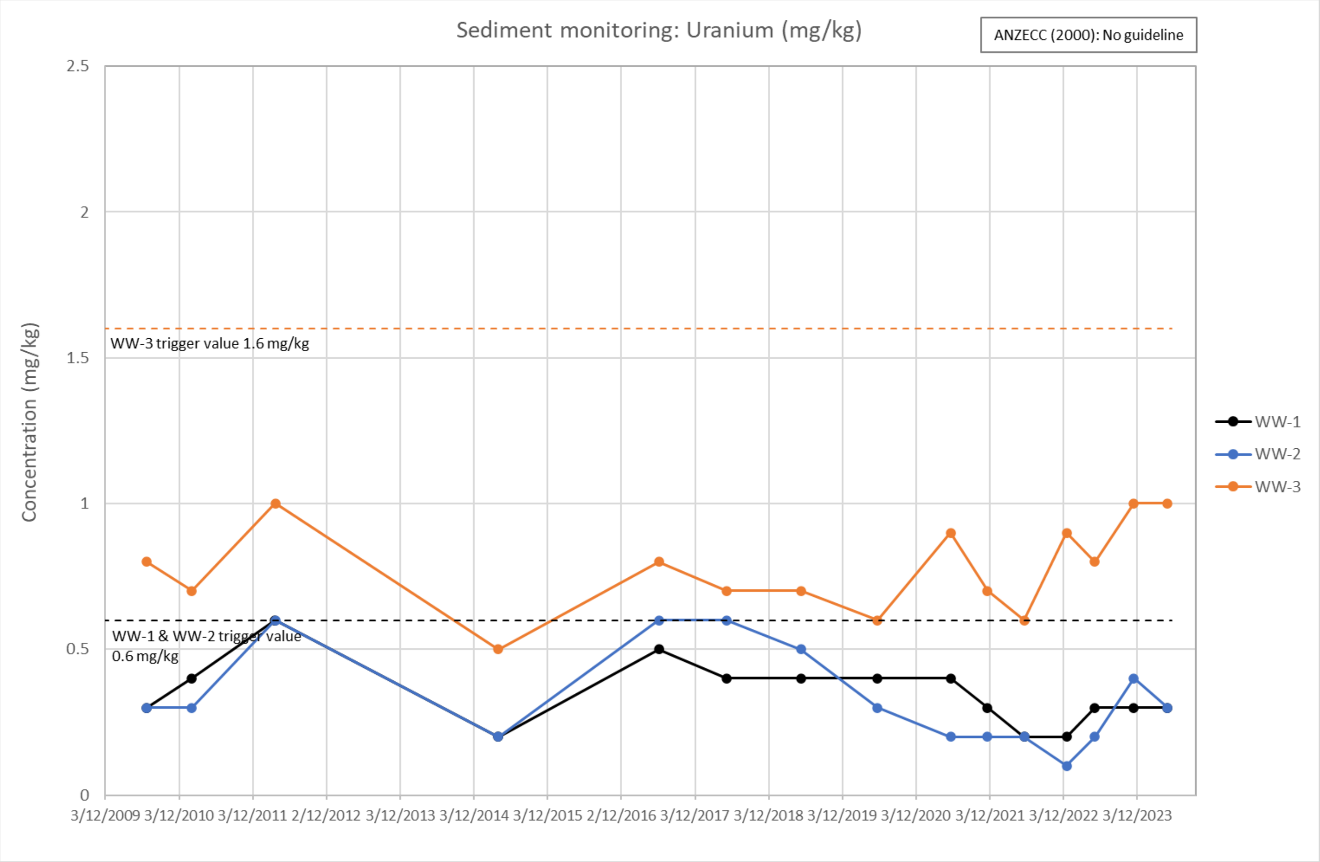

Sediment monitoring: Total Copper (mg/kg)
ANZECC (2000): Trigger value 65 mg/kg dry wt
High 270 mg/kg dry wt
High 270 mg/kg
Trigger value 65 mg/kg
Concentration (mg/kg)
300
250
200
150
100
50
0
14/04/2017
14/04/2018
14/04/2019
13/04/2020
14/04/2021
14/04/2022
14/04/2023
13/04/2024
MI-1

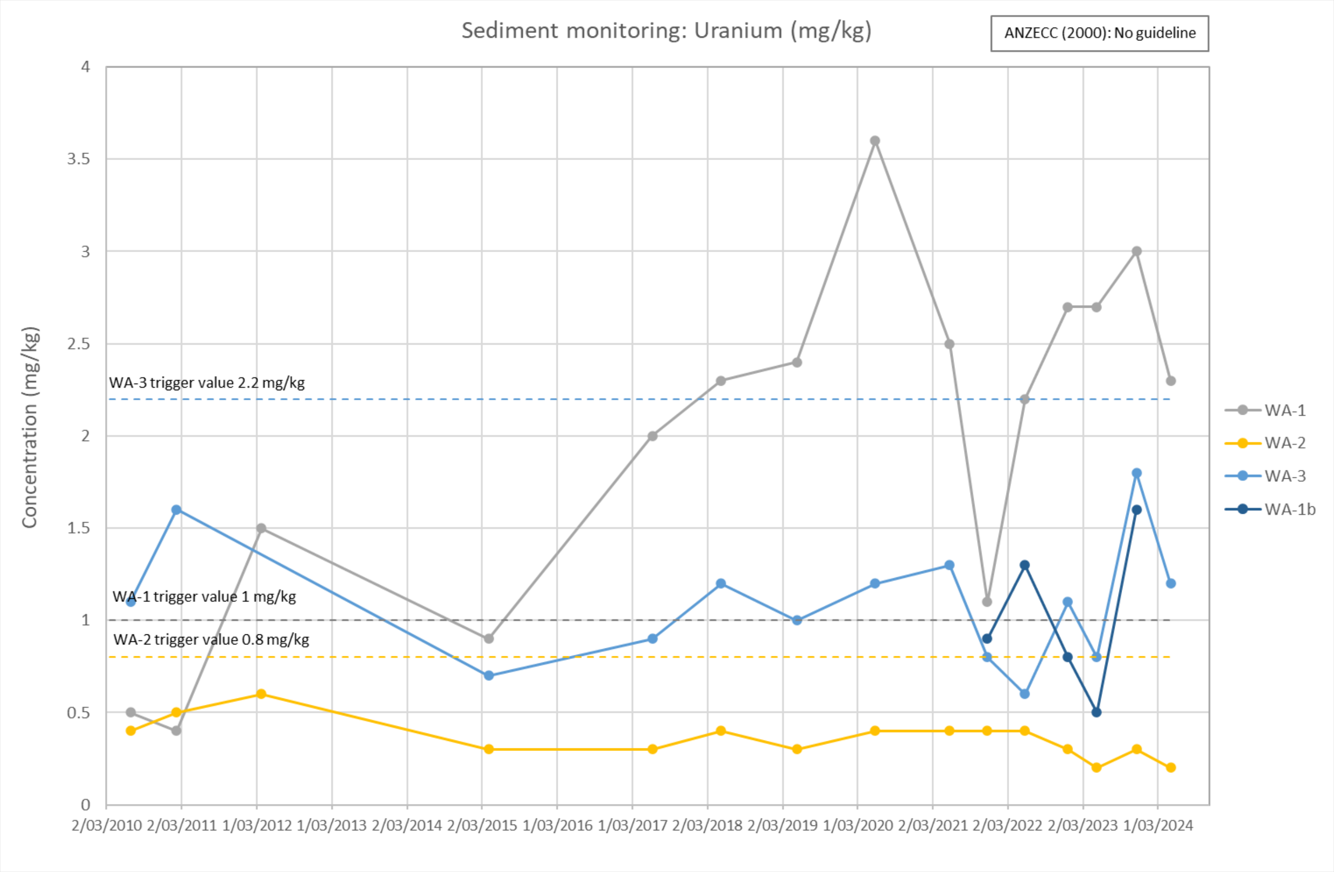

Sediment - Bioavailable Copper Non-compliance sites
Concentraton mg/kg
300
250
200
150
100
50
0
1/05/2021
1/07/2021
1/09/2021
1/11/2021
1/01/2022
1/03/2022
1/05/2022
1/07/2022
1/09/2022
1/11/2022
1/01/2023
1/03/2023
1/05/2023
1/07/2023
1/09/2023
1/11/2023
1/01/2024
1/03/2024
1/05/2024
Sample date
WA-1
WA-1b
ANZECC guideline lower limit
ANZECC guideline upper limit

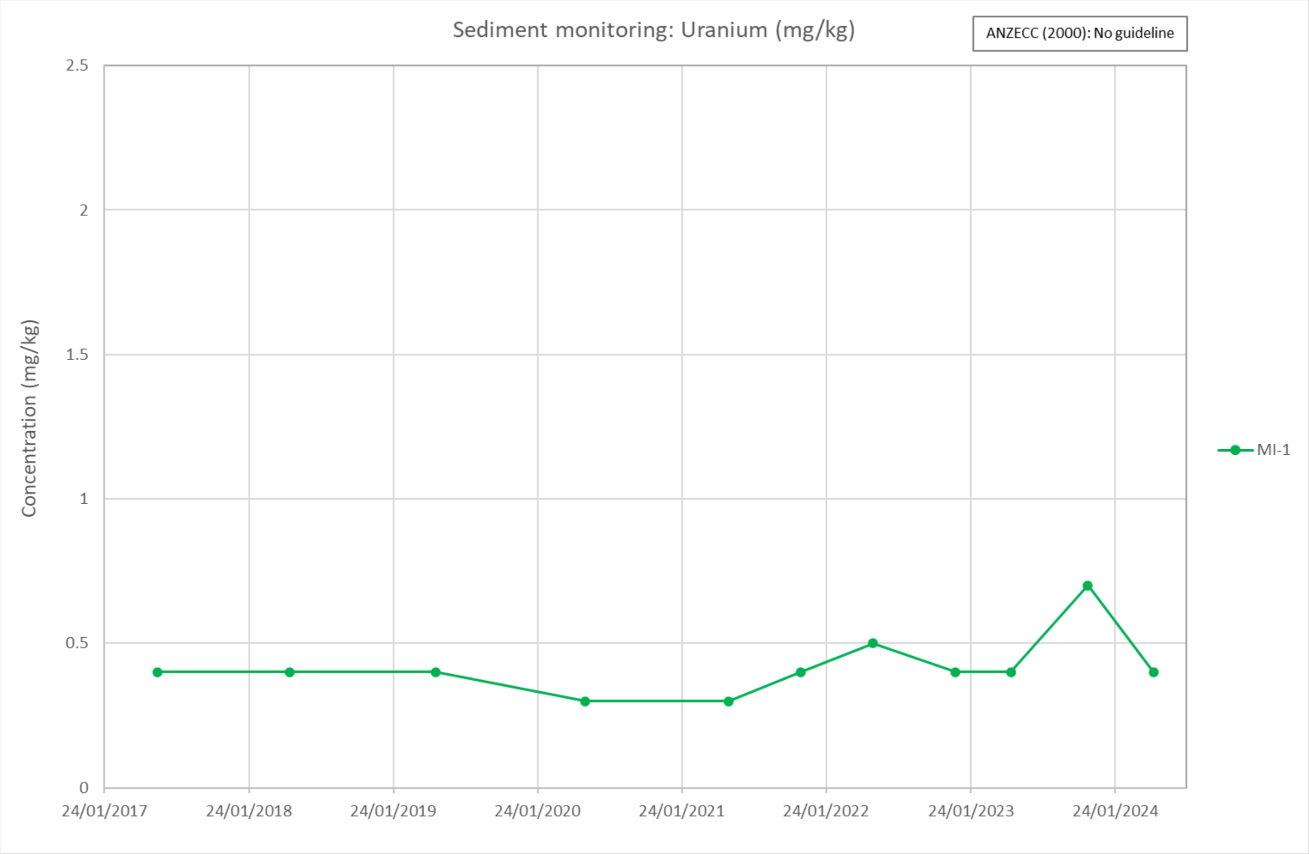

Sediment monitoring: Total Lead (mg/kg)
ANZECC (2000): Trigger value 50 mg/kg dry wt
High 220 mg/kg dry wt
High 220 mg/kg
Trigger value 50 mg/kg
Concentration (mg/kg)
220
200
180
160
140
120
100
80
60
40
20
0
21/04/2010
21/04/2011
20/04/2012
20/04/2013
21/04/2014
21/04/2015
20/04/2016
20/04/2017
21/04/2018
21/04/2019
20/04/2020
21/04/2021
21/04/2022
21/04/2023
20/04/2024
WW-1
WW-2
WW-3


Sediment monitoring: Total Lead (mg/kg)
ANZECC (2000): Trigger value 50 mg/kg dry wt
High 220 mg/kg dry wt
High 220 mg/kg
Trigger value 50 mg/kg
Concentration (mg/kg)
220
200
180
160
140
120
100
80
60
40
20
0
2/01/2010
2/01/2011
2/01/2012
1/01/2013
2/01/2014
2/01/2015
2/01/2016
1/01/2017
2/01/2018
2/01/2019
2/01/2020
2/01/2021
2/01/2022
2/01/2023
2/01/2024
WA-1
WA-2
WA-3
WA-1b


Sediment monitoring: Total Lead (mg/kg)
ANZECC (2000): Trigger value 50 mg/kg dry wt
High 220 mg/kg dry wt
High 220 mg/kg
Trigger value 50 mg/kg
Concentration (mg/kg)
220
200
180
160
140
120
100
80
60
40
20
0
5/03/2017
5/03/2018
5/03/2019
4/03/2020
5/03/2021
5/03/2022
5/03/2023
4/03/2024
MI-1


Sediment monitoring: Uranium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
2.5
2
1.5
1
0.5
0
WW-3 trigger value 1.6 mg/kg
WW-1 & WW-2 trigger value
0.6 mg/kg
3/12/2009 3/12/2010 3/12/2011 2/12/2012 3/12/2013 3/12/2014 3/12/2015 2/12/2016 3/12/2017 3/12/2018 3/12/2019 3/12/2020 3/12/2021 3/12/2022 3/12/2023
WW-1
WW-2
WW-3


Sediment monitoring: Uranium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
4
3.5
3
2.5
2
1.5
1
0.5
0
WA-3 trigger value 2.2 mg/kg
WA-1 trigger value 1 mg/kg
WA-2 trigger value 0.8 mg/kg
2/03/2010 2/03/2011 1/03/2012 1/03/2013 2/03/2014 2/03/2015 1/03/2016 1/03/2017 2/03/2018 2/03/2019 1/03/2020 2/03/2021 2/03/2022 2/03/2023 1/03/2024
WA-1
WA-2
WA-3
WA-1b


Sediment monitoring: Uranium (mg/kg)
ANZECC (2000): No guideline
Concentration (mg/kg)
2.5
2
1.5
1
0.5
0
24/01/2017
24/01/2018
24/01/2019
24/01/2020
24/01/2021
24/01/2022
24/01/2023
24/01/2024
MI-1

Appendix C. Prominent Hill Annual Vegetation and Habitat Compliance Monitoring Report 2024 (EcoLogical Associates 2024)

Prominent Hill Ecological Monitoring - Autumn Survey 2024

BHP

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DOCUMENT TRACKING

Project Name	Prominent Hill Ecological Monitoring Services Autumn Survey 2024
Project Number	24ADL7673
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Prepared by	**Lauren Heddle**
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Approved by	**Louise Swann**
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Last saved on	**26 June 2024**

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Template 2.8.1

Contents

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Abbreviations

Abbreviation	Description
BOM	Bureau of Meteorology
DEM	Department for Energy and Mining
ELA	Eco Logical Australia
EML	Extractive Mineral Leases
IBRA	The Interim Biogeographic Regionalisation for Australia
ML	Mining Lease
NVC	Native Vegetation Council
PEPR	Program for Environment Protection and Biodiversity
PH01 – PH27	Monitoring sites
SE	Standard Error
SEB	Significant Environmental Benefit

Executive Summary

Eco Logical Australia (ELA) was engaged by BHP (formerly OZ Minerals) to conduct the ecological monitoring services autumn survey for 2024 at the Prominent Hill copper and gold mine. "BHP Group Limited, to acquire 100% of the shares in OZ Minerals Limited", as of the 2nd of May 2023 (BHP 2023). Prominent Hill (Mining Lease (ML) 6228) is located approximately 650 km north of Adelaide and 136 km south-east of Coober Pedy, South Australia. The 2024 survey marks the eighth year of monitoring for the mine since the survey methodology was updated in the 2017 Program for Environment Protection and Rehabilitation (PEPR). BHP has a legislative requirement under the approved PEPR to conduct environmental monitoring on ML 6228, within the surrounding Significant Environmental Benefit (SEB) offset area and at a number of weed sites along main access routes to assess potential impacts of the mine on the abundance and diversity of native flora and fauna.

Twenty permanent vegetation quadrats (ten impact and ten control) were monitored, along with five weed sites and three sites with remote cameras for constant motion recording over three days and three nights. The vegetation quadrats have been positioned to capture the potential effects of the mine on the surrounding ecological environment by comparing sites within or close to the ML (impact sites) to those positioned away from the active mining area (control sites). The vegetation quadrats occur in three vegetation types – *Acacia* Woodland, Chenopod Shrubland and Mallee Woodland, with Chenopod Shrubland being the dominant vegetation type at the site. The weed monitoring sites are positioned along the mine Access Road to the Stuart Highway and Haul Road to the Wirrida Rail Siding to assess the potential for the introduction of weeds to the region from vehicles and machinery as well as other vectors such as wind and animals.

Species diversity, vegetation cover, recruitment and potential impacts such as dust deposition, inappropriate access, weeds and pest animals were assessed at the 20 monitoring quadrats to determine if the mining operation is influencing the surrounding environment. Within each quadrat a 10 m x 2 m subplot was used to assess surface cover (%) of grass, bare ground, litter, crust and scalded surface/ erosion. In 2020, Jessup transects were re-instated at each of the 20 quadrats to provide information about plant densities and recruitment.

In 2024, 154 flora species (153 native / 1 exotic) were recorded, an increase from 2023 and is the second highest species richness observed since the current monitoring program began in 2017. The number of species recorded declined between 2017 and 2019 (116 - 75 species) but then increased in 2020 and again in 2021, most likely a result of higher-than-average annual rainfall over the 2020 and onward monitoring periods. Species richness in 2024 is higher than those recorded in 2023. Cat and rabbit sightings were observed from the remote camera deployed at three sites in 2024.

Results were non-significant when comparing control and impact sites in 2024, reflecting a resilient and stable rangeland system incorporating large areas of *Acacia* Woodland, Chenopod Shrubland and Mallee Woodland. However, overall the range condition observed in 2024 within or close to the ML area (impact sites) is in most cases consistent with observations made within the surrounding SEB Offset areas (control sites).

There is no statistical indication that BHP's Prominent Hill mine is negatively impacting vegetation and habitat condition from the results of this survey, with no significant different between control and

impact sites. Levels of native vegetation species abundance, richness, diversity and recruitment within impact sites do not indicate trends appreciably different from those measured within the control sites, across vegetation types.

1. Introduction

BHP's (formerly OZ Minerals) Prominent Hill mine site is located approximately 650 km north west of Adelaide, South Australia (SA) and is within the Stony Plains bioregion (Oodnadatta subregion – STP02) as part of the Interim Biogeographic Regionalisation for Australia (IBRA) (Figure 1). The Mining Lease (ML) for Prominent Hill (ML6228) was approved in 2006 for the production of copper and gold. The Prominent Hill operation comprise a number of tenements approved under the *Mining Act 1971*, including the Mining Lease (ML 6288), Miscellaneous Purpose Licences (MPL 81, 82, 83,84, 91, 93, 94 96, 97, 101, 112-117 and 119-122) and extractive mineral leases (EML 6234, 6236-6242, 6278-6296, 6299-6301).

A review of monitoring programs in 2017 resulted in a change to ecological survey requirements pertinent to the ML conditions and revised Program for Environment Protection and Rehabilitation (PEPR) (PEPR 2022). The changes to PEPR criteria and ML conditions were tailored to support the ongoing monitoring and passive management of the surrounding Significant Environmental Benefit (SEB) offset area (maintained under the ML approval) and serves to limit the establishment and spread of weeds within the ML area and nearby receptors within the broader landscape.

This report marks the eighth year of compliance monitoring against the program defined in the 2017 PEPR. We note while the PEPR was revised and approved in 2022, the ecology monitoring and assessment requirements remain unchanged since 2017.

1.1. Background and purpose

Prominent Hill was granted Mining Lease (6228) in 2006 to explore for copper and gold with ecological monitoring occurring ever since. On the 2nd of May 2023, BHP Group Limited acquired 100% of the shares in OZ Minerals Limited (BHP 2023). The monitoring assessed native vegetation communities and fauna presence with a focus on threatened species within the landscape. In 2007 the ML conditions for ecological monitoring were revised, resulting in the requirement for a biannual autumn and spring survey for flora and fauna. This program was reviewed again in 2010 and 2012 and management driven alterations have been made since then.

Baseline data was set to be established following the methodology changes of 2015, however, a review to the program's fitness for purpose to meet the lease conditions and PEPR outcomes was completed in 2017 by Jacobs. As a result of this review, site numbers were reduced from 34 to 20, seven of which are new sites, and, as a surrogate for fauna surveys, flora sites were selected based on fauna habitat condition. Due to these methodology changes, and difficulty locating previous quadrats by reason of lack of physical quadrat set up and GPS information, comparisons with years prior to 2017 is problematic. Adjustments to site set up have been made and is described further in the methodology section below. Therefore, data collected in 2017 is now used as baseline data for the floristic monitoring at Prominent Hill in support of the 2022 PEPR.

The following report is based on compliance requirements as outlined in the PEPR. This floristic monitoring report will seek to demonstrate compliance with PEPR measurement criteria. ELA understands this monitoring report will be made available to DEM who assess BHP's ongoing compliance with vegetation and habitat conditions by review of performance against the environmental outcome measurement criteria (including leading indicator criteria) detailed in Table 1 below.

1.2. Objectives

The objectives of the 2024 Prominent Hill annual flora survey were to:

- Undertake monitoring at 20 permanent vegetation sites to assess potential changes in species diversity, vegetation cover, recruitment, perennial densities, the percentage of ground cover (grass, litter), bare ground and pest animal activity to determine if there have been any changes in the abundance or diversity of native vegetation or a reduction in habitat quality at both impact and control sites.
- Undertake weed monitoring at five locations to determine whether there has been introduction of new weed species or an increase in the abundance or distribution of existing species.
- Provide a report that considers the potential impact of BHP Prominent Hill mine on vegetation and habitat condition with reference to maintaining levels of native vegetation species abundance, richness, diversity and recruitment.

1.3. Scope

To meet above listed objectives, ELA has undertaken a survey comprising the following aspects (as contained within the PEPR and *What will be measured* column of Table 1):

- Habitat Quality Indicators including vegetation and soils (representing broader ecosystem function)
- 20 x 100 m x 100m vegetation quadrats (Biological Survey Method (DEW 1997))
    - Panoramic photographs collected to aid in identifying temporal change in vegetation cover and structure
    - identification of all species present (species diversity/richness, inclusive of annuals)
    - cover (%) of individual species
    - species identified as recruiting.
- 20 x 100 m Jessop Transect
    - abundance counts for species present;
    - counts of recruits for any recruiting species;
    - counts of reproductive individuals from recruiting species identified.
- 20 x 10 m x 2m subplot within the vegetation quadrat. For each 1 x 1m unit of sub-plot:
    - estimate of % grass cover (ephemerals, annuals)
    - estimate of % bare ground
    - estimate of % litter cover within the plot
    - estimate of % surface crust
    - counts of recruits (all shrubs) to provide recruitment score
    - long lived perennials (over and under storey) via species abundance counts (density) for both juveniles and adults.

.

- Observational data including vehicle tracks, erosion, vegetation clearing, dust, inappropriate access, feral animals (and weeds.
- Counts and identification of any declared weed infestations observed along transects at each location.
- Feral animal observations.
    - Deployment of three (Reconyx HF2X Hyperfire 2) remote cameras to identify presence of ferals within proximity of the mining camp.

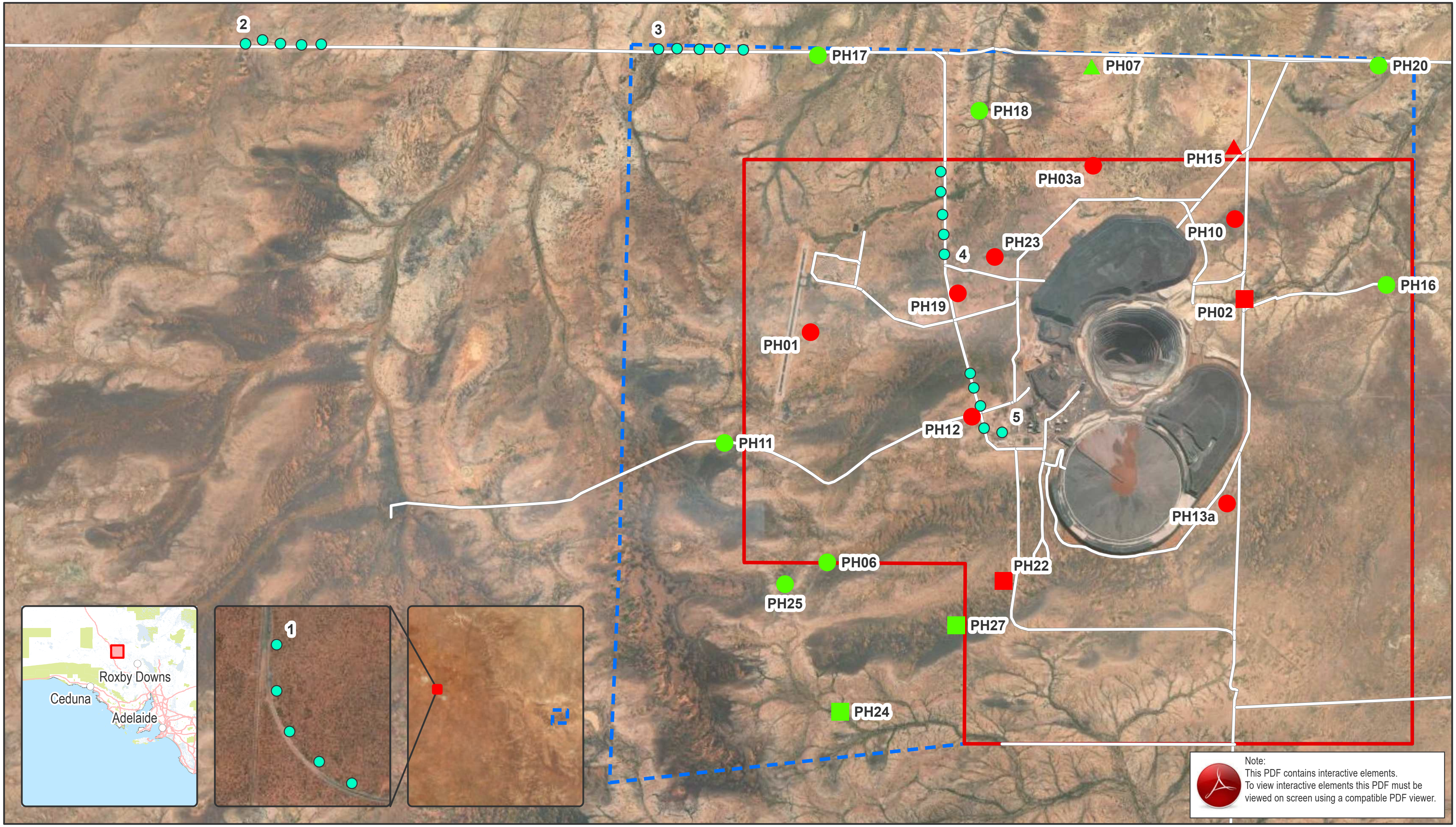
Table 1: Program for Environment Protection and Rehabilitation (PEPR) summary table (Reference: Table 7-12 in the 2022 PEPR)

Impact Event	Environmental Outcome	Outcome Measurement Criteria Details					Leading Indicator Criteria
		What will be Measured and Form (Method) of Measurement	**Location**	**Outcome Achievement**	**Frequency**	**Control or Baseline Data**	
Reduced conditions favourable for plant growth due to disturbance, dust, salinity, altered surface water flow or soil erosion. Reduced species abundance due to vegetation clearing, increased grazing resulting from increased water. Significant impacts to threatened species due to vegetation clearing. Altered vegetation composition due to increase in fire ignition and/or changes in fire frequency and intensity.	Environmental offsets are approved and in place for all clearance of native vegetation	Habitat Quality Indicators including vegetation and soils (representing broader ecosystem function) 100 x 100m vegetation quadrat (Biol. Survey Method) • identification of all species present (species diversity/richness, inclusive of annuals) • cover (%) of individual species • species identified as recruiting. 10 x 2m SUB PLOT within vegetation quadrat For each 1 x 1m unit of sub-plot: • estimate of % grass cover (ephemerals, annuals) • estimate of % bare ground • estimate of % litter cover within the plot • estimate of % surface crust • counts of recruits (all shrubs) to provide recruitment score • long lived perennials (over and under storey) via species abundance counts (density) for both juveniles and adults. Panoramic photographs collected to aid in assessment of vegetation cover for recruitment. Observational data to be collected at all sites including	See Figure 1. Assessment will be undertaken at a series of permanent impact sites (adjacent to mining operations) and control sites (replicate sites remote from mining operations but within SEB) to enable comparison between potential mine related activities and seasonal variations. Sites selected in representative habitats for key fauna species, including EPBC and NPW listed species, and to be representative of the broad vegetation community types present within the ML, MPL and SEB areas. Impact sites (PH01, PH02, PH03a, PH10, PH12, PH 13a, PH 15, PH19, PH22, PH23) and control sites (PH06, PH07, PH11, PH16, PH17, PH18, PH20, PH24, PH25, PH27)	Approved Native Vegetation Management Plan and SEB Offset in place.	Annually	REP021 Prominent Hill Analysis of Flora and Fauna Monitoring Data 2007 to Spring 2012 Other Flora survey reports, conducted at the site biannually between 2007 and 2016. Comparable data up until methodology changes in 2015.	Reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. An increase in bare ground and/or scald/erosion % cover at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. If leading indicator triggered, further assessment of detected impacts vs pre-mine condition by comparison with sites outside of SEB area required to determine non-compliance with lease condition. Annual review of vegetation clearance confirms all clearance has been approved

Impact Event	Environmental Outcome	Outcome Measurement Criteria Details					Leading Indicator Criteria
		What will be Measured and Form (Method) of Measurement	**Location**	**Outcome Achievement**	**Frequency**	**Control or Baseline Data**	
		(but not limited to) vehicle tracks, erosion, vegetation clearing, distance to mine site, light, dust, inappropriate access, feral animals and weeds. GIS output of approved clearance boundary and actual clearance boundary.					
Reduced species abundance due to vegetation clearing, increased grazing from increased surface water, traffic, noise and vibration and downstream effects. Significant impacts to threatened species due to vegetation clearing and predation	No loss of abundance or diversity of native vegetation, or reduction in habitat quality, on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities unless prior approval under relevant legislation is obtained and environmental offsets are approved and in place.	As above	As above	As above	As above	As above	Indicators of habitat degradation, including: Reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. An increase in bare ground and/or scald/erosion % cover at impact sites without a corresponding increase at control sites over three consecutive monitoring periods. If leading indicator triggered, implement targeted threatened bird surveys to confirm ongoing presence of Thick-billed Grasswren and Chestnut-breasted Whiteface within impacted sites.

Impact Event	Environmental Outcome	Outcome Measurement Criteria Details					Leading Indicator Criteria
		What will be Measured and Form (Method) of Measurement	**Location**	**Outcome Achievement**	**Frequency**	**Control or Baseline Data**	
Increased weed density and distribution as a result of Prominent Hill operations Introduction of new weed species as a result of Prominent Hill operations	No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or pest species in the licence area compared to adjoining land as a result of mining operations.	Records of counts and identification of any declared weed infestations observed along transects at each location. Records of weed control actions implemented (where relevant). Records of feral animal observations, trapping and capture rates.	Five weed monitoring locations as identified in Figure 1. Various locations including landfill, camp and as per opportunistic sightings	Weed infestations are recorded, treated and monitored for ongoing management requirements.	Annually	PH-ENV-REP-0500 Stage Two Significant Environmental Benefit Offset Area Management Plan REP021 Prominent Hill Analysis of Flora and Fauna Monitoring Data 2007 to Spring 2012.	Annual review of the weed survey and management register (results of field monitoring and visual observations) considering trends that could indicate population increase or new weed species.
				Pest animal sightings are recorded and will result in the initiation of a trapping/baiting program and subsequent monitoring.	As required		Quarterly review of cat sightings and trapping register considering trends that could indicate population increase and requirement for increase in trapping program

* Historical information can be found in Jacobs (2017) - 2017 Review of Prominent Hill Ecological Monitoring. All annual ecological monitoring reports. Other Flora and Fauna survey reports, conducted at the site biannually between 2007 and 2016. All annual ecological monitoring reports.



Note:
This PDF contains interactive elements.
To view interactive elements this PDF must be viewed on screen using a compatible PDF viewer.

Figure 1: Floristic and pest fauna monitoring

▭	Prominent Hill mining lease area	
▭	Significant Environmental Benefit (SEB) Offset Area	
▭	Vegetation monitoring sites - Floristic quadrat	
▨	Subplot	
▭	4m Jessup buffer	
➤	NW corner / panorama photo point	
➤	100m transect	
●	Weed monitoring sites	
—	Mine access road	
◆	Remote camera location	

Impact sites

- ■ Acacia Woodland Impact
- ● Chenopod Shrubland Impact
- ▲ Mallee Woodland Impact

Control sites

- ■ Acacia Woodland Control
- ● Chenopod Shrubland Control
- ▲ Mallee Woodland Control

0 1 2
Kilometres

Datum/Projection:
GDA 1994 MGA Zone 53
24ADL7673-OK Date: 6/06/2024

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2. Methodology

2.1. Survey team

The 2024 ecological monitoring was undertaken between 29 April – 3 May 2024. The surveys were carried out by ELA Principal Ecologist and SA Accredited Consultant, Tobias Scheid and Senior Ecologist, Emrys Leitch.

2.2. Monitoring site selection

2.2.1. Floristic monitoring quadrats

A total of 20 permanent floristic monitoring quadrats were surveyed comprising, ten control and ten impact sites (Table 2 and Figure 1). The permanent floristic monitoring quadrats (control / impact sites) have been selected to reflect a representative sample of three broad vegetation types that are present within the ML area. These include *Acacia* Woodland, Chenopod Shrubland and Mallee Woodland. The sites are defined within the PEPR, and the selected quadrats meet the measurement criteria conditions as defined in Table 1. The floristic monitoring quadrats and representative vegetation community are detailed in Table 2, below.

Table 2: Vegetation monitoring sites by vegetation type and treatment (impact / control)

Vegetation type	Impact or Control	Floristic monitoring quadrats
Chenopod Shrubland	Control	PH06, PH11, PH16, PH17, PH18, PH20, PH25
Chenopod Shrubland	Impact	PH01, PH03, PH10, PH12, PH13, PH19, PH23
Acacia Woodland	Control	PH24, PH27
Acacia Woodland	Impact	PH02, PH22
Mallee Woodland	Control	PH07
Mallee Woodland	Impact	PH15

Each of the 20 monitoring sites consists of a permanent 1 ha (100 m x 100 m) vegetation quadrat, a randomly positioned subplot (10 m x 2 m) located in the north-west corner and a 100 m Jessup transect. The Jessup transect includes an investigational buffer area of 4 m x 100 m (Figure 2). The Jessup transect runs from the western to eastern quadrat boundary (Figure 2). Quadrat and subplot corners as well as Jessup transect start and end points are marked with a permanent metal star picket. The location coordinates (latitude and longitude) were recorded for each corner point as were the start and end of the Jessup transect. A panoramic photograph was taken from the north-west corner (Figure 2).

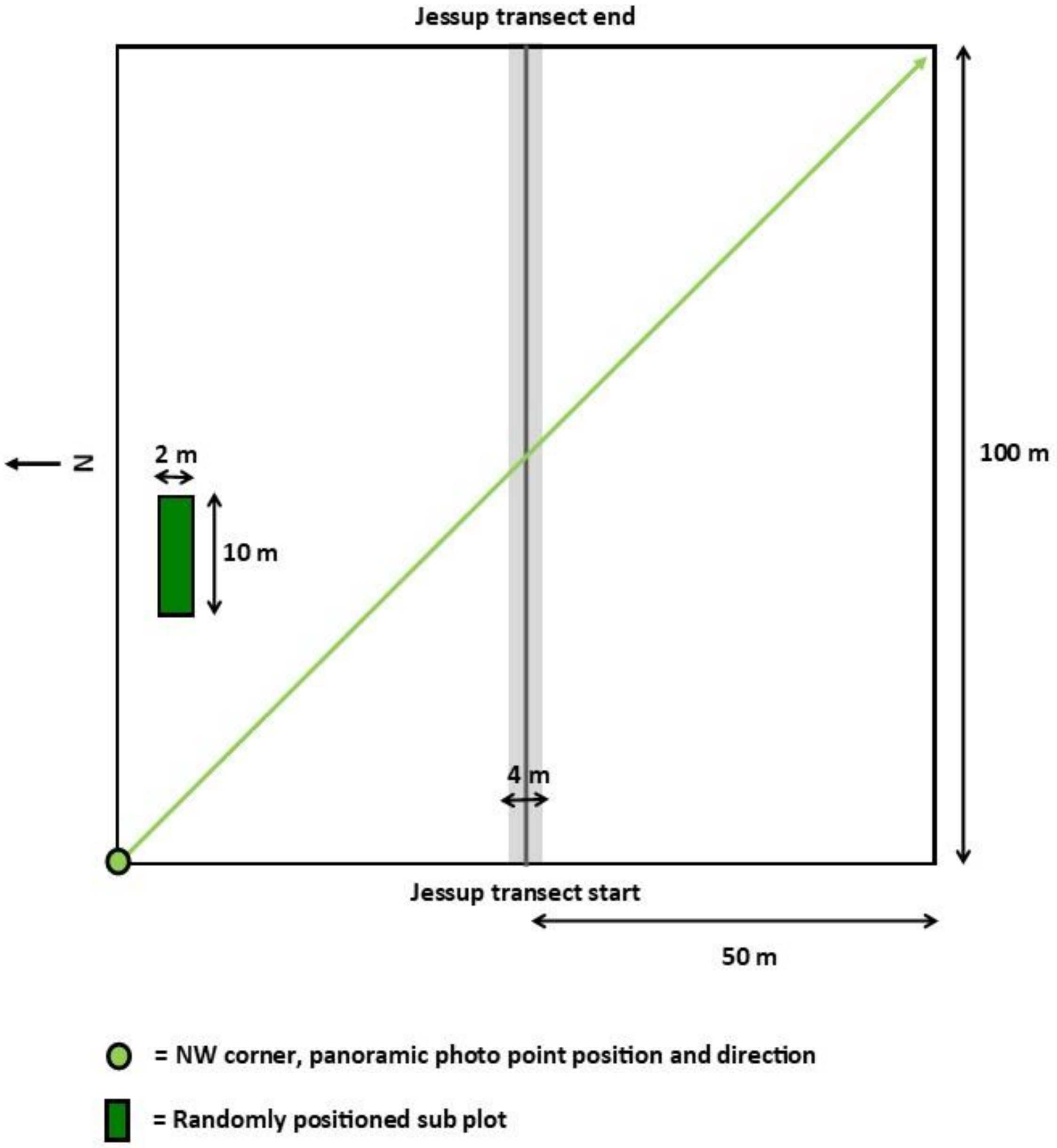

Figure 2: Monitoring quadrat diagram

2.2.2. Monitoring methods

Within each quadrat, a meander survey was undertaken across the entire 1 ha area to document species richness and abundance (% cover). Data is also recorded for recruitment and life form present (budding, flowering, immature fruit, mature fruit, vegetative or dead).

A Jessup transect with investigational buffer (belt transect) (4 m x 100 m) is in the centre of the quadrat in accordance with the survey methodologies outlined in the *Pastoral Lease Assessment – Technical Training Manual 2011* (DENR 2011). The Jessup transect is used to capture information about the amount of recruitment for perennial species, to get a ratio of adult to juvenile plants and measure plant density. The total number of adult and juvenile individuals for each perennial species within each of the Jessup plots (20 plots of 10 m x 2 m) was recorded.

Randomly positioned subplots (2 m x 10m) were used to estimate the percent of grass cover, bare ground, litter cover, surface crust, scalded surface or erosion and number of perennial recruits.

Table 3: Floristic data recorded annually

Measurement	Method
100 m x 100 m quadrat	Identification of species present; % cover of individual species; Record of species recruiting; and Record of life forms present for each species.
4 m x 100 m Jessup Transect	Counts of adult and juvenile long-lived perennials (woody shrubs); and Recruitment index score.
10 m x 2m sub plot	Estimate of % grass cover; Estimate of % bare ground; Estimate of % litter cover; Estimate of % surface crust; Estimate of % scalded surface or erosion; and Counts of perennial recruits.

In the 2024 survey, for increased rigor three remote cameras (HP2W) were deployed for constant motion recording over three days and three nights at sites PH01, PH02 and PH22.

Species Diversity

The mean number of flora species (i.e. species richness) was determined for each condition and vegetation type combination (i.e. control and impact conditions in *Acacia* Woodland, Chenopod Shrubland and Mallee Woodland), and one-way ANOVAs were done to determine whether control and impact sites were significantly different for each vegetation type. A similar comparison was also made between control and impact sites for just perennial species richness in each vegetation type. These analyses address leading indicator criteria outlined in the Prominent Hill PEPR (Table 1), specifically regarding whether there was any indication of "*reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites*". Species richness was used as a diversity metric for these comparisons to help confirm "*no loss of abundance or diversity of native vegetation, or reduction in habitat quality on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities*".

Vegetation Cover

Vegetation cover (% cover in quadrat) was determined for each condition and vegetation type combination and one-way ANOVAs were done to determine whether control and impact sites were significantly different for each vegetation type. A similar comparison was also made between control and impact sites for just perennial cover in each vegetation type. These analyses address leading indicator criteria outlined in the Prominent Hill PEPR (Table 1), specifically regarding whether there was any indication of "*reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites*". This was used to assess whether or not BHP are trending to achieve the environmental outcome of "*no loss of abundance or diversity of native vegetation, or* *reduction in habitat quality on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities"*.

Perennial Density

Perennial density (stems/m^2) was recorded for both mature and juvenile perennials using a Jessup belt transect (Figure 2) for each condition and vegetation types combination. One-way ANOVAs were performed to determine whether control and impact sites were significantly different for each vegetation type. These analyses were undertaken to address two of the leading indicator criteria. The first of these aims to detect "*reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites"*. The second aims to detect "*suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods"*. These leading indicator criteria are designed to support achievement of the environmental outcome of "*no loss of abundance or diversity of native vegetation, or reduction in habitat quality on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities*" (Table 1) through early indication of potential mining impacts that can be addressed or assessed further.

Native Recruitment

Native recruitment (proportion of species present with recruits) was determined for each condition and vegetation type combination and one-way ANOVAs were completed to determine whether control and impact sites were significantly different for each vegetation type. These analyses address the leading indicator criteria outlined in the Prominent Hill PEPR (Table 1), specifically regarding whether there was any indication of "*suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods"*. This was used to assess whether or not BHP is trending to achieve the environmental outcome of "*no loss of abundance or diversity of native vegetation, or reduction in habitat quality on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities"*.

Subplot Monitoring

The ground cover metrics measured in the subplots include grass cover (%), bare ground (%), litter cover (%), soil crust (%) and scalded surface/erosion (%). Maintaining ground cover is paramount in the South Australian Arid Lands (SAAL) as it helps to protect soil from erosion as well as provides protection for seed germination (DPI 2006). Each of these types of ground cover was averaged for subplots in each condition and vegetation type combination and one-way ANOVAs were executed to determine whether control and impact sites had significantly different ground cover for each vegetation type. A similar comparison was also made between control and impacts sites for perennial recruit numbers in the subplots for each condition and vegetation type combination. Analyses of ground cover were undertaken to address a specific leading indicator criterion in the Prominent Hill PEPR (Table 1) regarding whether there is any indication of "*an increase in bare ground and/or scald erosion % cover at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods"*. Additionally, analyses were performed for perennial recruitment numbers in the subplots to address two leading indicator criteria. The first of these is regarding whether there is any "*reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites"*. The second is regarding whether there is any "*suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods*". These leading indicator criteria are used to assess whether or not BHP is trending to achieve the environmental outcome of "*no loss of abundance or diversity of native vegetation, or reduction in habitat quality on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities*".

2.2.3. Weed monitoring transects

In addition to the 20 floristic monitoring quadrats, five permanent weed monitoring transects were also surveyed during the 2024 survey period. The permanent weed monitoring transects were established by EBS Consulting in 2017, and are monitored as a requirement of the performance outcome criteria detailed within the PEPR (Table 1).

The five weed monitoring transects are located alongside the mine access road towards the Stuart Highway and the Haul Road to the Wirrida Rail Siding, located approximately 1-98 km (northwest) from the mine, (Figure 1). These sites were identified to represent key environmental vectors and high frequency transport routes to allow early detection for new and emerging exotic species within the ML and surrounds (Figure 1).

Each of the five weed monitoring sites comprise five consecutive 100 m x 50 m transects, spaced 250 m apart, arranged in a linear alignment (along the roadside). Each weed transect is traversed on foot and weed species and abundance recorded.

2.3. Weather data

The Stony Plains bioregion experiences an arid climate with extreme temperatures and has a spatially averaged annual rainfall (1890-2005) of 118mm (Commonwealth of Australia 2008).

ELA used rainfall data provided by BHP, from the Prominent Hill Weather Station, to review local rainfall patterns and establish a long-term (16.5-year) rainfall average (2009-2024) across all seasons at Prominent Hill. In the year leading up to the 2024 monitoring period, April 2023 to April 2024, Prominent Hill received 169.8 mm of rainfall. This is aligned with all other annual averages (Jan – Dec) across the 16.5 year averages as well as the 12 month periods leading up to all previous years surveys with the exception of 2019 (33.8 mm) (Table 4).

Table 4: Historical rainfall data (Prominent Hill Weather Station data for November 2009 to May 2024)

Monthly rainfall (mm)													
Year	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Annual**
2009	12.4											30.6	-
2010	9.2	4.6	0.4	10	42.8	26.4	0	2.8	27.2	24.8	22.2	29.8	**200.2**
2011	23.2	15.6	64.6	62.0	0.0	20.2	0.8	13.0	1.4	0.6	20.4	8.0	**229.8**
2012	18.8	4.0	3.4	49.0	5.8	0.0	2.8	0.4	0.0	0.0	0.6	5.0	**89.8**
2013	2.8	0.0	4.8	15.0	2.6	36.0	36.6	4.8	0.0	0.6	2.0	1.0	**106.2**
2014	2.6	1.2	14.2	1.6	75.2	8.0	0.8	1.0	8.6	1.6	0.8	5.2	**120.8**
2015	24.8	43.4	0.0	0.8	1.6	37.4	8.0	0.6	1.8	0.2	0.2	2.2	**121**
2016	42.2	5.4	5.0	41.6	0.2	22.2	20.8	5.6	25.4	23.2	1.4	1.6	**194.6**
2017	12.6	84.2	2.0	0.0	24.6	4.6	9.0	0.0	0.6	0.2	8.0	41.0	**186.8**
2018	0.8	23.6	3.6	0.0	0.0	7.0	1.8	0.0	1.8	0.0	6.0	10.0	**54.6**
2019	0.0	6.8	0.0	0.4	5.6	0.4	2.4	0.0	0.0	2.6	0.6	2.6	**21.4**
2020	13.4	51.2	106.2	2.8	8.2	0.2	0.4	0.0	24.4	49.0	41.0	0.4	**297.2**
2021	6.4	8.4	20.0	31.8	0.0	6.4	7.6	7.0	0.0	0.0	4.4	61.8	**153.8**
2022	0.8	56.4	4.2	0.2	36.8	17.6	2.4	1.2	4.8	1.0	107.4	8.8	**241.6**
2023	60	47.4	2.8	2.0	31.2	0	42.6	0	1.6	0	0.4	12.2	**200.2**
2024	-	**16**	**0**	**5.8**	**0**	**2.8**	-	-	-	-	-	-	**24.6**
Monthly mean	13.1	25.2	16.5	15.5	116.8	14.1	7.6	2.9	7.6	8.6	9	14.1	
Seasonal mean	**Summer**			**Autumn**			**Winter**			**Spring**			
	18.3			**48.8**			**6**			**10.6**			

The aligned rainfall average recorded in the year leading up to the field survey (May 2023 to April 2024) meant that conditions were favourable for plant establishment, growth and recruitment. Following a higher-than-average rainfall recorded in both 2022 (241.6 mm) and (200.2 mm) 2023, results are likely still shown in new perennial recruits, perennial cover and increased species diversity within the monitoring sites.

3. Results

Results are presented as the mean ± the standard error (SE), where applicable. Please note that Mallee Woodland only has one impact and one control site, so a SE cannot be calculated for the quadrat based measures. Jessup Transects were re-instated in 2020, so there are four years of baseline metrics to compare to with regard to the Jessup belt transect data.

In the results below, metric data has been presented for analysis to include both perennial / annual species as well as just perennial species.

As part of these results, statistical analyses have been conducted to determine whether control and impact sites have significant differences in vegetation condition. For these statistical analyses a p-value of 0.05 has been selected as a threshold for accepting or rejecting the null hypothesis. The null hypothesis is that there is no statistically significant difference between two sets of data. If the p-value is greater than 0.05 we cannot reasonably reject the null hypothesis. Therefore, results with a p-value greater than 0.05 have data variability attributed to random effects. Random effects are effects that influence a result to varying degrees in an unpredictable manner causing the inevitable variability in results for biological data.

3.1. Vegetation quadrat monitoring

3.1.1. Species diversity

Basic Summary

In 2024, 153 species (152 native / 1 exotic) were recorded, an increase from 2023 and the second highest species richness observed since the current monitoring program began in 2017 (Appendix A). The total number of species showed a declining trend from 2017 to 2019 with 116 species in 2017, 93 in 2018 and 75 in 2019 (ELA 2017; ELA 2018; GHD 2019; ELA 2021), following years of low rainfall. Species richness increased for 2020 to 2024 in comparison to the 2017 to 2019 period, largely due to an increased representation of annual species following the high rainfall received during these years, with 49 annual species recorded in 2021 (ELA 2021), 30 recorded in 2022, 39 recorded in 2023 and 39 recorded in 2024; this is an increase from no annuals in 2018 and 2019 (ELA 2018; GHD 2019). Nineteen of the 20 monitoring sites had a record of at least one new species, not previously identified, in the site in 2024. These records are new to each site only and have previously been recorded within the mining lease area. Table 5 includes a list of new species recorded at each site during the 2024 monitoring event.

Table 5: New flora species records for each site

Floristic monitoring quadrat	Number of new species to site	Species names
PH01	5	*Astrebla pectinata* *Enchylaena tomentosa* var. *tomentosa* *Eremophila latrobei* ssp. *Glabra* *Atriplex crassipes var. crassipes* *Tripogonella loliiformis*
PH02	6	*Abutilon fraseri* ssp. *Sclerolaena tricuspis* *Setaria constricta* *Sida intricata* *Lepidium phlebopetalum* *Tripogonella loliiformis*
PH03	3	*Aristida holathera* *Brachyscome ciliaris* var. *ciliaris* *Tripogonella loliiformis*
PH06	7	*Astrebla pectinata* *Enchylaena tomentosa* var. *tomentosa* *Maireana triptera* *Sida intricata* *Dactyloctenium radulans* *Iseilema vaginiflorum* *Lepidium phlebopetalum*
PH07	5	*Acacia tetragonophylla* *Rhagodia spinescens* *Sida fibulifera* *Rhagodia ulicina* *Tripogonella loliiformis*
PH10	2	*Setaria constricta* *Vittadinia gracilis*
PH11	2	*Maireana aphylla* *Centipeda thespidioides*
PH12	8	*Abutilon fraseri* ssp. *Brachyscome ciliaris* var. *ciliaris* *Einadia nutans* ssp. *Enchylaena tomentosa* var. *tomentosa* *Enteropogon acicularis* *Lysiana exocarpi* ssp. *Exocarpi* *Atriplex crassipes* var. *crassipes* *Euphorbia drummondii group*
PH13	7	*Abutilon halophilum* *Enteropogon acicularis*

Floristic monitoring quadrat	Number of new species to site	Species names
		Setaria constricta *Amyema preissii* *Lepidium phlebopetalum* *Plantago cunninghamii* *Tripogonella loliiformis*
PH16	8	*Abutilon fraseri ssp.* *Enteropogon acicularis* *Eragrostis setifolia* *Lotus australis* *Dissocarpus biflorus* *Centipeda thespidioides* *Euphorbia drummondii group* *Lepidium phlebopetalum*
PH17	10	*Arabidella trisecta* *Panicum decompositum* var. *decompositum* *Sclerolaena eriacantha* *Senna artemisioides* ssp. *X sturtii* *Vittadinia gracilis* *Dissocarpus biflorus* *Podaxis pistillaris* *Plantago cunninghamii* *Ptilotus nobilis* ssp. *Tetragonia tetragonoides*
PH18	8	*Abutilon fraseri* ssp. *Abutilon leucopetalum* *Arabidella trisecta* *Brachyscome ciliaris* var. *ciliaris* *Marsilea drummondii* *Senna artemisioides* ssp. *filifolia* *Tripogonella* sp.*Atriplex crassipes var. crassipes*
PH19	9	*Abutilon fraseri* ssp. *Brachyscome ciliaris* var. *ciliaris* *Einadia nutans ssp.* *Minuria cunninghamii* *Lepidium phlebopetalum*
PH20	4	*Lysiana exocarpi* ssp. *Exocarpi* *Enneapogon polyphyllus* *Gnephosis arachnoidea* *Tripogonella loliiformis*
PH22	5	*Atriplex quinii*

Floristic monitoring quadrat	Number of new species to site	Species names
		Boerhavia dominii *Einadia nutans* ssp. *Minuria* sp. *Cullen* sp.
PH23	3	*Abutilon fraseri* ssp. *Brachyscome ciliaris* var. *ciliaris* *Lepidium phlebopetalum*
PH24	5	*Sclerolaena eriacantha* *Senna artemisioides* ssp. *X artemisioides* *Setaria constricta* *Centipeda thespidioides* *Eragrostis leptocarpa*
PH25	5	*Abutilon fraseri* ssp. *Dissocarpus biflorus* *Hibiscus* sp. *Euphorbia tannensis* ssp. *Eremophila* *Gnephosis arachnoidea*
PH27	5	*Maireana integra* *Setaria constricta* *Sisymbrium* sp. *Crassula* sp. *Iseilema vaginiflorum*

Comparison between sites for all species diversity

When observing patterns in total species richness between impact and control sites, the 2024 data shows lower species richness at the impact sites compared to control sites for Chenopod Shrubland (-10%) and *Acacia* Woodland (-13.9%). However, for Mallee Woodland, the impact site had higher species richness than the control site in 2024 (+25.6%). Despite this, a one-way ANOVA determined there was no significant difference in total species richness between control and impact sites for any of the vegetation types in 2024 (p = 0.566).

Comparison between years

The average total species diversity in 2024 increased for all vegetation-condition type combinations except impact Mallee Woodland Sites when compared to the 2023 monitoring data (Figure 3). The largest increase was observed in the *Acacia* Woodland impact sites with an increase of 6 species per site on average. However, the control site in the *Acacia* Woodland had an average decrease of 1 to 2 species. Both the control and impact Chenopod Shrubland sites had an increase of 3 to 4 species per site on average from 2023 to 2024. Lastly, the Mallee Woodland control sites increased by 5 species on average, and the impact sites decreased by 1 species per site on average.

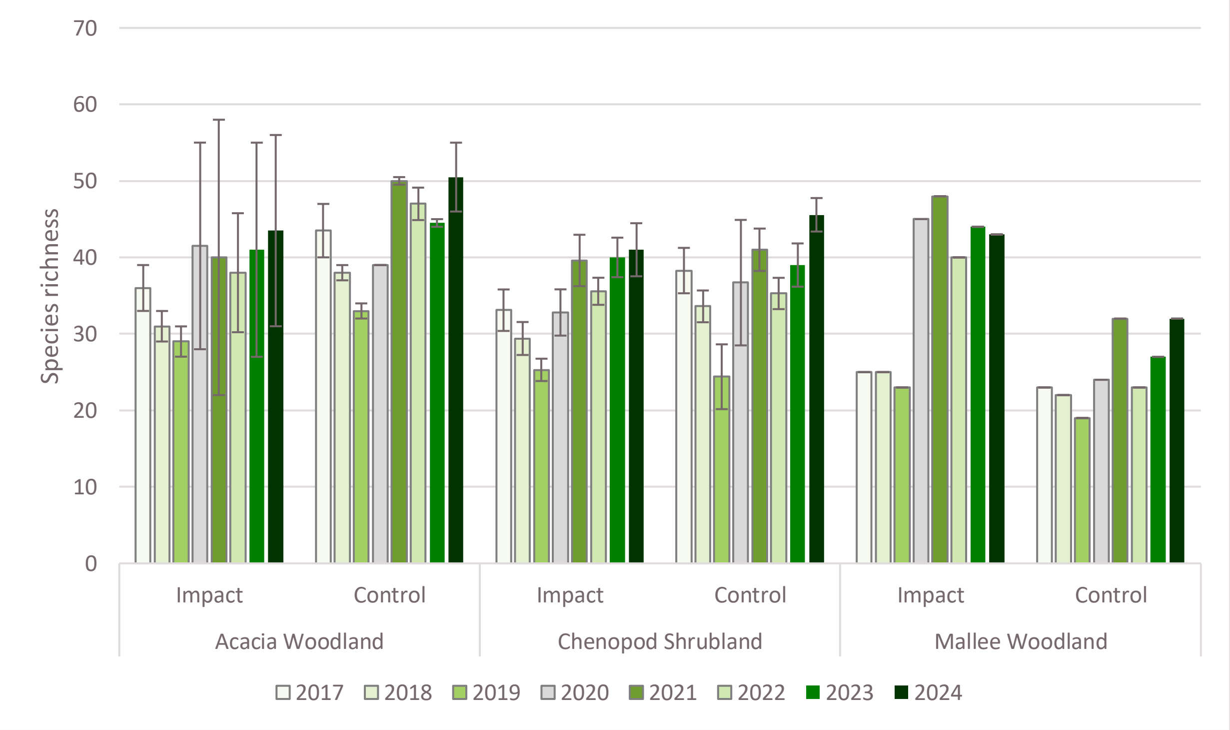

Figure 3: Total mean species richness (± SE) across the 2017-2024 monitoring period

Comparison between years for perennial species diversity

When perennial species diversity was assessed alone it showed a general increase in perennial species from 2023 to 2024 (Figure 4).

Comparison between sites for perennial species diversity

On average, in 2024 there was lower perennial species diversity at the impact sites compared to control sites for the Chenopod Shrubland (control = 37.1 species, impact = 31.1 species) vegetation type. For the *Acacia* Woodland and Mallee Woodland vegetation types, perennial species diversity was higher at the impact sites compared to the control sites (control = 34 species, impact = 40 species for *Acacia* Woodland and control = 27 species, impact = 37 species for Mallee Woodland). However, a one-way ANOVA indicated that there was no significant difference in perennial species diversity between control and impact sites for any of the vegetation types in 2024 (p=0.169).

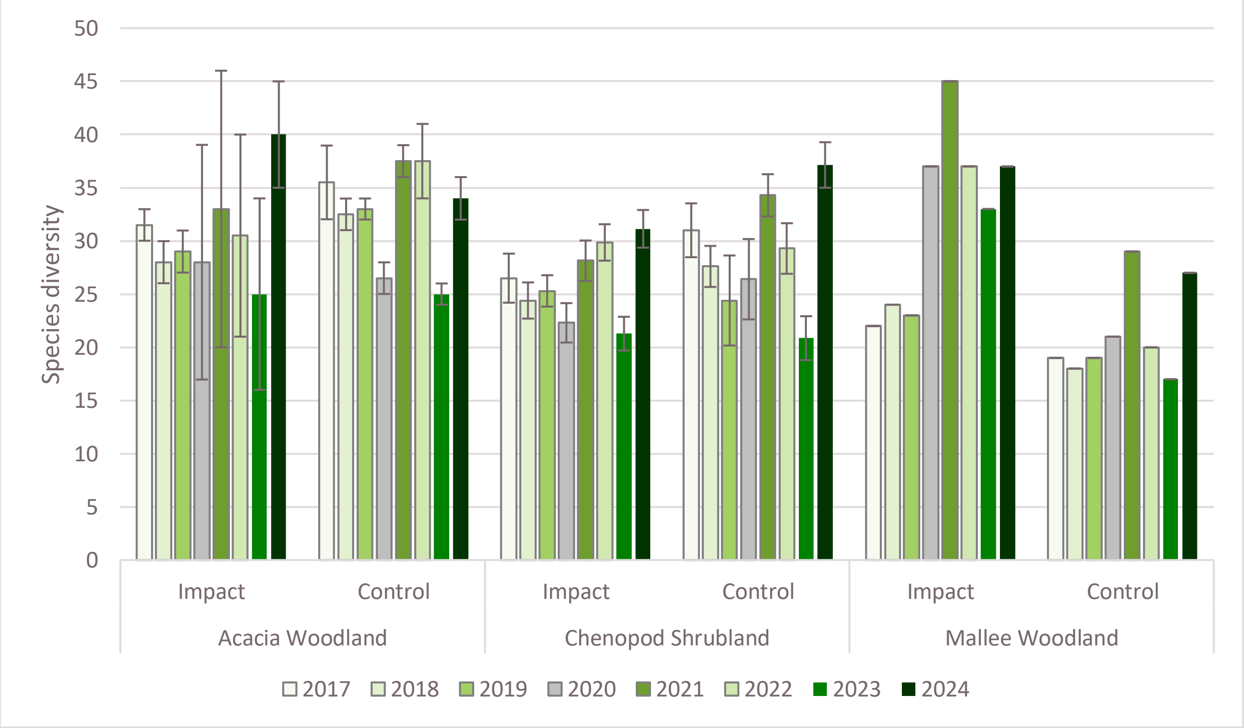

Figure 4: Mean perennial species diversity (± SE) across the 2017-2024 monitoring period

3.1.2. Vegetation cover

Comparison between sites for all species cover in quadrats

When observing patterns in total species cover between quadrats in control versus impact sites, the 2024 data shows higher average cover for control sites than impacts sites in *Acacia* Woodland (+32.8%) and Chenopod Shrubland (+22.1%). However, for Mallee Woodland, the control site had lower cover than the impact site (-76.3%). Despite this, a one-way ANOVA determined there was no significant difference in total species cover between control and impact sites for any of the vegetation types in 2024 (p=0.0903).

Comparison between years

The average total vegetation cover for quadrats in 2024 decreased for both control and impacts sites in all vegetation types when compared to the 2023 monitoring data (Figure 5).

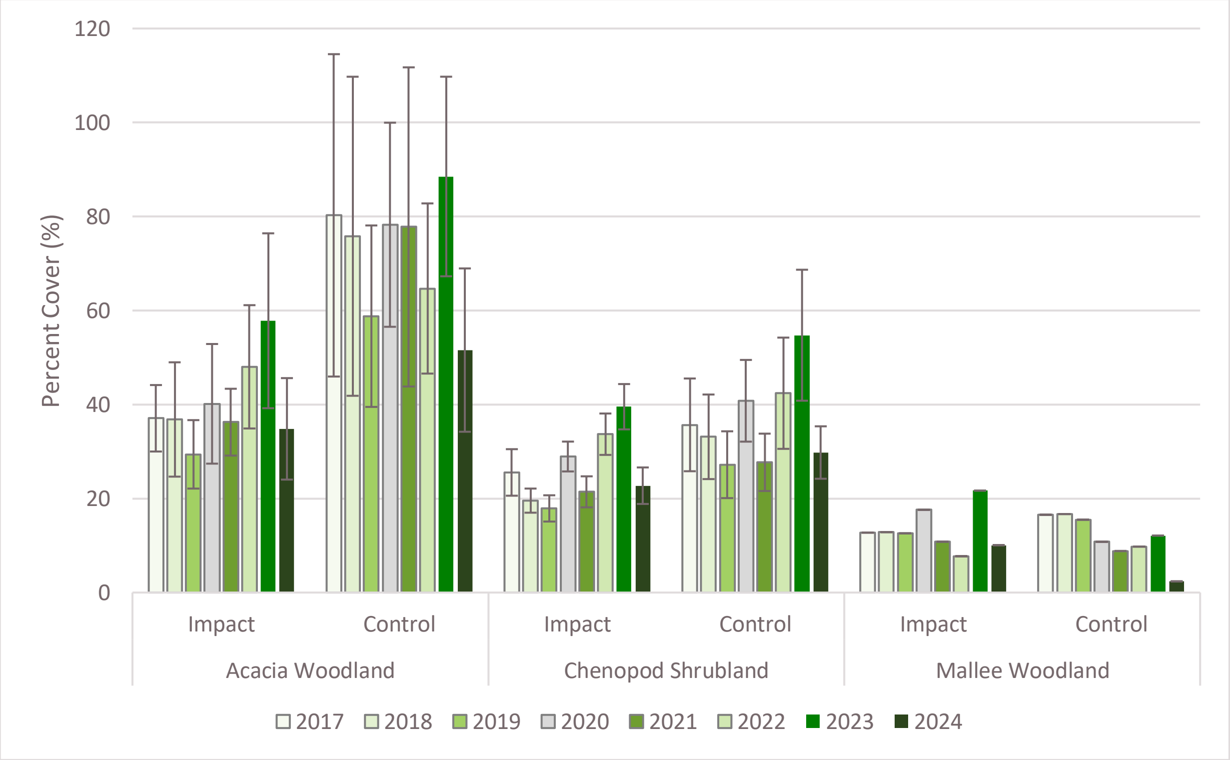

Figure 5: Mean total (annual and perennial species) percent vegetation cover (± SE) across the 2017-2024 monitoring period

Comparison between sites for perennial species cover in quadrats

When observing patterns in perennial species cover between quadrats in control versus impact sites, the 2024 data shows higher average cover for the control sites than impact sites for *Acacia* Woodland (+31.5%) and Chenopod Shrubland (+19.5%). However, perennial species cover was on average lower in control sites than impact sites for Mallee Woodland (-78.9%). Despite this, a one-way ANOVA determined there was no significant difference in perennial species cover between control and impact sites for any of the vegetation types in 2024 (p=0.107).

Comparison between years for perennial species cover in quadrats

The average perennial species cover for quadrats in 2024 decreased since 2023 for both control and impacts sites in all vegetation types with the exception of *Acacia* Woodland and Chenopod Shrubland control site (Figure 6). Perennial vegetation cover increased by 4% for *Acacia* Woodland and Chenopod Shrubland from 2023 to 2024.

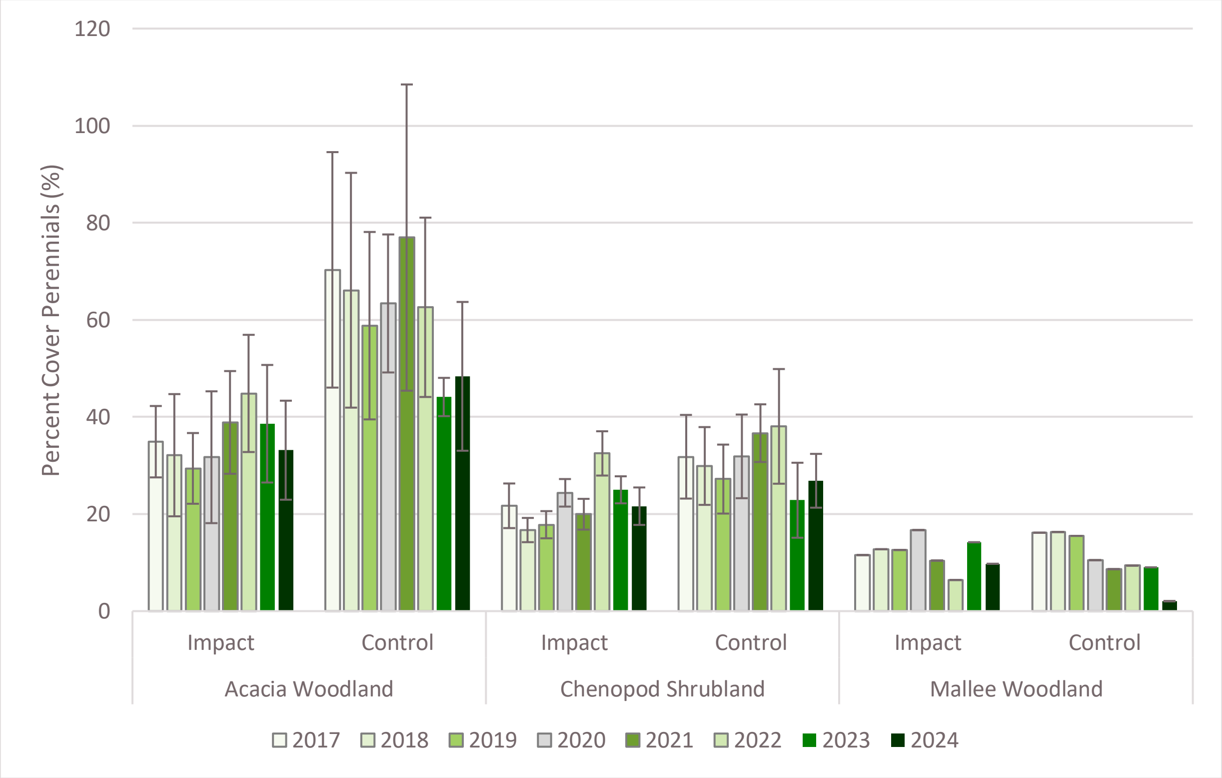

Figure 6: Mean perennial percent vegetation cover (± SE) across the 2017-2024 monitoring period

3.1.3. Perennial density

Comparison between sites for all species cover in quadrats

When observing patterns in perennial density between Jessup transects in control versus impact sites, the 2024 data shows lower average total perennial density for control sites than impact sites in *Acacia* Woodland (-27%) and Chenopod Shrubland (-55.7%). However, for Mallee Woodland, the control site had higher total perennial density than the impact site (+788.9%).

For mature perennials, the 2024 data showed higher mature perennial density for impact sites than control sites in *Acacia* Woodland (+36.5%) and Chenopod Shrubland (+65%). However, for Mallee Woodland, the impact site had lower mature perennial density than the control site (-91%).

For juvenile perennials, the 2024 data showed higher juvenile perennial density for impact sites than control sites in *Acacia* Woodland (+40%) and Chenopod Shrubland (+746.3%). However, for Mallee Woodland, the control and impact site contained the same juvenile perennial density of 0.005 (stems/m^2).

Despite these differences between control and impact sites potentially seeming large, a one-way ANOVA indicated that there was no significant difference in perennial density between control and impact sites for all perennial density (p=0.515), mature perennial density (p=0.712) or juvenile perennial density (p=0.853) for any of the vegetation types in 2024.

Comparison between years

On average total perennial density decreased from 2023 to 2024 for control sites in *Acacia* Woodland and Chenopod Shrubland, as well as control sites in Mallee Woodland. Total perennials generally increased in impact sites of *Acacia* Woodland and Chenopod Shrubland, as well as the control sites of Mallee Woodland. On average, mature perennial density decreased from 2023 to 2024 for control sites in *Acacia* Woodland and Chenopod Shrubland, with the exception of the impact sites in Mallee Woodland. On average, juvenile perennial density decreased from 2023 to 2024 for control sites in *Acacia* Woodland and Chenopod Shrubland with the exception of control and impact sites in the Mallee Woodland (Figure 7).

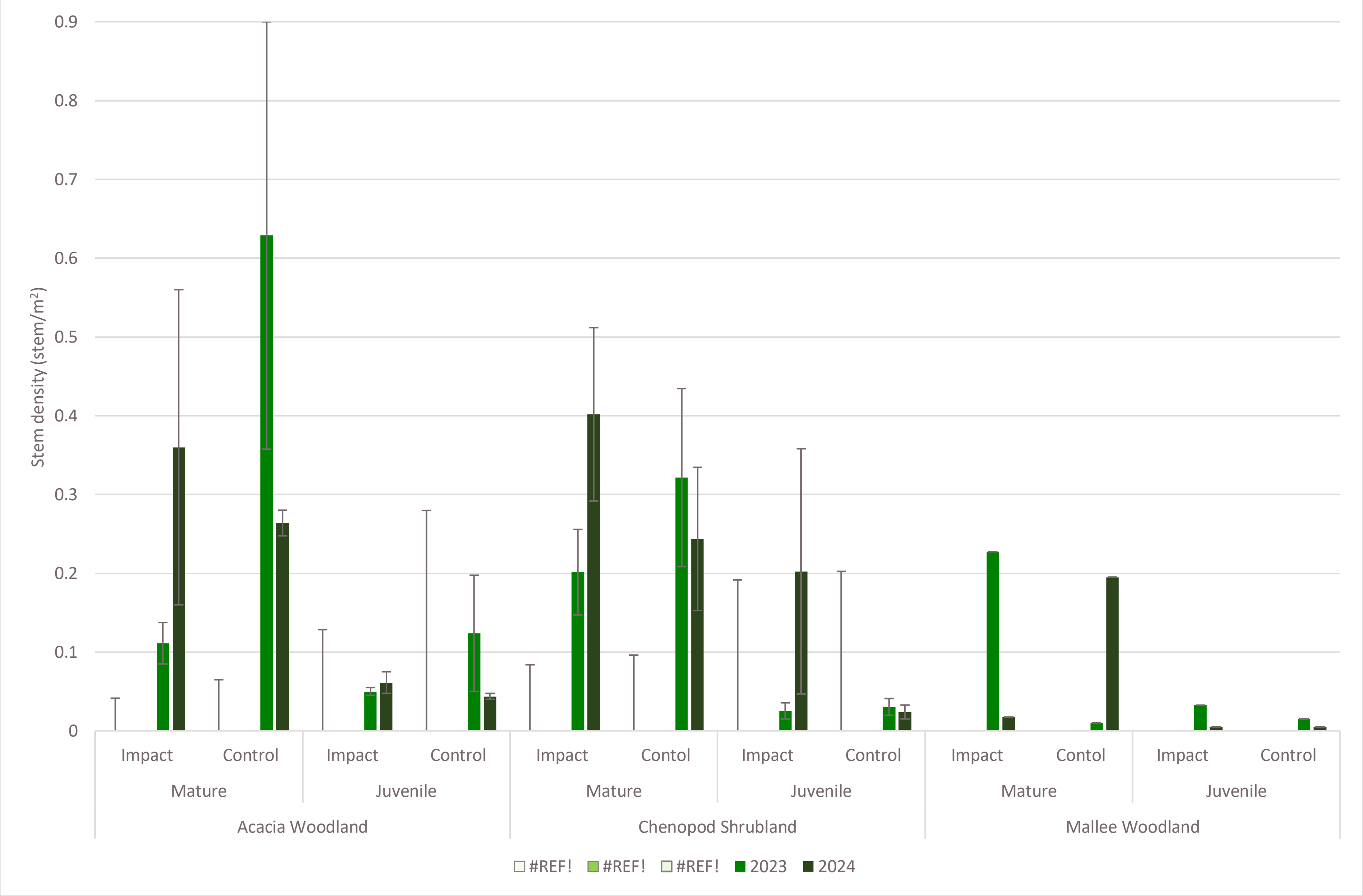

Figure 7: Mean density (± SE) of adult and juvenile plants based on Jessup transect across the 2020-2024 monitoring period

3.1.4. Native recruitment

Comparison between sites for native recruitment in quadrats

When observing patterns in native recruitment between quadrats in control versus impact sites, the 2024 data shows lower average native recruitment for control sites than impact sites in *Acacia* Woodland (-6.9%), Chenopod Shrubland (-7%) and Mallee Woodland (-6.3%) (Figure 8). Although a one-way ANOVA showed no significant difference between control and impact sites for any of the vegetation types in 2024 (p=0.56).

Comparison between years

The average native recruitment for quadrats increased in impact and control sites for *Acacia* Woodland (impact = + 23.6%, control = +4.3%) as well as impact sites for Mallee Woodland (+27.8%) between 2023 and 2024. Average native recruitment decreased in quadrats for the impact and control sites in Chenopod Shrubland (impact = -2.1%, control = 11.9%) as well as control sites in Mallee Woodland (-24.1%).

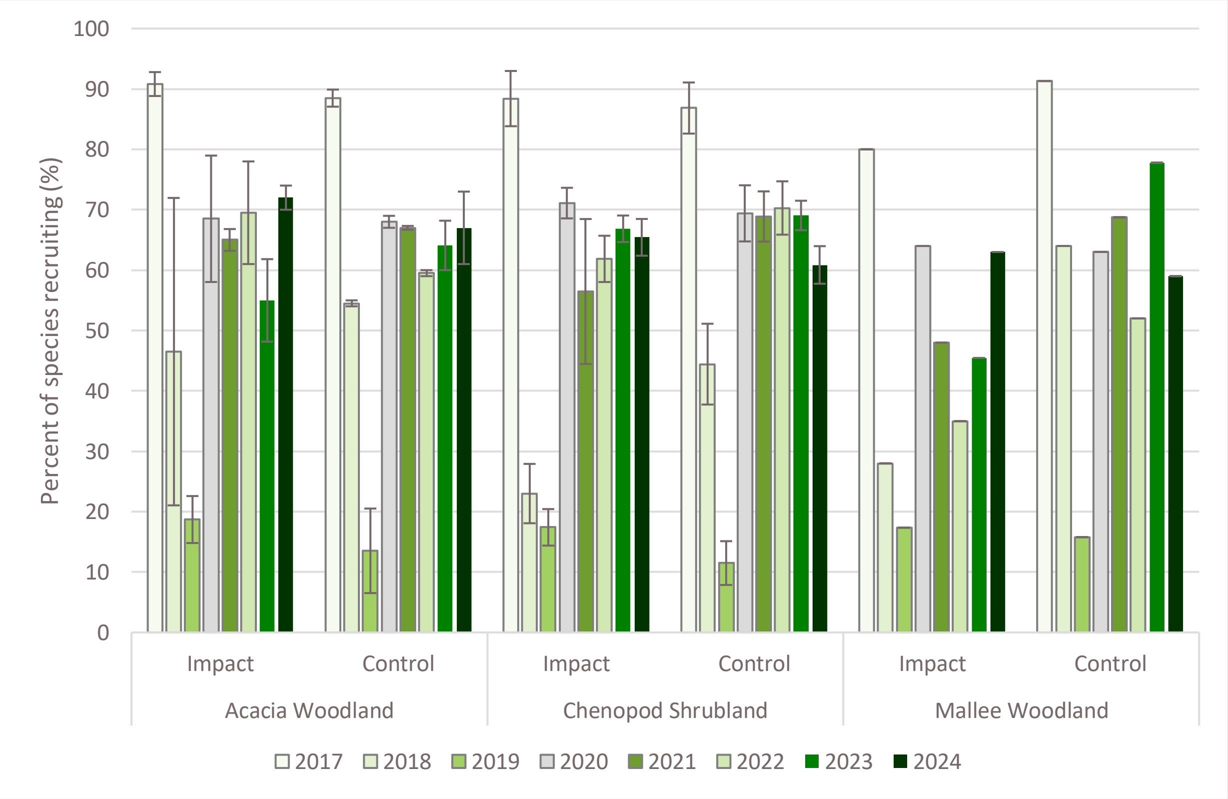

Figure 8: Mean percentage (± SE) of species recruiting across the 2017-2024 monitoring period

3.1.5. Subplot monitoring (% cover estimates and perennial recruitment)

Comparison between sites ground cover and perennial recruit number in subplots

When comparing ground cover in *Acacia* Woodland subplots for control versus impact sites, the 2024 data shows higher average grass cover and soil crust in control sites than impact sites. Bare ground, scalded surface and litter cover on average are lower in control sites than impact sites for *Acacia* Woodland subplots.

When comparing ground cover in Chenopod Shrubland subplots for control versus impact sites, the 2024 data shows higher average grass cover, litter cover and scalded surface in control sites than impact sites. Bare ground and soil crust are on average lower in control sites than impact sites in Chenopod Shrubland subplots.

When comparing ground cover in Mallee Woodland subplots for control versus impact sites, the 2024 data shows higher average bare ground, scalded surface and litter cover in control sites than impact sites. Grass cover is lower in the control site than the impact site. Soil crust ground cover category was undetected in the Mallee Woodland sites.

Despite these slight variations in ground cover between control and impact sites for each vegetation type, a one-way ANOVA determined there was no significant difference in percentage of grass cover (p=0.612), bare ground (p=0.131), litter cover (p=0.101), soil crust (p=0.853) or scalded surface/erosion (p=0.391) for any of the vegetation types in 2024.

When comparing number of perennial recruits between subplots in control versus impact sites, the 2024 data shows higher average number of perennial recruits for control sites than impact sites for Chenopod Shrubland (+65%), whereas *Acacia* Woodland had lower (-45.5%)No perennial recruits were present in the control site for Mallee Woodland, while 2 perennial recruits were present in the impact site. Despite this, a one-way ANOVA determined there was no significant difference in perennial recruitment numbers between control and impact sites for any vegetation types in 2024 (p=0.583).

Comparison between years

Between 2023 and 2024 for the *Acacia* Woodland vegetation type there has been a decrease in grass cover and soil crust for both impact and control sites as well as scalded surface for impact sites. There has been an increase in grass cover for both impact and control sites as well as soil crust for control sites, and bare ground, litter cover, and scalded surface for impact sites (Figure 9).

Between 2023 and 2024 for the Chenopod Shrubland there has been a decrease in bare ground and litter cover for both impact and control sites. There has been an increase in grass cover, soil crust and scalded surface for both impact and control sites (Figure 10).

Between 2023 and 2024 for the Mallee Woodland there has been a decrease in bare ground for both the control and impact sites, and litter cover for the impact site only. There has been an increase in grass cover at the impact site, litter cover and scalded surface at the control site. No soil crust was detected in both the impact and control sites, or for scalded surface in the impact site only in 2023 or 2024 (Figure 11).

Between 2023 and 2024 there has been a decrease in the average number of perennial recruits for both control and impact sites in all vegetation types with the exception of the Mallee Woodland control site (Figure 12).

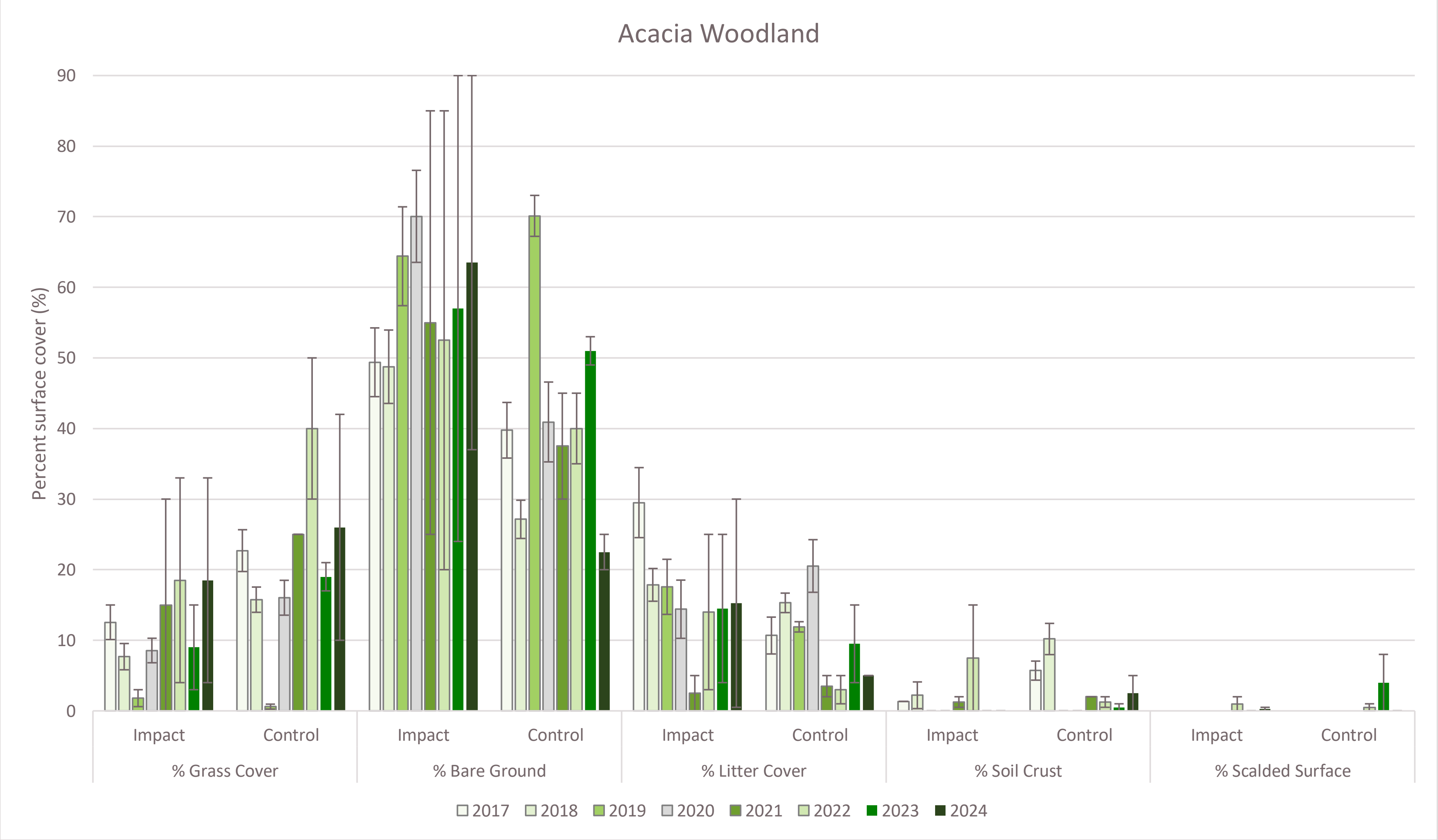

Figure 9: Mean percentage surface cover (%; ± SE) for *Acacia* Woodland across the 2017-2024 monitoring period

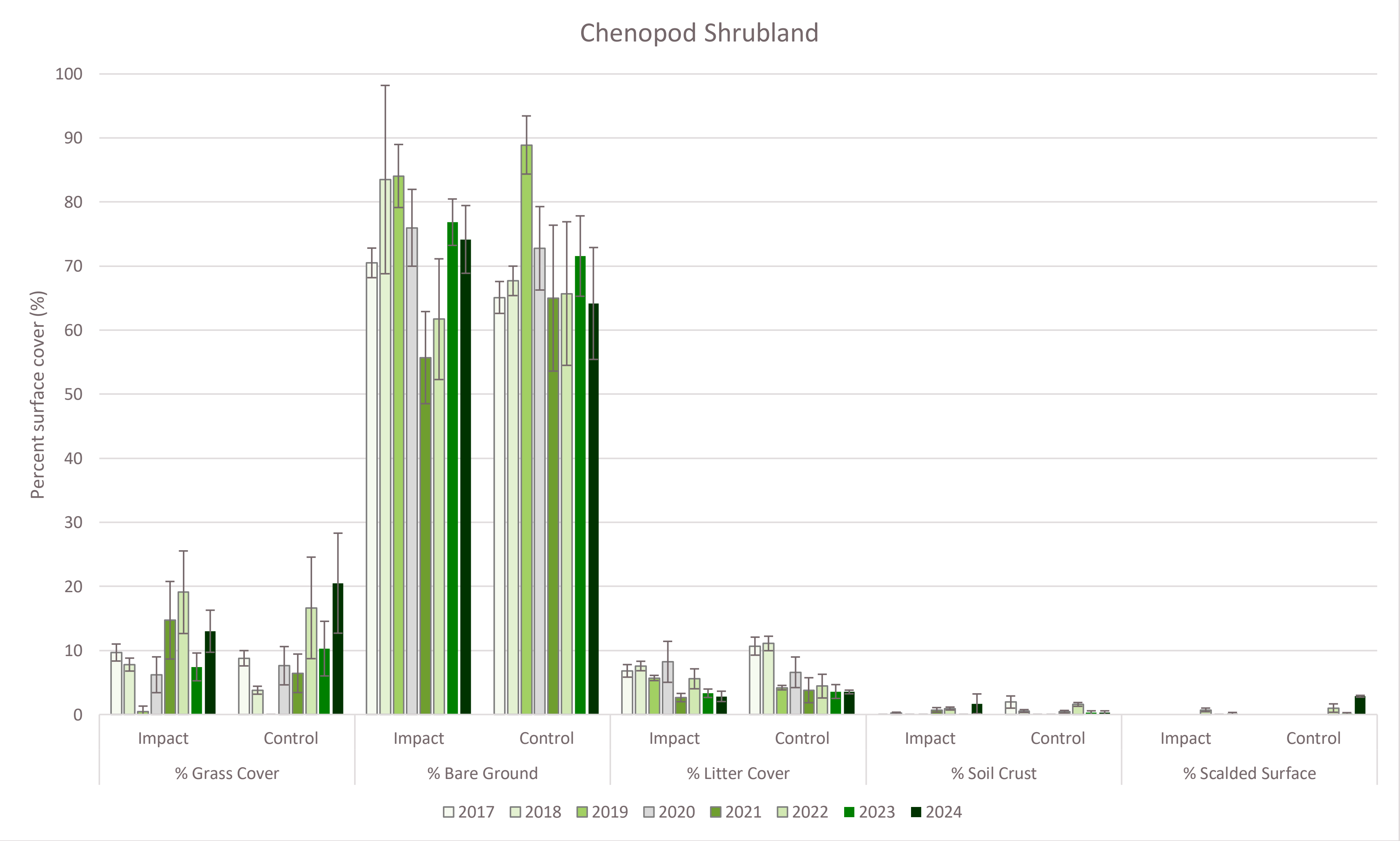

Figure 10: Mean percentage surface cover (%; ± SE) for Chenopod Shrubland across the 2017-2024 monitoring period

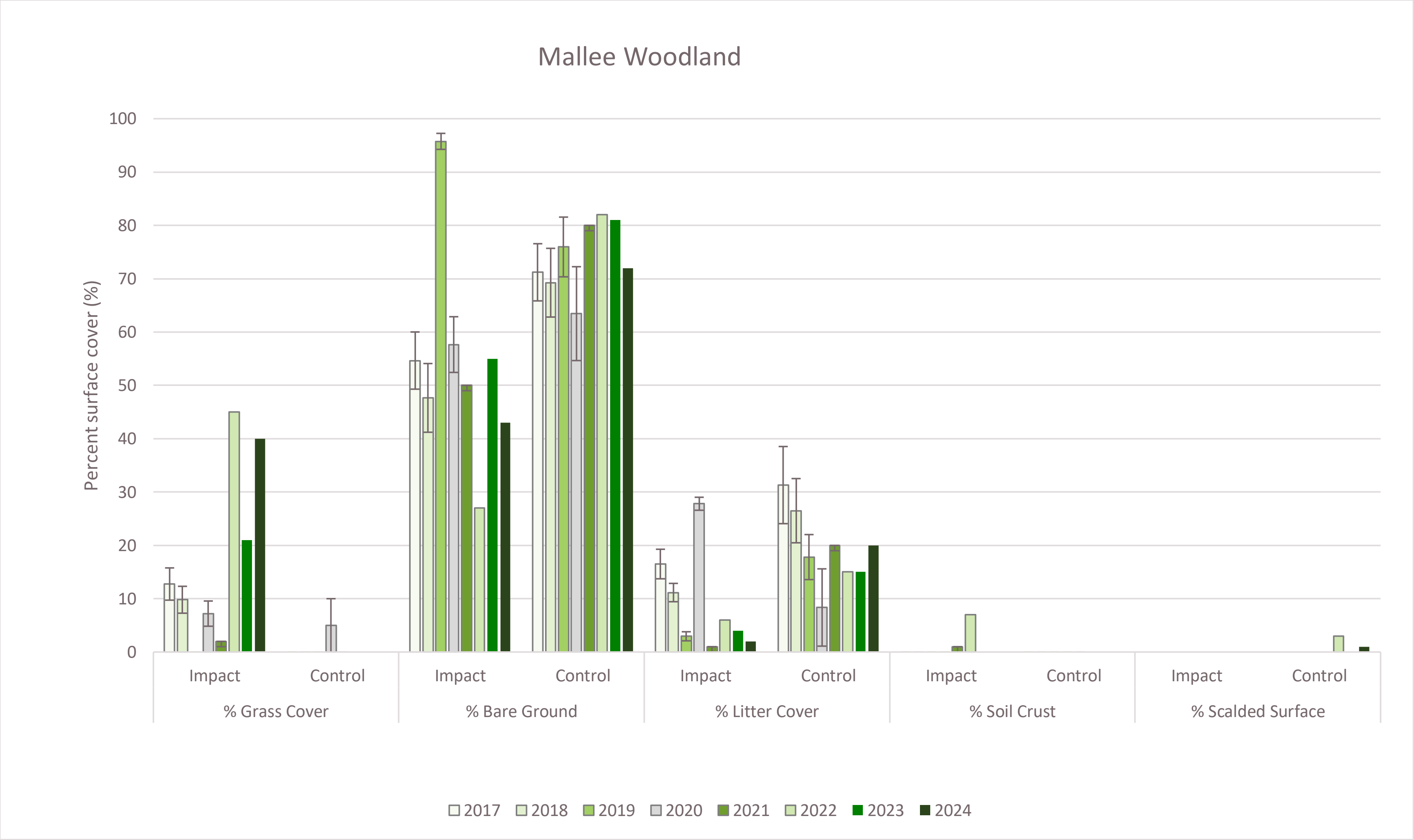

Figure 11: Mean percentage surface cover (%; ± SE) for Mallee Woodland across the 2017-2024 monitoring period

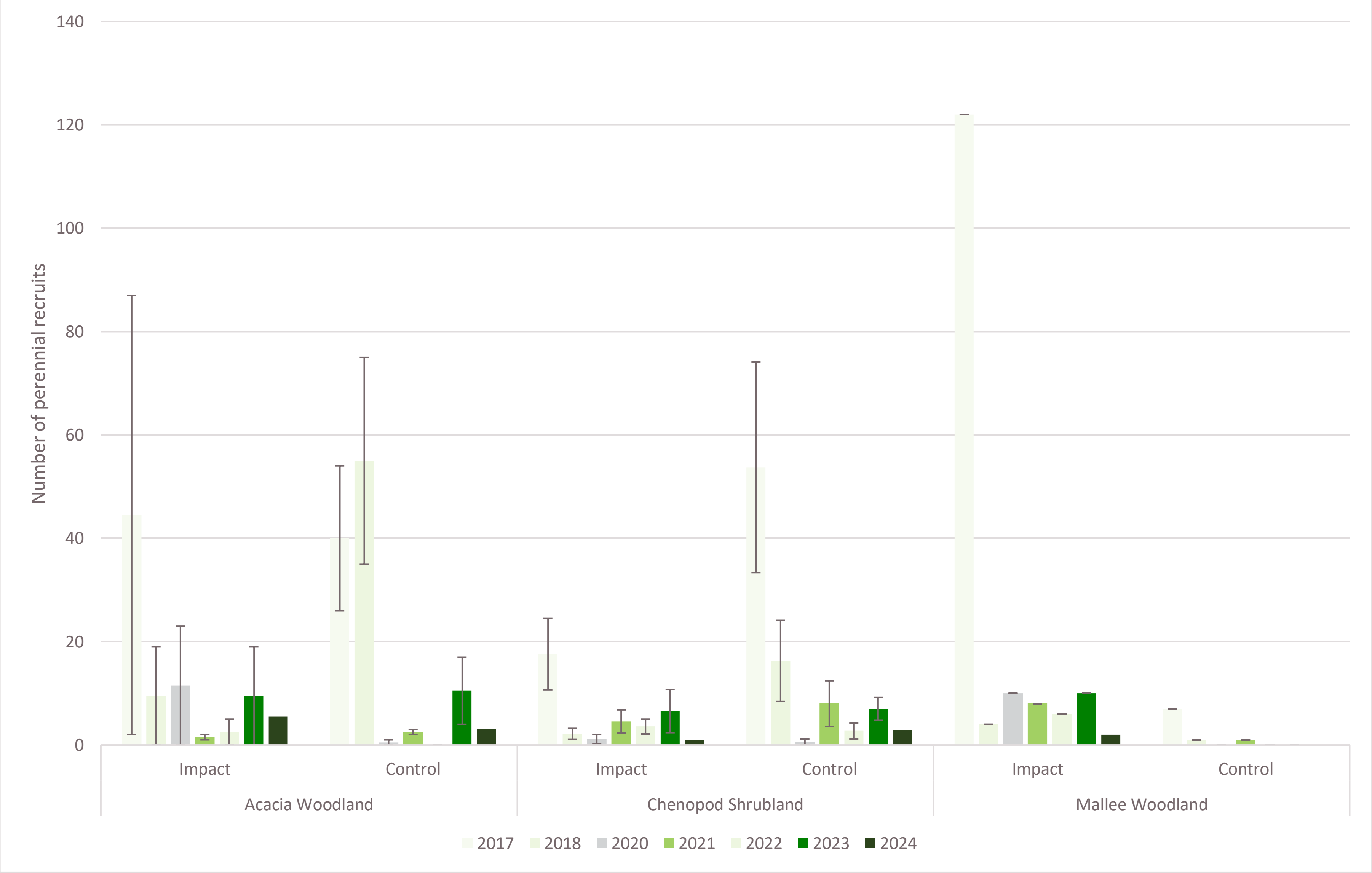

Figure 12: Mean number of perennial recruits recorded in each 2 m x 10 m subplot (2019 data unavailable)

3.1.6. Exotic flora and fauna and incidental observations

The remote cameras (deployed at PH01 and PH02) recorded multiple cat visits, with rabbits recorded in PH02 only (Figure 13and Table 6). No fauna were sighted by the camera at PH022.

Signs of rabbit activity were present at PH01, with warrens observed. However, cat scats were observed in most monitoring sites in 2024. In contrast, there was no sign of predator activity (cat and fox) recorded across any of the vegetation communities during the 2023 monitoring event, which is consistent with 2022 data.

Other observations are recorded in Table 6, including patches of *Malvastrum americanum* observed at most monitoring sites.

No trends regarding dust impacts were recorded in 2024 but should be continued to be monitored in future years. There were also no signs of recent land clearance or fire recorded in 2024.

Figure 13: Cat and rabbit sightings from remote camera deployment sites

Table 6: Other observational data recorded during the 2024 survey

Site	Vegetation type	Impact/ Control	Observations	Remote camera sightings
PH01	Chenopod Shrubland	Impact	*Oryctolagus cuniculus* warrens and *felis catus* scats present. Pitfall line caps in good condition and pose no danger to wildlife.	Multiple *felis catus* visits. One adult *Macropodidae* and one joey visit (sighted separately).
PH02	*Acacia* Woodland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	Multiple *felis catus* and *oryctolagus cuniculus* visits.
PH03	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH06	Chenopod Shrubland	Control	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH07	Mallee Woodland	Control	Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH10	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH11	Chenopod Shrubland	Control	*Felis catus* scats present. *Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH12	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH13	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No fauna present.*
PH15	Mallee Woodland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH16	Chenopod Shrubland	Control	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH17	Chenopod Shrubland	Control	*Felis catus scats present. Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH18	Chenopod Shrubland	Control	*Felis catus* scats present. *Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH19	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH20	Chenopod Shrubland	Control	*Felis catus* scats present. *Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH22	*Acacia* Woodland	Impact	*Felis catus* scats, *Dromaius novaehollandiae* scats and track, and large *Macropodidae* present. Pitfall line caps in good condition and pose no danger to wildlife.	No fauna sighted.
PH23	Chenopod Shrubland	Impact	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH24	*Acacia* Woodland	Control	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*

Site	Vegetation type	Impact/ Control	Observations	Remote camera sightings
PH25	Chenopod Shrubland	Control	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*
PH27	*Acacia* Woodland	Control	*Malvastrum americanum* present. Pitfall line caps in good condition and pose no danger to wildlife.	*No camera present.*

3.2. Weed monitoring

Each of the five monitoring sites consisted of five linear transects that were assessed for the presence of weeds. Of the five sites surveyed, *Malvastrum americanum* var *americanum* was the only exotic plant species observed as present in 2024 and was recorded at one of the five sites (Figure 14) . Since 2022, *Malvastrum americanum* var *americanum* has reduced in abundance at sites 1, 2, 4 and 5 but increased at site 3 (Figure 14).

Given weed sampling sites consist of fixed transects along the roadside it is difficult to infer trends observed in this area (2017-2024), i.e. reflective of current weed establishment and incursion of new and emerging weeds within the broader study area.

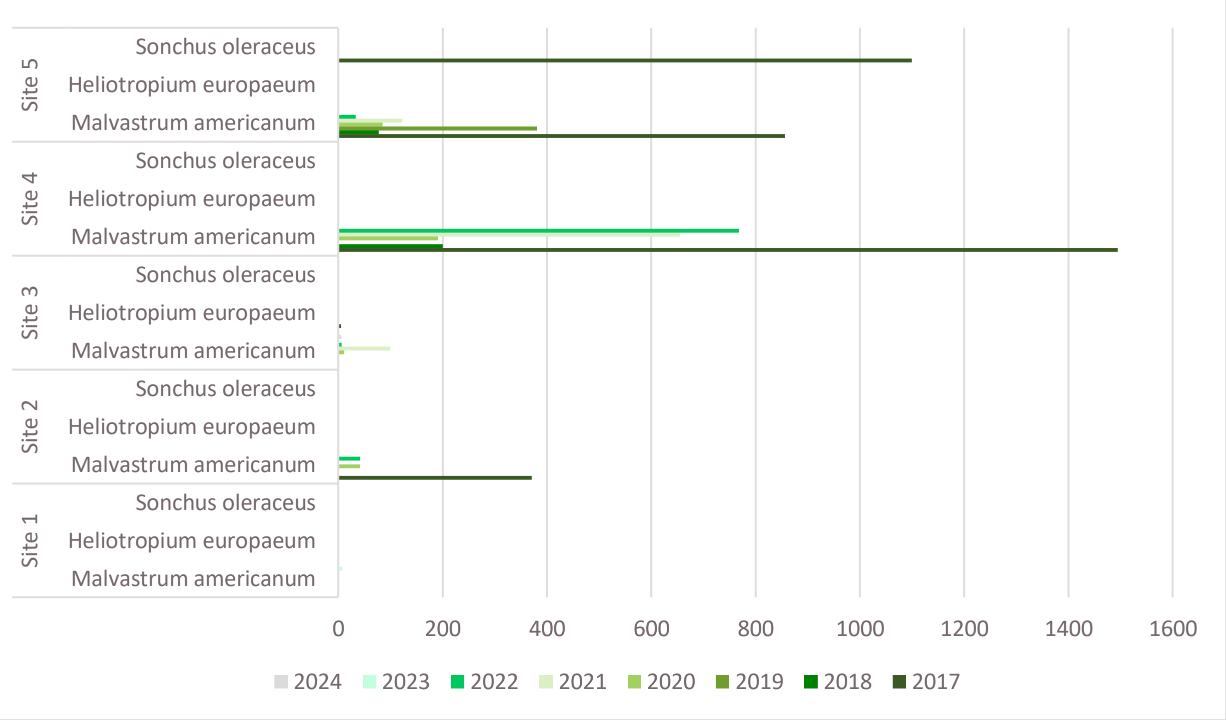

Figure 14: Weed abundance across the fine weed monitoring locations 2017-2024 surveys

4. Discussion

In the SAAL, rainfall is limited, and it is not uncommon to observe a bias with regard to species diversity and abundance following rainfall events in the South Australian Arid Lands. Rainfall at Prominent Hill in the 12 month period prior to field work (169.8 mm) is lower though similar to previous year averages of rain, with a mean annual rainfall of 200.2 mm in 2023 and a high 241.6 mm in 2022. In addition to monitoring bias, it is important to look solely at the perennial species as it is these which provide stability to grazing / disturbance systems due to their ability to persist during drier periods, consequently the measurement of plant attributes such as density and frequency of perennials, particularly those which are palatable, are important in understanding the plant dynamics and overall rangeland condition (DENR 2011).

Data from the 2024 monitoring event were compared with results from previous years and between impact and control sites to infer whether mining activities at Prominent Hill are influencing the ecological value of the vegetation communities within the study area.

Higher species numbers were recorded in 2024 (154) and 2023 (140 species) compared to previous years. This higher than average from 2023 and earlier is likely due to consistent rainfall averages leading up to the survey period, displaying arid-like conditions in which these species to recruit and establish. Nineteen of the 20 monitoring sites had a record of at least one new species, not previously been identified within those sites. The records are new to each site only and have previously been recorded within the mining lease area. This demonstrates that species within the mining lease area have continued to successfully recruit and spread seed, producing plants in new areas. Increased abundance in annual species diversity / richness were recorded at impact sites compared to control sites at Mallee Woodland with decreased numbers at impact sites for *Acacia* Woodland and Chenopod Shrubland sites though no significant difference was found between control and impact sites across the study area after statistical testing. Yearly comparisons between 2023 and 2024 showed an increase across all impact and control sites except Mallee Woodland impact sites which showed an average decrease. Although mean species diversity appears variable year to year, this is likely due to annual species fluctuations following continued and natural variable rainfall and climatic condition in the SAAL.

Yearly comparisons for perennial species richness showed a general increase from 2023 (101 species) to 2024 (153). In 2024, there was higher perennial species richness for impact sites compared to control sites for *Acacia* Woodland and Mallee Woodland. Chenopod Shrubland perennial species richness was lower at the impact sites compared to the control sites. No significant difference in total species richness was found between control and impact sites for any of the vegetation types in 2024, suggesting it is reasonable to attribute the variation between sites to random effects rather than impacts from Prominent Hill mining activities.

Higher average vegetation cover is shown for control sites compared to impact sites at *Acacia* Woodland and Chenopod Shrubland, with lower vegetation cover between control and impact at Mallee Woodland. There was no significant difference in perennial species cover between control and impact sites for any of the vegetation types in 2024 which suggests that it is reasonable to attribute the variation between sites to random effects rather than impacts from Prominent Hill mining activities. Average total vegetation cover across all quadrats decreased from 2023 to 2024. This decrease across all sites on average suggests that the ecosystem may have been impacted by environmental factors such as lower rainfall than the two previous years, however seasonal variability is normal. Although, the ecosystem still maintained consistent species richness between 2023 and 2024.

When comparing perennial density across control and impact, the Chenopod Shrubland and *Acacia* Woodland impact sites showed higher average perennial density than control sites for total, mature and juvenile perennials. Mallee Woodland had lower densities at impact sites than control sites for mature and remained the same for juvenile perennials. Comparatively and on average, total perennial density decreased from 2023 to 2024 for control sites in *Acacia* Woodland and Chenopod Shrubland, as well as control sites in Mallee Woodland. Total perennials generally increased in impact sites of *Acacia* Woodland and Chenopod Shrubland, as well as the control sites of Mallee Woodland. It is possible that perennial density showed an average decrease following low rainfall in early 2024 and resulted negatively on perennial species recruitment at this time compared to previous high rainfall years (2022-2023). A decline resulting from low rainfall is natural, as is an increase following higher rainfall. Fluctuations suggest effects of seasonal changes rather than direct impacts from Prominent Hill mining activities.

The 2024 data shows higher average native recruitment for impact sites than control sites across all three vegetation types. No significant difference was found between any vegetation type across control and impact sites in 2024. Overall, these results suggest it is reasonable to attribute the variation between control and impact sites to random effects for *Acacia* Woodland, Mallee Woodland and Chenopod Shrubland vegetation types. Mallee Woodland contained a significant correlation between site condition and native recruitment, with the control site having higher native recruitment than the impact site in 2023. However, in 2024the impact site increased from 2023 and contained similar results to the control site. When comparing native recruitment between years, increase in recruitment from 2023 to 2024 was observed at *Acacia* Woodland control and impact sites as well as Mallee Woodland impact sites. A decrease was seen in 2024 at *Acacia* Chenopod Shrubland control and impact sites, as well as Mallee Woodland control sites. No significant difference was found across sites and years for recruitment following statistical analyses.

High variability in coverage of grass, bare ground, litter, and crust between vegetation type and site condition was observed in 2024. Higher grass, soil crust and scalding covers were recorded in control sites within the *Acacia* Woodland sites. Higher grass, scalding and litter cover were recorded in control sites within Chenopod Shrublands. Higher bare ground, scalded and litter covers were recorded in control sites for Mallee Woodland. Comparatively, there was lower bare ground, scalded and litter cover in control sites within *Acacia* Woodland. Lower bare ground and soil crust was observed in control sites within Chenopod Shrublands, and lower grass cover was observed in control sites within Mallee Woodland. However, following statistical analyses, no significant difference was determined.

Perennial recruitment within the subplots for control versus impact shows lower average numbers for control sites within all vegetation types. No recruitment was occurring at control sites for Mallee Woodland whilst recruits increased by two at impact sites. Despite the variability, no significant difference was determined following statistical analyses. This suggests that it is reasonable to attribute the variation between sites to random effects rather than impacts from Prominent Hill Mining activities.

Highly variable data across 2023 and 2024 was observed with decreases across bare ground and litter cover for control and impact sites and soil crust for control sites within Chenopod Shrublands; decreased bare ground and, litter cover at control sites within *Acacia* Woodlands; decreased litter cover at impact sites and bare ground at control and impact sites within Mallee Woodland. No presence was detected of soil crust at both impact and control sites, scalded surface at impact sites and grass cover at control sites within Mallee Woodland vegetation. Grass cover was leading in consistency between 2023 and 2024 showing an increasing at control and impact sites across years for vegetational vegetation types except for control sites in the Mallee Woodland.

Data discrepancy should be noted due to differences in survey teams from year to year. Monitoring this criterion over the next two years will be important in determining whether this becomes a leading indicator of a reduction in habitat quality.

The survey period experienced no rainfall in both February and April and low rainfall in January (16 mm) and March (5.8 mm) 2024. The decrease in vegetation cover and perennial species in 2024 could result from low rainfall but did not impact the increased species richness and recruitments observed in 2024 (Hunter and Melville 1994).

Cat and fox predator activity in 2023 and 2024 was not present across all vegetation communities which would suggest successful pest management is occurring across the site. Although an increase in cat activity observed in 2024 suggests that predators should continue to be monitored for following years.

Land clearance, fire and dust impacts were not observed in 2024, consistent with 2022 and 2023.

The presence of weeds within the study area is difficult to ascertain from five roadside monitoring sites nearby to the mining operations however 2024 presents the smallest number of weeds across all monitoring years (2017 – 2024) and weed sites (weed site 3: 5 individuals). This can be attributed to the confirmed management of weeds within the mine site and along the haul road as well as within the village area. *Malvastrum americanum* var *americanum* (Malvastrum) was recorded across 17 of the 20 monitoring sites (PH02, PH03, PH06, PH10, PH11, PH12, PH13, PH15, PH16, PH17, PH18, PH19, PH20, PH23, PH24, PH25, PH27) (Table 6). Site PH11 and PH15 are new sites with *Malvastrum americanum* var *americanum* (Malvastrum) observed in 2024. Site PH01 had individuals recorded in 2023, though were not present in 2024. Of the 17 sites, six recorded higher cover in 2024 than 2023, with three the same cover and eight less than. It is important to note that the species is listed as a possible weed on the South Australian Census, but it is not a declared weed (eFlora 2020, PIRSA 2020). It should also be noted that both eFloraSA, the electronic taxonomic key of the Flora of South Australia and PlantNet, the online taxonomic key of the Flora of New South Wales, identify *Malvastrum americanum* var *americanum* (Malvastrum) as naturalised (eFloraSA 2007, PlantNET 2023).

The trends in data from 2017 to 2024 in vegetation and habitat compliance monitoring at Prominent Hill demonstrates that the condition of vegetation in arid systems fluctuates with rainfall. High rainfall before from 2020 has led to drastic improvements in most condition indicators for 2021 compared to the previous monitoring years, and these improvements have persisted into 2024 where rainfall more closely resembles the long-term mean. It is important to keep in mind the strong influence of rainfall in arid environments and how it can mask effects from other sources, for example grazing or mining. Regular annual vegetation monitoring over many years is required to smooth out climatic variation to enable detection of changes in vegetation condition due to other influences.

5. Conclusions

In conclusion, the objective to undertake monitoring at 20 permanent vegetation sites to assess potential changes in species diversity, vegetation cover, recruitment, perennial densities, the percentage of ground cover (grass, litter), bare ground and pest animal activity to determine if there have been any changes in the abundance or diversity of native vegetation or a reduction in habitat quality is considered to be met. The 2024 data does not indicate measurable loss of abundance or diversity of native vegetation, or reduction in habitat quality, within the ML in comparison to the control sites (mostly situated within the SEB offset area), and the vegetation condition observed within the ML area is in most cases consistent with observations made within the surrounding SEB offset areas.

The objective to undertake weed monitoring at five locations was met and it is considered there has been no introduction of new weed species. An increase in the abundance or distribution of existing species in 2024 has occurred, though only by one site, in comparison to last year. However, cover has decreased by one hundred percent at all other sites in 2024 though this is expected as *Malvastrum americanum* var *americanum* (Malvastrum) is known to be sensitive to rainfall and is typically found along drainage lines where water is naturally held (Western Australian Herbarium 1998).

There is no statistical indication that BHP Prominent Hill mine is negatively impacting vegetation and habitat condition from the results of this survey. Levels of native vegetation species abundance, richness, diversity and recruitment within impact sites do not indicate trends appreciably different from those measured within the control sites, across vegetation types.

A summary of the relevant compliance and outcome criteria contained within the PEPR is provided in Table 7, below and further demonstrates that the objectives of this survey, as presented in Section 1.2, have been met.

Table 7: Compliance summary of outcome criteria

Grouped condition number	Environmental outcome	Outcome measurement criteria details	Statement addressing the outcome measurement criteria	Outcome achievement	Leading indicator	Statement addressing the leading indicators
GC12	No loss of abundance or diversity of native vegetation, or reduction in habitat quality, on or off the Mining and or miscellaneous purposes lease areas during construction, operation as a result of mining activities unless prior approval under relevant legislation is obtained and environmental offsets are approved and in place.	Annual monitoring which consists of assessments undertaken at a series of permanent impact sites (adjacent to mining operations) and control sites (replicate sites remote from mining operations but within SEB) to enable comparison between potential mine related activities and seasonal variations. Habitat Quality Indicators including vegetation and soils (representing broader ecosystem function) to be monitored using the following methods: ○ 100 x 100 m vegetation quadrats (Biol. Survey Method) ○ 10 x 2 m sub plots within the vegetation quadrat ○ Panoramic photographs collected to aid in assessment of vegetation cover for recruitment.	The species diversity, vegetation cover and the percentage of species recruiting in 2024 remains high, compared to the historical data (2017-2023). Mallee Woodland had higher diversity at control sites than impact sites, and the opposite was true for *Acacia* Woodlands and Chenopod Shrublands in 2024. The percentage of vegetation cover was higher at control than impact sites for *Acacia* Woodland and Chenopod Shrublands. The percentage of native perennial species recruiting was higher for control sites than impact sites for *Acacia* Woodland and Chenopod Shrublands in 2024. Greater amounts of rabbit activity were observed at impact sites compared to control sites for all three vegetation types. ELA cannot confirm an approved Native Vegetation	Approved Native Vegetation Management Plan and SEB Offset in place. Our results do not indicate any clearance unapproved or otherwise to have occurred.	Indicators of habitat degradation, including: ○ Reduction of perennial species abundance (counts) at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. ○ Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods. If leading indicator triggered, implement targeted threatened bird surveys to confirm ongoing presence of Thick-billed Grasswren and Chestnut-breasted Whiteface within impacted sites.	The following observations have been made in relation to the leading indicator criteria: 1. The average total species diversity increased in 2024 compared to 2023. Native vegetation cover (abundance) has remained constant over the 2021-2024 period. 2. The proportion of species recruiting is higher at impact than control sites across all three vegetation types. 3. The amount of grass cover at all sites (except Mallee Woodland control site) has increased compared to 2023. 4. Bare ground cover has reduced in 2024 at all sites except for *Acacia* Woodland impact site.

Grouped condition number	Environmental outcome	Outcome measurement criteria details	Statement addressing the outcome measurement criteria	Outcome achievement	Leading indicator	Statement addressing the leading indicators
		○ Observational data to be collected at all sites including (but not limited to) vehicle tracks, erosion, vegetation clearing, distance to mine site, light, dust, inappropriate access, feral animals and weeds. ○ GIS output of approved clearance boundary and actual clearance boundary.	Management Plan and SEB Offset in place. Our results are not relevant to any clearance, unapproved or otherwise and the survey work did not include review of clearance boundaries. We understand BHP include this work in their annual reporting.			
GC13 GC14	Environmental offsets are approved and in place for all clearance of native vegetation	As above	As above	As above	Suppression of recruitment indicated by a reduction in recruitment index scores at impact sites without a corresponding reduction at control sites over three consecutive monitoring periods for Chenopod Shrubland. An increase in bare ground and/or scald/erosion % cover at impact sites without a corresponding reduction at control over three consecutive monitoring periods for *Acacia* Woodland.	As above

Grouped condition number	Environmental outcome	Outcome measurement criteria details	Statement addressing the outcome measurement criteria	Outcome achievement	Leading indicator	Statement addressing the leading indicators
					If leading indicator triggered, further assessment of detected impacts vs pre-mine condition by comparison with sites outside of SEB area required to determine non-compliance with lease condition. Annual review of vegetation clearance confirms all clearance has been approved.	
GC64	No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor sustained increase in abundance of existing weed or pest species in the licence area compared to adjoining land as a result of mining operations.	Annual review of records of weed monitoring and control (where required) demonstrate compliance with Section 3.4 of Stage Two SEB Area Management Plan as endorsed by the Native Vegetation Council.	Weed monitoring was completed in and outside of the ML. No new weed species were detected in the 2024 monitoring period across the five weed monitoring sites or at the 20 permanent vegetation monitoring sites. The abundance of *Malvastrum americanum* var *americanum* has reduced in abundance at all sites with no statistical difference observed. Remote cameras observed rabbit and cat activity at 2 of the 3 sites.		NA	NA

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Appendix A - 2024 Species Matrix

Table 8: Vegetative life stage key

Abbreviation	Definition
B	Budding
F	Flowering
I	Immature fruit
M	Mature fruit
V	Vegetative
D	Dead

Species Name	Common Name	Lifespan (Perennial / Annual)	Total Sites	PH01			PH02			PH03			PH06			PH07			PH10			PH11			PH12			PH13			PH15			PH16			PH17			PH18			PH19			PH20			PH22			PH23			PH24			PH25			PH27		
Abutilon fraseri ssp.		P	9				0.1	1	MD	0.01	0	XD													0.01	1	IF							0.01	1	V				0.01	0	V	0.01	1	M							0.01	1	X				0.01	0	V	0.01	1	XD
Abutilon halophilum	Plains Lantern-bush	P	13	0.2	1	VF							0.01	1	XD	0.01	1	D										0.01	1	VXD	0.01	0	D	0.01	1	MD	0.01	0	D				0.1	1	D	0.01	1	M	0.25	0	X	0.01	1	V				0.01	1	F	0.01	0	XD
Abutilon leucopetalum	Desert Lantern-bush	P	2																																					0.01	1	V																			0.01	0	D
Abutilon sp.	Lantern-bush	P	1																																																				0.01	1	XD						
Acacia aneura complex	Mulga	P	8				11	1	VF				0.5	0	M	0.025	1	V				0.01	1	V																									3	1	V				6	1	VR	0.01	1	VF	3	1	DR
Acacia oswaldii	Umbrella Wattle	P	2																														0.01	0	V							0.3	0	V																					
Acacia tetragonophylla	Dead Finish	P	14				3	1	X	0.2	1	X	0.5	0	VF	0.1	1	V										0.2	0	MR	0.01	0	V							4	1	V	5	0	X	0.5	1	X	3	1	V	0.5	1	X	5	1	XD	0.2	1	V	5	1	XRV
Acacia victoriae ssp. victoriae	Elegant Wattle	P	1																									1	1	V																																	
Alectryon oleifolius ssp. canescens	Bullock Bush	P	2							0.2	0	V																			0.1	0	V																														
Amyema fitzgeraldii	Pincushion Mistletoe	P	1																																					0.01	0	VB																					
Amyema maidenii ssp. maidenii	Pale-leaf Mistletoe	P	1				1	1	VF																																																						
Anemocarpa podolepidium	Rock Everlasting	P	1													0.01	0	X																																													
Arabidella trisecta	Shrubby Cress	P	5													0.01	0	D													0.1	1	VFX				0.01	0	DX	0.01	1	VFX							0.01	1	X												
Aristida capillifolia	Needle-leaf Three-awn	P	3				3	1	X																															0.3	1	M				0.2	1	XD															
Aristida contorta	Curly Wire-grass	P	19.66666667	17	1	VFX	1	1	X	0.1	1	VFX	5	1	XD	0.1	1	XD	0.1	1	XD	8	1	FMV	0.5	1	D		1	XD	0.1	1	MD	2	1	MD	10	1	XD	1	1	VXD	1	1	XD	0.3	1	MD	6	1	VD	1	1	XD	5	1	XD	4	1	XD	2	1	XD
Aristida holothera	Tall Kerosene Grass	P	1							0.01	0	D																																																			
Astrebla pectinata	Barley Mitchell-grass	P	5.666666667	0.0025		VXD							0.01	0	D							0.1	1	V				0.5	1	XD				1	1	MX																						0.01	0	D			
Atriplex quinii	Kidney-fruit Saltbush	P	18	0.1	1	V	0.01	0	V	0.01	0	V	0.02	1	MR				0.01	0	D	0.1	1	F	0.05	0	F	0.02	1	V	0.01	1	F	0.01	0	V	0.01	1	F				0.01	1	F	0.01	0	M	0.01	0	F	0.1	1	F	0.01	1	V	0.01	1	V	0.01	0	V
Atriplex vesicaria	Bladder Saltbush	P	19.33333333	10	1	V	4	1	V	5	1	F	3	0	F	0.5	1		0.3	1	VM	3	0	F	5	1	F		1	V	2	1	V	12	1	FM	8	1	F	30	1	VFM	2	0	V	8	1	F	0.1	1	F	3	1	V	20	1	VMR	7	1	F	4	1	MF
Austrostipa sp.	Spear-grass	P	1							0.01	1	MD																																																				
Boerhavia dominii	Tar-vine	P	7.666666667	0.1	1	V							0.01	0	MD													0.01	1	DM							0.01		D	0.01	1	XD				0.01	1	X	0.1	1	D							0.01	0	D			
Brachyscome ciliaris var. ciliaris	Variable Daisy	P	9							0.01	0	D	0.01	1	MD										0.01	0	F							0.01	1	X	0.01	1	X	0.01	0	X	0.01	1	D	0.01	1	X				0.01	0	D									
Calotis sp.		P	0																																																												
Chrysocephalum apiculatum	Common Everlasting	P	0																																																													
Chrysocephalum pterochaetum	Shrub Everlasting	P	0																																																													
Convolvulus remotus	Grassy Bindweed	P	16.33333333	0.01	1	V	0.01	1	M	0.01			0.01	1	MD				0.01	1	MD	0.1	1	X	0.5	1	MVFI	0.01	1	MD	0.01	1	M	0.01	0	MF	0.01	1	X				0.01	1	M	0.01	1	X	0.1	1	DF	0.01	1	MD	0.01	1	M				0.01	1	D
Cullen australasicum	Tall Scurf-pea	P	9	0.025	1	V	0.2	1	V																0.05	0	F	0.01	0	VX				0.01	0	D				0.01	1	VD	0.01	0	V							0.01	1	V							0.01	1	V
Cynanchum viminale ssp. australe	Caustic Bush	P	3																0.1	0	FI																0.01	0	V																			0.02	1	F			
Cyperus alterniflorus	Umbrella Flat-sedge	P	1				0.1	0	M																																																						
Digitaria brownii	Cotton Panic-grass	P	17	0.5	1	V	0.1	1	XD	0.01	0	D	0.1	1	XD				0.01	1	M	0.1	1	D	0.01	1	MD	0.01	1	X	0.01	1	XD	0.01	1	MD	0.1	1	X				0.01	1	XD	0.01	1	MD	0.1	1	X	0.1	1	XD	0.1	1	XD				1	1	M
Digitaria sp.	Summer-grass	P	0																																																												
Diplachne fusca ssp. muelleri	Brown Beetle-grass	P	1																																																									0.01	1	M
Dissocarpus paradoxus	Ball Bindyi	P	4	0.2	1	VFX							0.01	1	M													0.01	0	MD				0.01	0	MD																											
Einadia nutans ssp.	Climbing Saltbush	P	9				0.1	1	M																0.01	0	V	0.01	0	M										0.01	0	M	0.01	0	F				0.01	0	V	0.01	1	D	0.75	1	M				0.75	1	M
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	P	15	0.01	0	V	1	1	M	0.01	1	V	0.01	0	V	0.01	0	V				0.01	1	D	0.01	0	V				0.01	0	V							0.25	0	V	0.01	0	V	0.01	1	V	0.05	1	V	0.01	1	V	0.02	1	M				0.75	1	M
Enneapogon cylindricus	Jointed Bottle-washers	P	20	0.01	1	VF	3	1	MD	1	1	MD	0.5	1	VD	0.01	1	MD	0.2	1	MD	5	1	D	4	1	D	4	1	M	1	1	MX	1	1	MD	5	1	XD	10	1	MD	2	1	XD	0.5	1	MD	4	1	D	2	1	XD	8	1	XD	2	1	MD	0.5	1	XD
Enneapogon nigricans	Black-head Grass	P	1.666666667																			0.1	1	D							0.01		MX																														
Enteropogon acicularis	Umbrella Grass	P	9				0.01	1	D																0.01	0	MD	0.01	1	MD	0.01	0	MD	0.01	1	MD	1	1	X							0.01	1	MDX							0.01	0	MD	0.1	1	MD			
Eragrostis setifolia	Bristly Love-grass	P	8				0.2	1	XD				0.1	1	MD							0.01	1	D										0.01	1	M				0.25	1	MD													0.2	1	V	0.2	1	MD	0.01	1	MX
Eremophila latrobei ssp. glabra	Crimson Emubush	P	7.666666667	0.01		V	0.05	1	V													0.1	0	V				0.2	1	M													0.01	0	V				1	0	X	0.5	0	FM							0.01	0	M
Eremophila longifolia	Weeping Emubush	P	1																																														0.01	1	V												
Eremophila rotundifolia	Round-leaf Emubush	P	1.666666667																																																	0.5	0	FM				1		MR			
Eremophila serrulata	Green Emubush	P	8				0.05	0	V																															0.1	0	D	2	1	M	0.1	0	V	0.1	0	V	0.1	1	M	0.01	0	M				0.01	0	V
Eucalyptus socialis ssp. socialis	Beaked Red Mallee	P	1.666666667														0	M													2	1	VM																														
Frankenia serpyllifolia	Thyme Sea-heath	P	0																																																												
Glycine canescens	Silky Glycine	P	3																																					0.1	1	V													0.01	0	D				0.05	0	V
Goodenia fascicularis	Silky Goodenia	P	5				0.01	1	D				0.01	0	XD																			0.01	0	D				0.25	1	VFD													0.01	0	D						
Grevillea nematophylla ssp. nematophylla	Water Bush	P	1																												0.2	0	V																														
Gunniopsis zygophylloides	Twin-leaf Pigface	P	1													0.01	1	M																																													
Lawrencia squamata	Thorny Lawrencia	P	0																																																												
Leiocarpa leptolepis	Pale Plover-daisy	P	2																									0.01	0	D							0.01	0	F																								
Leiocarpa websteri	Narrow Plover-daisy	P	3				0.01	0	V				0.01	0	VDX																						0.01	1	F																								
Lotus cruentus	Red-flower Lotus	P	3.333333333	0.01																					0.01	0	V										0.5	0	V	0.01	1	V																					
Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe	P	4							0.05	0	FI													0.01	0	V													0.01	0	F				0.01	0	F															
Lysiana murrayi	Mulga Mistletoe	P	1				0.01	0	F																																																							
Maireana aphylla	Cotton-bush	P	9				0.05	1	VM				6	1	V							0.1	0	V				4	0	V													0.01	0.1	V							0.1	0	V	0.5	0	V	0.1	1	V	0.5	0	V
Maireana appressa	Pale-fruit Bluebush	P	1																															0.01	0	V																											
Maireana astrotricha	Low Bluebush	P	13	4	1	F	0.7	1	V	6	1	V				0.2	0	V	2	1	V				2	0	V				3	1	V				0.5	1	VM	3	0	V	0.01	0	V	1	0	V							0.5	0	V	0.4	0	V			
Maireana campanulata	Bell-fruit Bluebush	P	1																			0.75	0	MV																																							
Maireana coronata	Crown Fissure-plant	P	1																																																				0.01	0	V						
Maireana eriantha	Woolly Bluebush	P	4							0.1	1	M																0.01	0	V							0.01	0	V							0.01	0	M															
Maireana georgei	Satiny Bluebush	P	5																									0.02	0	V	0.01	0	V							0.01	0	V	0.01	1	V							0.7	0	V									
Maireana integra	Entire-wing Bluebush	P	15	0.5	0	VM	0.5	0	V	0.2	1	M				0.01	0	V	0.05	0	V				0.1	1	V				0.01	1	V	0.05	1	V	0.05	1	V	0.1	1	V				0.01	0	V				0.1	0	V	1	1	V	0.75	0	V	0.01	0	MF
Maireana lobiflora	Lobed Bluebush	P	0																																																												
Maireana pentatropis	Erect Mallee Bluebush	P	3				0.01	0	V							0.05	0	V													0.1	1	V																														
Maireana pyramidata	Black Bluebush	P	7.666666667	0.5	0	V				7	1	MF							3	0	V				6	0	F	3	0	V										0.5		V				0.01	0	V				3	1	V									
Maireana sedifolia	Bluebush	P	0																																																												
Maireana spongiocarpa	Spongy-fruit Bluebush	P	0																																																													
Maireana trichoptera	Hairy-fruit Bluebush	P	4													0.01	0	V	0.01	0	V							0.01	0	V																0.01	0	V															
Maireana triptera	Three-wing Bluebush	P	8				0.01	0	V				0.01	0	V													0.01	0	V				0.01	0	V							2	0	V							3	1	V	1	0	V				0.01	0	M
Maireana turbinata	Top-fruit Bluebush	P	4							0.1	1	M																						0.1	0	M							0.1	0	V	0.1	0	V															
Malvastrum americanum var. americanum	Malvastrum	P	16.33333333				1	1	M	0.6	1	MG	1	1	MD				0.01	1	M	0.5	1	M	2	1	MD		1	MD	0.1	1	MD	0.5	1	M	0.2	1	M	0.5	1	M	0.2	1	M	0.5	1	M				2	1	M	10	1	MD	1		MD	1	0	MD
Malva weinmanniana	Australian Hollyhock	P	1																						0.01	1	MD																																				
Marsilea drummondii	Common Nardoo	P	7				0.25	1	MD				0.4	1	MD							0.01	1	MD				0.2	1	MD										0.01	0	MD													0.2	0	D				0.5	1	D
Minuria cunninghamii	Bush Minuria	P	12	0.01	1	VD	0.1	1	X				0.01	0	D							0.001	0	V	0.5	1	XD							0.01	1	X				0.1	0	D	0.01	0	VX	0.05	1	X				0.01	1	XD	0.1	1	XD	0.01	0	D			
Minuria leptophylla	Minnie Daisy	P	5										0.1	0	D							0.01	0	D				0.05	0	D				0.01	1	XD	0.5	1	XV																								
Minuria integerrima	Smooth Minuria	P	2							0.1	1	XD																												0.1	0	DX																					
Neobassia proceriflora	Desert Glasswort	P	2										0.01	1	M													0.01	1	MD																																	
Neurachne munroi	Window Mulga-grass	P	0																																																												
Osteocarpum dipterocarpum	Two-wing Bonefruit	P	4							0.01	1	V													0.01	0	V																			0.2	0	M										0.01	0	M			
Oxalis perennans	Native Sorrel	P	1																																					0.01	0	V																					
Panicum decompositum var. decompositum	Native Millet	P	11.66666667	0.0025	0	VDX	0.01	0	V				0.01	1	D				0.01	1	D	0.1	0	D				0.01	1	D				0.5	1	X	0.025		D	0.1	1	VD	0.01	1	MD							0.01	0	XD							1.5	1	XD
Pittosporum angustifolium	Native Apricot	P	13	0.1	1	V	0.5	1	V	0.1	1	MXR	0.1	1	V	0.3	1	V	0.05	1	V				0.1	0	V				0.05	1	V	0.2	0	V				0.5	1	M	0.1	0	V	0.3	1	M				1	1	MX									
Ptilotus obovatus	Silver Mulla Mulla	P	19.66666667	4	1	VF	8	1	F	3	1	F	3	1	F	0.01	0	M	1	1	M	1	1	M	2	1	F	0.05	0	V	0.75	1	MF	0.2	1	M	0.5	1	X	3	1	M	1	1	F	0.5	1	M	2	1	M		1	F	2	1	M	2	0	F	1	1	F
Rhagodia spinescens	Spiny Saltbush	P	17.66666667	1	0		3	1	FM	0.1	1	F	0.5	0	F	0.01	1	F	0.01	1	V				0.5	0	F	0.5	0	V	0.01	0	V	2	1	F	0.05	0	F	3	0	V	0.2	0	F	0.25	0	F				0.75	1	F	2	0	F	0.2	0	F	2	0	F
Roepera aurantiaca ssp. aurantiaca	Shrubby Twinleaf	P	1																												0.01	0	V																														
Roepera crassissima	Thick Twinleaf	P	1													0.01	0	M																																														
Santalum acuminatum	Quandong	P	2				0.1	1	DIV																																								0.1	0	V												
Santalum lanceolatum	Plumbush	P	5													0.1	1	V							0.5	1	VM													1	0	VS													0.25	1	VIM				3	1	FMI
Sclerolaena brachyptera	Short-wing Bindyi	P	4																						0.01	1	M	0.1	1	M	0.01	0	V													0.1	1	M															
Scaevola spinescens	Spiny Fanflower	P	0																																																												
Sclerolaena diacantha	Grey Bindyi	P	17	0.01	1	V	0.2	0	M	0.1	1	M	0.01		MV	0.01	0	M				0.1	1	M	0.1	1	M	0.01	1	M	0.01	1	M					0.1		0.1	1	m	0.2	1	M	0.01	1	M	0.5	1	M	0.01	1	M	0.2	1	M	0.1	1	M	0.2	1	VM
Sclerolaena divaricata	Tangled Bindyi	P	13.66666667				0.01	1	M	0.1	1	M	0.1	1	M				0.01	0	M	0.5	0	V	0.1	0	M	0.25	1	M				0.01	1	I							0.2	1	MD				0.1	1	M	0.2	1	M	0.1	0	M	2		MD	0.1	1	M
Sclerolaena eriacantha	Silky Bindyi	P	8	0.71	1	M	0.01	1	V																			0.01	1	M				0.01	0	M	0.01	1	X	0.1	1	I	0.01	1	M										0.01	1	M						
Sclerolaena lanicuspis	Spinach Bindyi	P	15	0.1	1	MRI				0.01	1	M	0.2	1	M	0.01	1	M	0.01	0	M	0.1	1	M				0.01	1	V	0.01	0	V	0.02	1	M	0.01	1	F							0.2	0	D				0.01	1	M	0.5	1	M	0.1	1	M	0.01	1	V
Sclerolaena obliquicuspis	Oblique-spined Bindyi	P	0																																																												
Sclerolaena patenticuspis	Spear-fruit Bindyi	P	2										0.01	0	VI	0.01	1	M																																													
Sclerolaena tricuspis	Three-spine Bindyi	P	2				0.01	0	M																									0.01	0	MD																											
Senecio lanibracteus	Inland Shrubby Groundsel	P	11	0.1	1	V	0.5	1	X	0.6	1	F	0.05	1	VFX				0.01	0	V				0.5	1	FM							0.01	0	D	0.01	1	XV	0.01	1	X	0.02	0	V	0.01	0	X															
Senna artemisioides ssp. filifolia	Fine-leaf Desert Senna	P	1																																					0.01	0	V																					
Senna artemisioides ssp. helmsii	Blunt-leaf Senna	P	2																			0.1	0	M																																					0.01	1	V
Senna artemisioides ssp. X artemisioides	Silver Senna	P	8				0.2	1	V																			0.1	0	V	0.01	1	V										4	1	V	1	1	X	2	1	VM				0.01	1	R				1	1	M
Senna artemisioides ssp. X sturtii	Grey Senna	P	2																																		1	1	VXS																						3	1	M
Setaria constricta	Knotty-butt Paspalidium	P	10.66666667				0.01	1	MD										0.01		MD				0.5	1	MD	0.01	1	MD	0.01	1	X	0.01	0	MD	0.1	1	F	0.01	1	MD				0.01	1	MD							0.01	0	V				0.01	1	DX
Sida fibulifera	Pin Sida	P	19.66666667	0.2	1	V	0.2	1	IV	0.1	0	X	0.01	1	MD	0.01	0	X	0.01	1	VD	0.1	1	V	0.11	1	X	0.01	0	MD	0.01	1	X	0.05	1	M	0.2	1	X		1	M	0.2	1	X	0.1	1	X	0.1	1	X	0.2	1	X	0.1	0	X	1	1	M	2	1	X
Sida intricata	Twiggy Sida	P	15	0.2	1	V	0.01	1	X	0.1	1	X	0.05	0	VMF				0.01	1	V										0.01	0	X	0.01	0	X	0.05	1	x	0.1	0	M	0.01	0	D	0.01	0	X				0.01	1	X	0.01	0	V	0.01	0	V	0.01	0	X
Sida petrophila	Rock Sida	P	4																0.03	1	V										0.01	1	X																			0.01	1	V				0.02	1	V			
Sida sp.	Sida	P	0																																																												
Sida spodochroma		P	3																																					0.1	1	V				0.01	0	X				0.01	1	M									
Solanum petrophilum	Rock Nightshade	P	1																												0.01	1	V																														
Solanum quadriloculatum	Plains Nightshade	P	20	0.01	0	V	0.01	0	M	0.01	0	VF	0.01	1	D	0.01	1	V	0.01	0	V	0.01	1	D	0.01	0	VM	0.01	1	V	0.01	1	V	0.01	1	F	0.1	1	v	0.01	1	M	0.01	0	V	0.01	1	V	0.1	1	FD	0.11	0	M	0.05	1	MDF	0.01	0	FM	0.01	1	MF
Solanum sp.	Nightshade/Potato-bush	P	1																																																	0.01	0	V									
Swainsona campylantha		P	0																																																												
Swainsona phacoides	Dwarf Swainson-pea	P	0																																																												
Swainsona sp.	Swainson-pea	P	2										0.01	1	FD																						0.01	1	v																								
Tecticornia pergranulata ssp.	Black-seed Samphire	P	3													0.5	0	V													0.01	0	V													2	0	V															
Teucrium racemosum	Grey Germander	P	1																																					0.01	1	M																					
Tribulus eichlerianus	Eichler's Caltrop	P	2																									0.01	1	MD																			0.1	1	FD												
Vittadinia gracilis	Woolly New Holland Daisy	P	6							0.5	1	F							0.01	0	1				0.01	1	MF				0.01	0	F				0.5	1	FDX							0.2	1	MD															
Eragrostis brownii		P	0																																																												
Eriochiton sclerolaenoides		P	0																																																												
Pterocaulon sphacelatum		P	0																																																												
Vittadinia muelleri		P	0																																																												
Acacia sp.		P	2.666666667										0.5	0	VFM																																											0.01		RV	0.01	0	M
Rhagodia ulicina		P	1													0.01	1	F																																													
Minuria sp.		P	2													0.01	0	X																															0.01	0	D												
Lotus australis		P	1																															0.01	0	V																											
Dissocarpus biflorus	Twin Flower Saltbush	P	3																															0.01	0	V	0.01	1	F																			0.01	0	M			
Podaxis pistillaris	Fungus ssp.	P	1																																		0.01	1	0																								
Brachyscome sp.		P	1																																											0.01	1	F															
Cullen sp.		P	1																																														0.1	1	V												
Amyema preissii		P	1																									0.01	1	XD																																	
Hibiscus sp.		P	1																																																							0.01	0	X			
Sisymbrium sp.		AP	1																																																										0.01	1	DX
Crassula sp.		AP	1																																																										0.01	1	D
Alternanthera angustifolia	Narrow-leaf Joyweed	A	4							0.01	0	X																												0.01	1	D													0.01	1	DM				0.01	1	XD
Alternanthera denticulata	Lesser Joyweed	A	2				0.02	1	VD													0.01	1	D																																							
Atriplex angulata	Fan Saltbush	A	0																																																												
Atriplex crassipes var. crassipes		A	2.666666667	0.01		SFIV																			0.01	0	MF	0.05	1	D										0.01	1	VM																					
Atriplex fissivalvis	Gibber Saltbush	A	0																																																											
Atriplex holocarpa	Pop Saltbush	A	5							0.01	1	M										0.05	1	D										0.01	0	VM																						0.01	0	MD	0.01	1	D
Atriplex spongiosa	Pop Saltbush	A	1																																											0.01	1	M															
Brachyscome eriogona		A	2																									0.01	1	D																															0.01	1	F
Calotis hispidula	Hairy Burr-daisy	A	1																									0.01	1	MD																																	
Calotis multicaulis	Woolly-headed Burr-daisy	A	0																																																												
Centipeda thespidioides	Desert Sneezeweed	A	6							0.01	1	MD										0.1	1	D				0.05	1	MD				0.01	1	MD																			0.2	1	DX				0.01	1	D
Chloris pectinata	Comb Windmill Grass	A	2							0.01	1	MD																0.1	1	DX																																	
Dactyloctenium radulans	Button-grass	A	6										0.01	0	D																			0.2	1	MD	0.01	1	XD	0.01	1	MD													0.01	1	DX				0.05	1	DX
Daucus glochidiatus	Native Carrot	A	0																																																												
Dysphania sp.	Crumbweed/Rat Tails	A	0																																																												
Enneapogon avenaceus	Common Bottle-washers	A	11.33333333	0.5	1	V	1	1	XD							0.2	1	X							0.01	1	D	1			0.1	1	M	1	1	XD	0.1	1	XD	2	1	MD	0.5	1	XD										2	1	XD	0.5	1	MD			
Enneapogon polyphyllus	Leafy Bottle-washers	A	18	0.1	1	V	0.1	1	XD	0.1	1	DX	0.5	1	VD	0.01	1	MD	0.1	1	X	8	1	D	2	1	XD	0.2	1	MD	0.1	1	X	1	1	XD	0.2	1	X				0.2	1	XD	0.01	1	XD	1	1	D	0.2	1	XD	3	1	XD				0.5	1	XD
Eragrostis dielsii	Mulka	A	1				0.01	0	MD																																																							
Eragrostis leptocarpa	Drooping Love-grass	A	3										0.05	1	XD													0.5	1	MD																									0.01	0	D						
Eragrostis sp.	Love-grass	A	0																																																												
Erodium carolinianum	Clammy Heron's-bill	A	0																																																													
Erodium sp.	Heron's-bill/Crowfoot	A	0																																																												
Euphorbia drummondii group		A	8				0.01	1	F				0.01	0	D										0.01	0	DX	0.01	0	F	0.01	1	FM	0.02	0	D	0.01	1	F	0.01	1	V																					
Euphorbia tannensis ssp. eremophila	Desert Spurge	A	3																			0.01	0	M																			0.01	0	M													0.01	0	VB			
Gnephosis arachnoidea	Spidery Button-flower	A	14	0.01	1	VF	0.01	0	D	0.01	0	D	0.01	0	D							0.01	0	D				0.01	0	D				0.01	0	D	0.01	0	D				0.01	1	D	0.01	1	MD				0.01	0	D	0.01	0	D	0.01	0	D	0.01	0	D
Heliotropium europaeum	Common Heliotrope	A	0.333333333				0.1																																																								
Iseilema vaginiflorum	Red Flinders-grass	A	7										0.01	0	D							0.01	1	D				0.05	1	D				0.05	1	X				0.01	1	VX																0.01	0	D	0.01	0	D
Lepidium phlebopetalum	Veined Peppercress	A	7				0.01	1	D				0.01	1	D													0.01	1	MD				0.01	0	MD							0.01	1	D				0.01	0	D	0.01	1	D									
Pelargonium sp.	Storks-bill	A	0																																																												
Pimelea simplex ssp.	Desert Riceflower	A	0																																																												
Plantago cunninghamii	Clay Plantain	A	6.666666667										0.01		XD													0.01	0	MD				0.01	1	D	0.01	0	D	0.025	1	V																0.01	1	D	0.01	1	XD
Portulaca oleracea	Common Purslane	A	1																																														0.01	1	X												
Ptilotus nobilis ssp.		A	3				0.001	0	D																									0.01	0	D	0.0025	0	DX																								
Pseudognaphalium luteoalbum	Jersey Cudweed	A	0																																																												
Ptilotus gaudichaudii	Paper Fox-tail	A	2																									0.01	1	DX													0.01	0	DX																		
Rhodanthe floribunda	White Everlasting	A	1																									0.01	0	FD																																	
Rhodanthe charsleyae		A	2																									0.01	0	D																									0.01	0	D						
Rhodanthe corymbiflora	Paper Everlasting	A	1																									0.01	0	D																																	
Rhodanthe stricta	Slender Everlasting	A	2																																																				0.01	0	D				0.01	1	D
Roepera apiculata	Pointed Twinleaf	A	4													0.1	1	V													0.01	1	V							0.1	1	VF				0.01	0	D															
Rhodanthe uniflora	Woolly Daisy	A	2										0.01	0	MF																																														0.01	1	D
Salsola australis	Buckbush	A	19.33333333	0.2	1	DV	1	1	M	0.25	1	M	0.5	1	MF	0.01	1	M	0.25	1	MD	0.5	1	D	0.5	1	M	0.01	1	D	0.1	1	M	0.25	1	M	0.1	1	F		1	FM	0.2	1	M	0.1	1	MD	0.05	1	D	0.2	1	DMI	0.01	1		0.2	1	D	0.5	1	M
Roepera ovata	Dwarf Twinleaf	A	0																																																												
Sisymbrium erysimoides	Smooth Mustard	A	0																																																												
Sonchus oleraceus	Common Sow-thistle	A	0																																																												
Synaptantha tillaeacea var. tillaeacea		A	0																																																												
Tetragonia tetragonoides	New Zealand Spinach	A	2																												0.01	1	M				0.01	1	F																								
Trianthema triquetrum	Red Spinach	A	8										0.01	1	M				0.01	1	M				0.01	1	M	0.02	1	D																			0.01	1	M	0.01	1	M				0.01	1	XD	0.01	1	M
Trigonella suavissima	Sweet Fenugreek	A	0																																																												
Tripogonella loliiformis	Five-minute Grass	A	14	0.01	1	XV	0.01	0	D	0.01	1	MD				0.01	1	V	0.01	0	MD	0.3	0	D	0.01	1	MD	0.01	0	DM				0.01	0	DM							0.01	1	VD	0.1	0	MD				0.01	1	MD				0.01	1	MX	0.01	1	MD
Urochloa praetervisa	Large Arm-grass	A	1																									0.2	1	DX																																	
Vittadinia cuneata var.	Fuzzy New Holland Daisy	A	0																																																												
Chenopodium		A	0																																																												
Malacocera tricornis		A	0																																																												
Chenopodium curvispicatum		A	0																																																												
Lepidium sp.		A	1																			0.01	0	D																																							
Tripogonella sp.		A	1																																					0.01	1	DX																					
				Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	LiFe STage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage	Cover %	Recruits	Life Stage
	Total Species		**154**	**35**			**56**			**41**			**49**			**32**			**29**			**36**			**40**			**59**			**43**			**50**			**44**			**53**			**42**			**46**			**31**			**41**			**46**			**41**			**55**		
	Sum Cover			**40.45**			**45.621**			**25.87**			**23.03**			**2.385**			**7.35**			**29.011**			**27.79**			**16.7**			**10.08**			**22.45**			**28.9875**			**61.215**			**21.44**			**16.54**			**24.03**			**19.55**			**68.96**			**23.09**			**34.21**		
	Proportion Recruiting				**71%**			**70%**			**71%**			**55%**			**59%**			**59%**			**64%**			**58%**			**64%**			**63%**			**56%**			**73%**			**68%**			**57%**			**61%**			**74%**			**78%**			**61%**			**49%**			**73%**	
	Reproductive Number					**18**			**42**			**36**			**45**			**19**			**19**			**29**			**32**			**45**			**23**			**42**			**38**			**36**			**29**			**37**			**23**			**30**			**37**			**33**			**48**
	Proportion Reproductive					**51%**			**75%**			**88%**			**92%**			**59%**			**66%**			**81%**			**80%**			**76%**			**53%**			**84%**			**86%**			**68%**			**69%**			**80%**			**74%**			**73%**			**80%**			**80%**			**87%**
	Total Perennial Species			**29**			**45**			**33**			**38**			**27**			**25**			**26**			**33**			**38**			**37**			**37**			**35**			**44**			**34**			**40**			**26**			**35**			**36**			**32**			**40**		
	Sum Cover Perennial			**39.62**			**43.35**			**25.46**			**21.9**			**2.055**			**6.98**			**20.011**			**25.24**			**14.41**			**9.75**			**19.86**			**28.535**			**59.03**			**20.49**			**16.3**			**22.95**			**19.11**			**63.69**			**22.32**			**33.04**		

Appendix B – Floristic Monitoring sites and panoramic photographs

Site ID	Vegetation Community	Type	Northwest corner	
			Latitude	Longitude
PH01	Chenopod Shrubland	Impact	29.71758652S	135.52812195E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH02	*Acacia* Woodland	Impact	29.71266747S	135.59562683E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH03	Chenopod Shrubland	Impact	29.69483376S	135.57168579E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH06	Chenopod Shrubland	Control	29.74950446S	135.52990631E


2019


2020


2021


2022


2023


2024

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH07	Mallee Woodland	Control	29.68139458S	135.57141113E


2019


2020


2021


2022


2023


2024

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH10	Chenopod Shrubland	Impact	29.701975S	135.593815E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH11	Chenopod Shrubland	Control	29.73239136S	135.51400757E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH12	Chenopod Shrubland	Impact	29.72888651S	135.55339703E


2019


2020


2021


2022


2023


2024

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH13	Chenopod Shrubland	Impact	29.74042511S	135.59289551E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH15	Mallee Woodland	Impact	29.69200524S	135.59357799E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH16	Chenopod Shrubland	Control	29.71088982S	135.61737061E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH17	Chenopod Shrubland	Control	29.68013382S	135.52932739E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH18	Chenopod Shrubland	Control	29.68750763S	135.55403137E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH19	Chenopod Shrubland	Impact	29.71213913S	135.55108643E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH20	Chenopod Shrubland	Control	29.68099976S	135.61598206E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH22	*Acacia* Woodland	Impact	29.7509861S	135.55839539E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH23	Chenopod Shrubland	Impact	29.70710564S	123.55673218E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH24	*Acacia* Woodland	Control	29.76878357S	135.53315735E

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH25	Chenopod Shrubland	Control	29.75158433S	135.52481204E


2019


2020


2021


2022


2023


2024

Site ID	Vegetation Community	Type	North west corner	
			Latitude	Longitude
PH27	*Acacia* Woodland	Control	29.75692749S	135.55107117E

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Appendix D. Tailing Storage Facility 2023 Operational Review (WSP Golder 2024)

BHP Prominent Hill Pty Ltd

Tailings Storage Facility 2023 Operational Review

Prominent Hill Operations

JUNE 2024

CONFIDENTIAL

Question today
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Tailings Storage Facility 2023 Operational Review
Prominent Hill Operations

BHP Prominent Hill Pty Ltd

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REV	DATE	DETAILS
Rev A	19 March 2024	Draft
Rev 0	9 May 2024	Final
Rev 1	5 June 2024	Final

	NAME	DATE	SIGNATURE
Prepared by:	Brad Tiver	5 June 2024	
Reviewed by:	Thomas Hills	5 June 2024	
Approved by:	Brad Tiver	5 June 2024	

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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1 Project background

1.1 General

BHP has engaged WSP to undertake the annual operational review of the Tailings Storage Facility (TSF) at the Prominent Hill operation as part of the Engineer of Record (EoR) roles and responsibilities. This review period covers 1 January 2023 to 31 December 2023, following an inspection of the facility undertaken on 9 January 2024.

The Prominent Hill copper-gold mine is located approximately 650 km north-west of Adelaide, 100 km south-east of Coober Pedy and 150 km north-west of Roxby Downs in northern South Australia.

The Prominent Hill TSF is located within the southern Waste Rock Dump (WRD) and hence is referred to as an Integrated Waste Landform (IWL), with waste rock in place around the full perimeter of the facility. Under this design, continued staged construction of future embankment lifts takes place in the downstream direction, and hence raising the embankment does not rely on the strength nor the rate of rise of the deposited tailings.

The TSF is a singular circular cell within the IWL and contains tailings generated from the processing of ore from open pit and underground mines. The TSF has an average diameter of ~1,750 m and occupying storage surface area of approximately 243 ha. The containment embankments are constructed of waste rock and integrated with the southern WRD. A plan view of the site, showing the IWL and the general arrangement of the TSF and its ancillary facilities, is presented in Figure 1.1.

The Prominent Hill operation comprises an open pit (no longer being mined) and underground mine, a processing plant, as well as an accommodation village, airstrip, and associated infrastructure (not shown in Figure 1.1), covering an area of approximately 78.5 km^2. The mine is located on Mining Lease (ML) 62287 and commenced operations in August 2006.

Commentary in this report is based on the review of information and data provided by BHP, as well as observations made during a site inspection of the TSF carried out on 9 January 2024.

1.2 Purpose

The purpose of this annual review was to consider whether the TSF was operated in accordance with the relevant documentation during the review period and to provide commentary and advice for ongoing safety management and storage efficiency of the facility to report against the Outcome Measurement Criteria (OMC) outlined in the Program for Environment Protection and Rehabilitation (PEPR) (OZ Minerals, 2022). BHP will submit the report to the Department for Energy and Mining (DEM), the principal mining regulator for South Australia.

1.3 Change of ownership

In 2023, OZ Minerals was acquired by BHP. The acquisition included an internal review within BHP's first 90 days of ownership, and a series of recommendations by BHP regarding the TSF were published in a report that WSP received in draft on 2 August 2023 (BHP, 2023). Following the issue of that report, WSP reviewed the consequence category for the TSF and established a path forward to meet compliance with the Global Industry Standard on Tailings Management (GISTM) (ICMM, 2020) by August 2024.

In the recommendations chapter of this report, OZ Minerals is referred to where appropriate.

Figure 1.1 Prominent Hill IWL (imagery provided by BHP, taken June 2023)

2 Compliance with statutory requirements

The Prominent Hill IWL has maintained compliance with the relevant items in the PEPR during 2022. A summary of TSF compliance against the PEPR is provided in Appendix A.

3 Current TSF management practice

3.1 Mineral processing

The Prominent Hill operation produces a high-quality copper-gold concentrate using a conventional crushing, grinding, flotation and dewatering circuit. In 2023, 5.2 Mt of tailings was generated. Ore is sourced from underground workings using the sub-level open stoping technique and from remaining stockpile reserves on cessation of open pit mining in March 2018. Concentrate production rates are typically 100,000 to 150,000 dry tpa, containing 45 to 55% copper and 45 to 55 g/t gold.

3.2 Tailings delivery and water return

3.2.1 Tailings delivery

Tailings are pumped from a thickener located at the processing plant to the TSF via a hopper using variable speed underflow pumps. Tailings enter the facility via sub-aerial spigot discharge at spigot points spaced at 108 m intervals around the perimeter of the TSF. The existing arrangement has 25 spigots on two pipelines (a total of 50 spigots) that extend from the process plant to the top of the TSF embankment and around the southern and northern perimeter.

The spigots comprise tee-pieces with valves, which connect to a discharge pipe that is in turn inserted in a slotted conductor pipe (diffuser). The diffuser is founded on a geotextile mat to reduce erosion at the spigot points and reduce the spray back that can occur during windy conditions.

The tailings beach is managed through planned activation or deactivation of perimeter spigots to generally prevent channelling and facilitate the formation of uniform beaches.

3.2.2 Water return

The Prominent Hill operation is located in an arid environment where evaporation far exceeds rainfall by an annual average ratio of 23:1. Reducing raw water consumption and increasing water recycling are integral to the project design and ongoing water management. Water is returned from the TSF via a submersible pump located in the centre of the TSF. The pump is located within a slotted decant tower, which is surrounded by rock designed to provide some filtration and return clean water.

In addition to the main decant return system, a series of production wells have been installed along the decant access causeway. As the decant access causeway was constructed from waste rock during the initial stages, water can collect in this zone and hence the wells are in place to improve water return from the TSF. This is considered good practice, particularly in an arid climate.

3.3 TSF description

3.3.1 TSF consequence category

The consequence category of the TSF was updated in 2023 to Very High (WSP, 2023c) in accordance with the Global Industry Standard on Tailings Management (GISTM) (ICMM, 2020). The population at risk is approximately 100 people, which is the key driver. During 2024, BHP is undertaking a quantitative risk assessment (QRA), along with a revised dam break study that considers the Stage 6 layout and developing an emergency preparedness and response plan (EPRP) and improved trigger action response plans (TARPs) for the TSF. We anticipate the consequence category will be re-assessed in 2024, following on from these assessments.

3.3.2 History and development

The history and development of the TSF is described in the Integrated Knowledge Base Report (WSP, 2024), which has been prepared in draft in the first half of 2024 in preparation for compliance with GISTM.

The TSF beach is now approximately 243 ha in footprint. The original ground level at the toe of the embankments varies between RL 10 212 m and RL 10 216 m. The Stage 5 embankment crest is at an elevation of 10 241 m. Based on the current beach elevation, the current height of tailings in the TSF ranges from about 24 m to 28 m.

4 Field observations and commentary

The TSF was inspected on 9 January 2024 by Brad Tiver, Engineer of Record and Harry Lewis, Tailings Engineer. Craig Goss, Responsible Tailings Facility Engineer of BHP, escorted WSP around the TSF for the inspection, along with Dale Hole, RTFE of BHP Olympic Dam. The inspection was undertaken travelling around the TSF perimeter in an anti-clockwise direction in a slow-moving vehicle, with stops made intermittently as required. Overall, the TSF was in good condition.

Key observations made during the site visit and are outlined in the following subsections.

4.1 Tailings discharge system

Spigots around the TSF were observed. At the time of inspection there was discharge of tailings through spigots on the southern embankment, as shown in Figure 4.1.

Delivery pipelines appeared in good condition, with no signs of leakage, corrosion or damage observed, as shown in Figure 4.2.

Figure 4.1 Discharge of tailings from Spigot 14 at the southern embankment, facing north

Figure 4.2 Discharge pipeline, southern embankment

4.2 Beach development

Beach development appeared to be accordance with the usual operation of the TSF, and appeared even and uniform, as shown in Figure 4.3. The majority of the tailings beach appeared to be dry and had significant cracking at the surface due to desiccation of the tailings. There was a notable white salt crust on the tailings beach.

Figure 4.4 shows the northern embankment where the tailings has consolidated with the formation of desiccation cracks, and Figure 4.5 shows where active deposition was ongoing from the southern embankment at the time of inspection.

Figure 4.3 Consolidating beach development of tailings deposit, northern embankment spigot 25

Figure 4.4 Tailings beach showing desiccation cracks, northern embankment spigot 14

Figure 4.5 Tailings beach with active deposition, southern embankment spigot 13

4.3 Perimeter embankment

The crest of the perimeter embankment was mostly free of observable deformation or cracking at the time of the site visit. Figure 4.6, taken at the northern embankment near spigot 14, indicates some slight rutting from tyre tracks. Aside from this no significant erosion was observed elsewhere. Notwithstanding, BHP indicated its preference to include a more robust wearing coarse, for example 20 mm crushed rock, at the surface of the embankments as part of the Stage 6 embankment raise project in 2025. No damp spots suggesting seepage were observed, nor was any leakage or seepage observed from tailings pipework on the embankment crest.

Figure 4.6 Perimeter embankment observation, northern embankment

4.4 Freeboard capacity

At the time of the site visit, with the TSF at the Stage 5 embankment crest elevation, there were no signs of operating freeboard reaching capacity. From observations of the northern and southern embankments as shown in Figure 4.7 the freeboard capacity is sufficient for ongoing operation.

Figure 4.7 Freeboard capacity observation, southern embankment

4.5 Decant facility

The structure of the decant tower and the water return pipeline appeared to be in good condition, as shown in Figure 4.8. During 2023, BHP removed parts of the drainage rock around the slotted concrete rings due to poor recharge of water into the slotted concrete tower. BHP observed that the drainage rock was finer than expected and impeding the flow of water. BHP replaced it with coarser rock and this significantly improved the operation of the decant tower.

Previously there was minor cracking on the northern side of the decant causeway near the inside edge of the windrow. WSP recommends that BHP continue to monitor the cracking development on the decant causeway.

Figure 4.8 Decant causeway

4.6 Horizontal bores

During the site visit we observed the horizontal bores and the collection sump along the south pit wall area. The bores extending from the pit wall and water pipelines appeared to be in good condition as shown in Figure 4.9.

We recommend that BHP continues to monitor the south pit wall failure area and collection sump for any signs of change.

Refer to Section 5.1.2 for further commentary on the horizontal bores.

Figure 4.9 Horizontal bores

4.7 Raw Water Dam and Enviro Dam

A visual inspection of the Raw Water Dam and Enviro Dam was conducted at the time of site visit, as shown in Figure 4.10 and Figure 4.11, respectively. BHP informed us that there were no operational issues associated with the Raw Water and Enviro Dams during the reporting period. BHP is currently investigating the remaining life of the geomembrane in the two ponds. Further inspections of the Raw Water and Enviro Dams will be conducted as part of the mid-year audit.

Figure 4.10 Raw water dam

Figure 4.11 Enviro dam

4.8 Return water dam

The former return water dam, to the east of the TSF, was inspected as is the usual practice on the annual inspection. It was decommissioned in 2018. Notwithstanding, we continue to observe the valve pit and the depression where the return water dam was. Due to recent rain, the rehabilitated return water dam area had standing water in it at the time of inspection. We did not observe any issues at the return water dam area.

Figure 4.12 Valve pit at the former return water dam

Figure 4.13 Former return water dam

5 Monitoring data review

5.1 Water balance

5.1.1 Water recovery

BHP maintains records on the quantity of tailings deposited into the TSF, the density of the tailings slurry being deposited, and the volumes of water recovered via the decant and dewatering systems. This information, combined with the climatic data for the site, is used by BHP to create a model to estimate the water balance for the TSF.

Figure 5.1 presents an annual summary of the water balance results since 2020 and Figure 5.2 presents a monthly summary of the water balance results during 2023. The water sent to the TSF during 2023 has reduced compared to previous years due to the significant change in production rate – an average rate of ~7.1 Mt of tailings in 2020 to 2022 compared to 5.2 Mt in 2023. Note that 'water return' in Figure 5.1 is only water return from the decant and the dewatering bores in the decant causeway. As shown in the graphs in Appendix B, water return also comprises the horizontal drains that drain into the sump in the pit. These are integral to the operation of the TSF and the water balance.

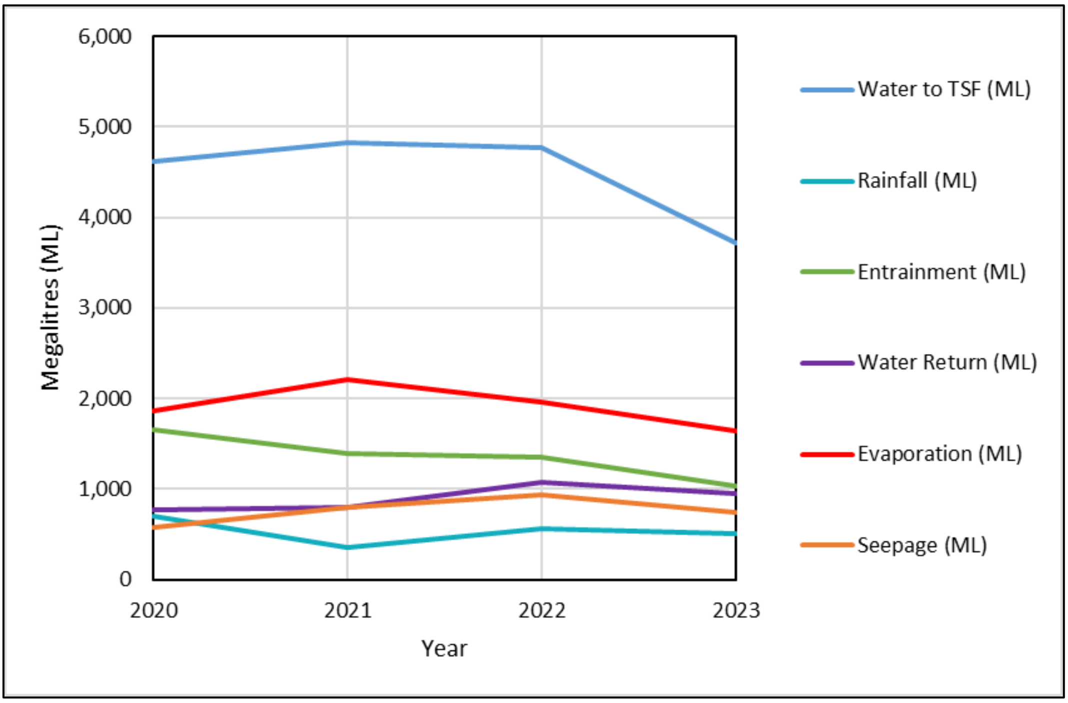

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Figure 5.1 TSF annual water balance results 2020 to 2023 (source BHP)

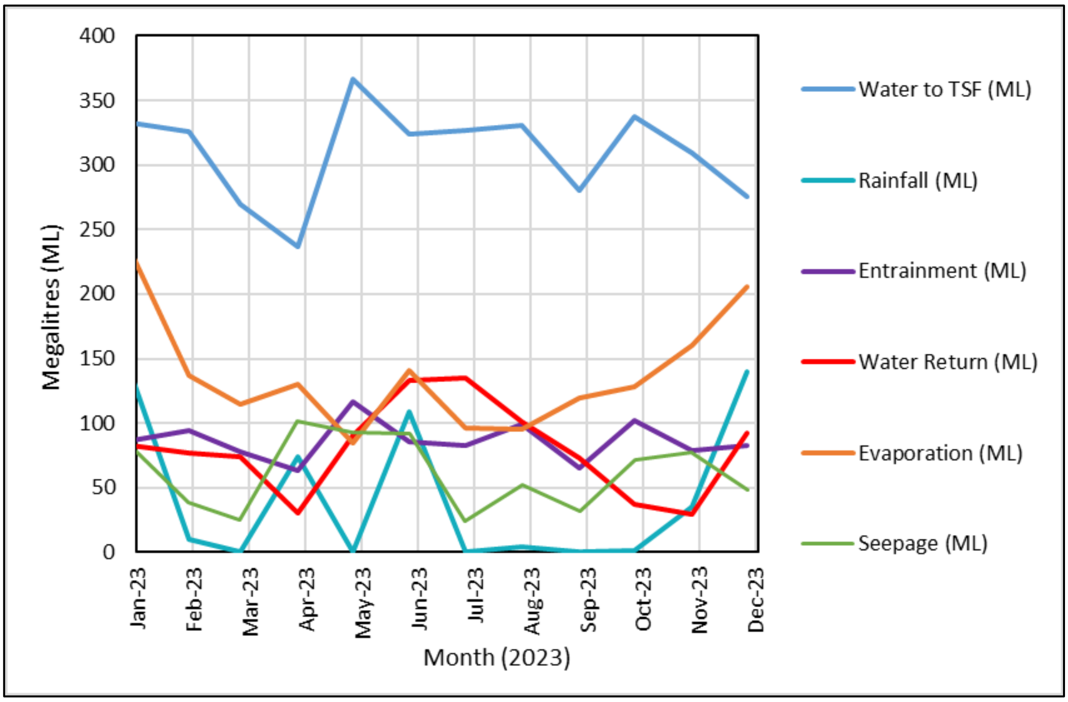


Figure 5.2 TSF monthly water balance results 2023 (source BHP)

A key feature of the water balance is the performance of the water return system. BHP water recovery records for the period 2020 to 2023 are presented in Figure 5.3.

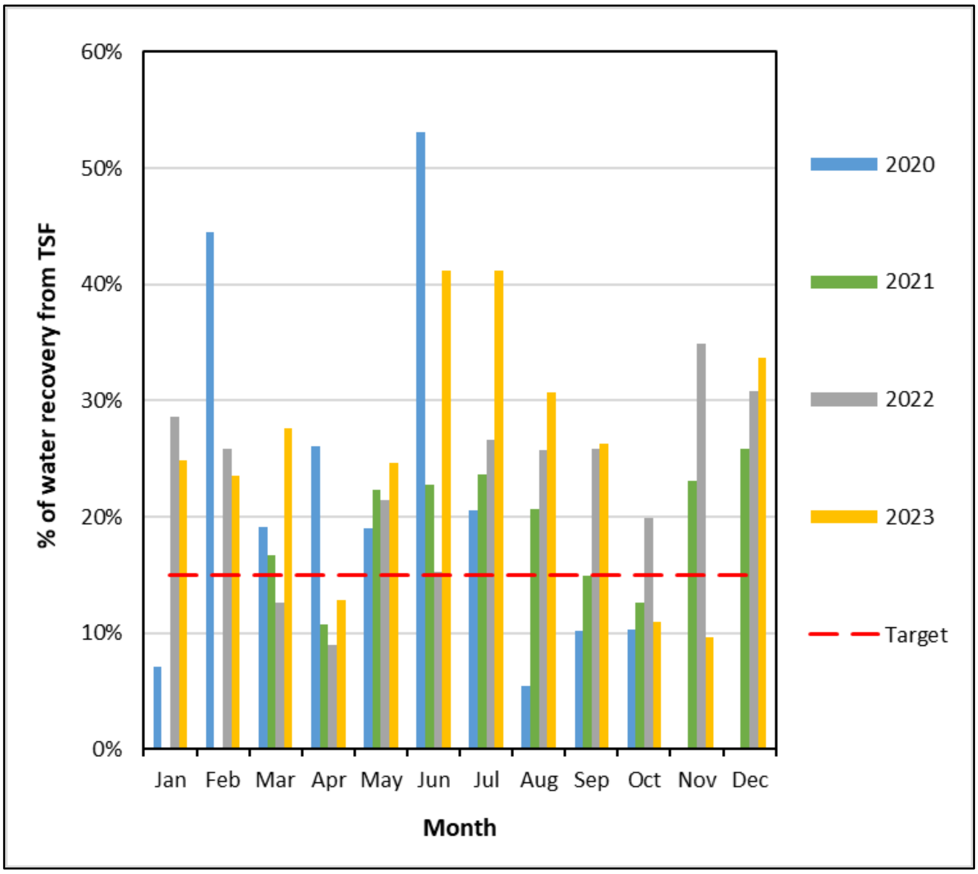


Figure 5.3: Monthly water recovery from the TSF 2020 to 2023 (source BHP)

In 2023, there were three significant rainfall events occurring in January, June, and December with the recorded monthly rainfall, provided by BHP, being 56 mm, 45 mm and 58 mm, respectively. The lowest monthly water return for the year occurred in November at under 10%, and the 15% water recovery target was also not met in April, and October with 13% and 11% water recovery, respectively. Water recovery from the TSF exceeded the target of 15% for nine months of the year, with the highest water recovery occurring in June and July, both at 42%. The average water recovery for 2023 was approximately 22%, which exceeded the target and was approximately the same as for 2022 which was 23%. As above, we note that the water recovery does not account for the horizontal dewatering drains. We consider these should constitute part of the water return for the TSF.

Average monthly seepage from the TSF for 2023, calculated by net difference, was 17%, approximately the same as that calculated for 2022 of 18%.

During 2024, WSP is preparing a water balance in Goldsim for BHP, which should improve some out the features of the current spreadsheet model, which will also include clarity of naming of features of the TSF water recovery, as per the commentary herein. We note that the figures in Appendix B that are maintained by BHP could be updated in the future to improve clarity in the legends and the presentation of the data.

5.1.2 Water extracted from bores

Figure 5.4 presents a comparison of water extraction from the vertical and horizontal bores installed in the vicinity of the TSF. We note that there have been significant fluctuations in the recorded montly extraction volumes over the reporting period. During 2024, BHP is installing flow meters on each individual horizontal drains, as these are a significant contributer to water return from the TSF. This action will help inform future decision making about whether additional dewatering at the TSF is required.

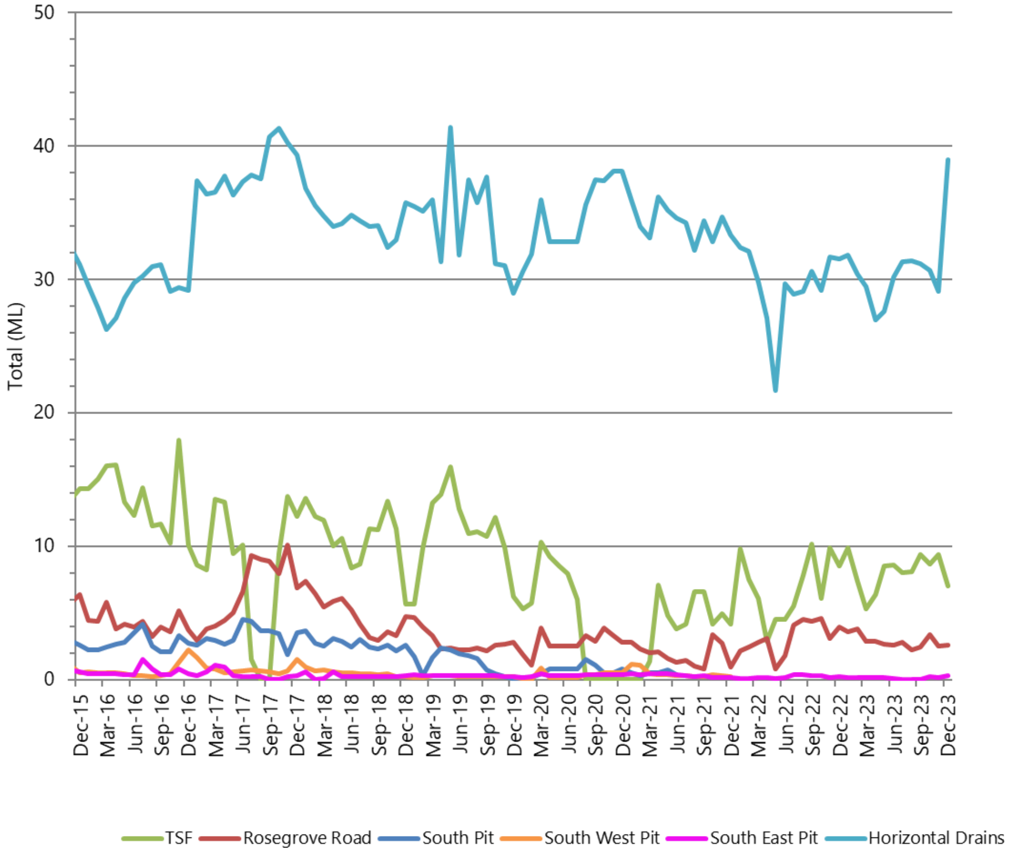


Figure 5.4: Water extraction from vertical bores and horizontal bores, 2015 to 2023 (source BHP)

5.2 Groundwater level monitoring

5.2.1 Overview

Monitoring of groundwater at Prominent Hill consists of monitoring both groundwater levels and water quality. There are two reference points:

1. There are open standpipes situated around the TSF that are monitored for groundwater level and groundwater quality.
2. There are vibrating wire piezometers in between the TSF and pit wall. Up to and including in 2023, these VWPs were not monitored by the TSF team, and trigger levels were not set as related to factor of safety for the TSF stability. They were monitored quarterly by the geotechnical team at BHP for the pit. It is outside the reporting window of this report but it is acknowledged that triggers have been set for the VWPs around the TSF and these will be reported against in future annual reviews.

5.2.2 Open standpipes

Monitoring of groundwater at Prominent Hill consists of monitoring both groundwater levels and water quality. To monitor groundwater levels effectively, six monitoring bores were installed around the TSF perimeter as part of the initial TSF construction works in 2008 (referred to as TSF-1 to 6), with four additional groundwater monitoring wells constructed since 2012 to supplement/replace the existing network. The locations of the TSF monitoring bores are shown in Figure 5.5.

The current operational monitoring bores include:

- Two shallow bores (i.e., TSF-1 and TSF-2) located between the northern embankment and the southern wall of the open pit.
- Three shallow bores (i.e., TSF-A, B and C) located around the southern, eastern, and western embankment perimeter.
- Two deep bores (i.e., TSF-D and TSF-E) located outside the eastern and southern embankment perimeter.

The current practices for monitoring groundwater levels require the levels to be recorded on a quarterly basis with data collected in March, June, September, and December.

Historical water levels in the TSF groundwater monitoring bores date back to 2008 and are shown in Figure 5.6 to Figure 5.8 for monitoring bores TSF-1, 2 and A to E. Note that the dashed lines indicate the pre-2012 constructed bores that were taken out of service and replaced with new bores, indicated in the solid lines, where applicable.

Since mid-2012 there has been a general decline in groundwater levels in TSF-1 and 2. However, there was an increase in level of approximately 1 m observed in TSF-2 between December 2020 and March 2021. This is likely attributed to the raising of the Stage 5 decant causeway. There are other rises in water level between September 2021 and December 2021 and October 2022 which are likely attributed to rainfall events. TSF-1 shows little change in the 12 month moving averages during 2023 and are similar to 2021 and 2022, while TSF-2 has increased slightly over the same period, shown in Figure 5.6. We note that the horizontal drains are installed at a nominal elevation of RL 10,185 m, so the elevation of the groundwater in TSF-1 and TSF-2 makes reasonable sense in that context.

Groundwater levels in the TSF-A, TSF-B, and TSF-C monitoring bores, located around the west, south and east of the TSF have remained relatively constant since 2013 with slight fluctuations as shown in Figure 5.7.

TSF-D has shown a gradual increase in groundwater level since 2013. Over 2023, the increase in groundwater level was less than 0.5 m. TSF-E showed little to no change in groundwater level, with minor fluctuations as shown in Figure 5.8. Overall, groundwater levels in the monitoring bores are in line with expectations.

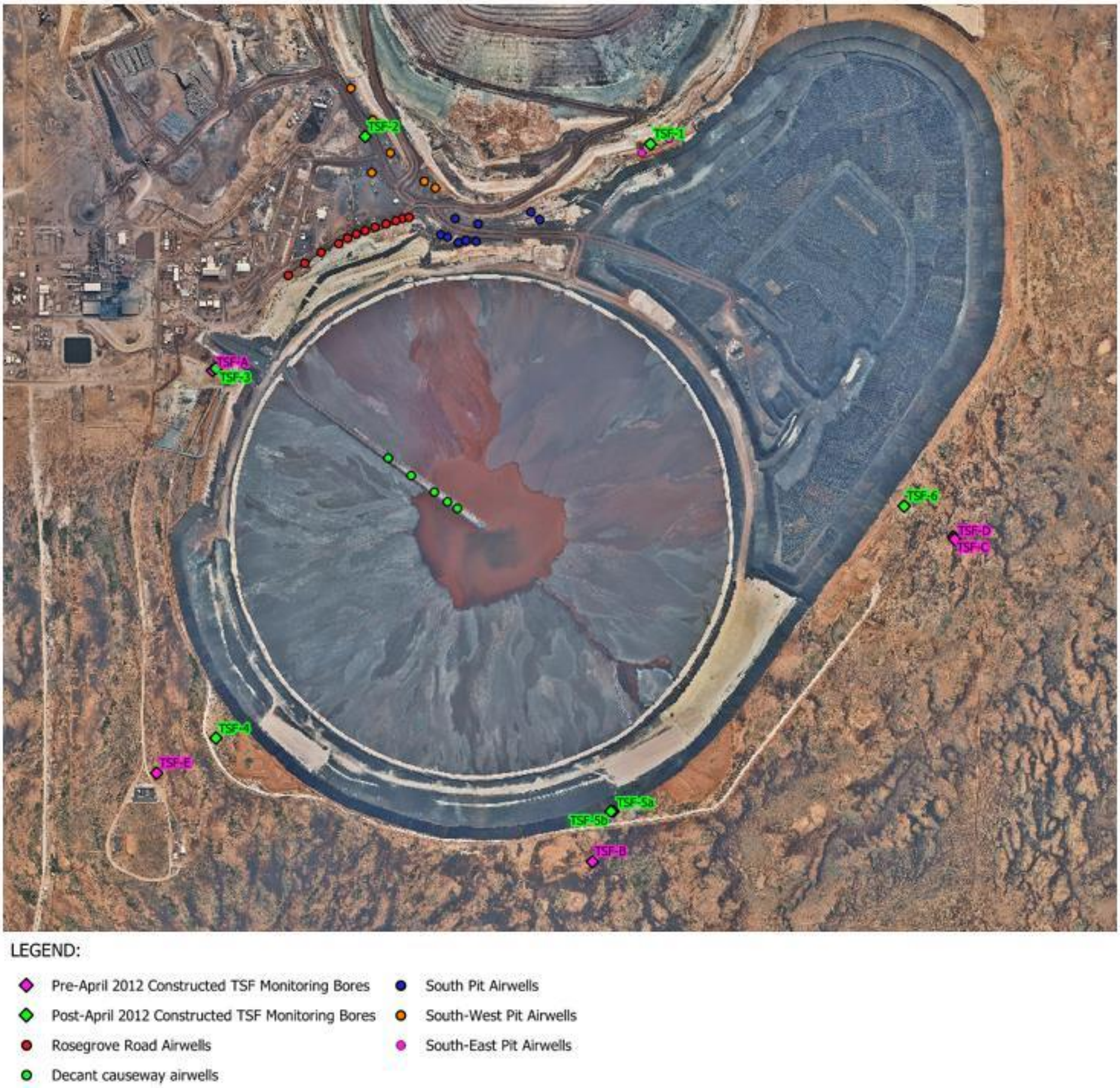


Figure 5.5 Locations of monitoring bores and dewatering wells at Prominent Hill TSF

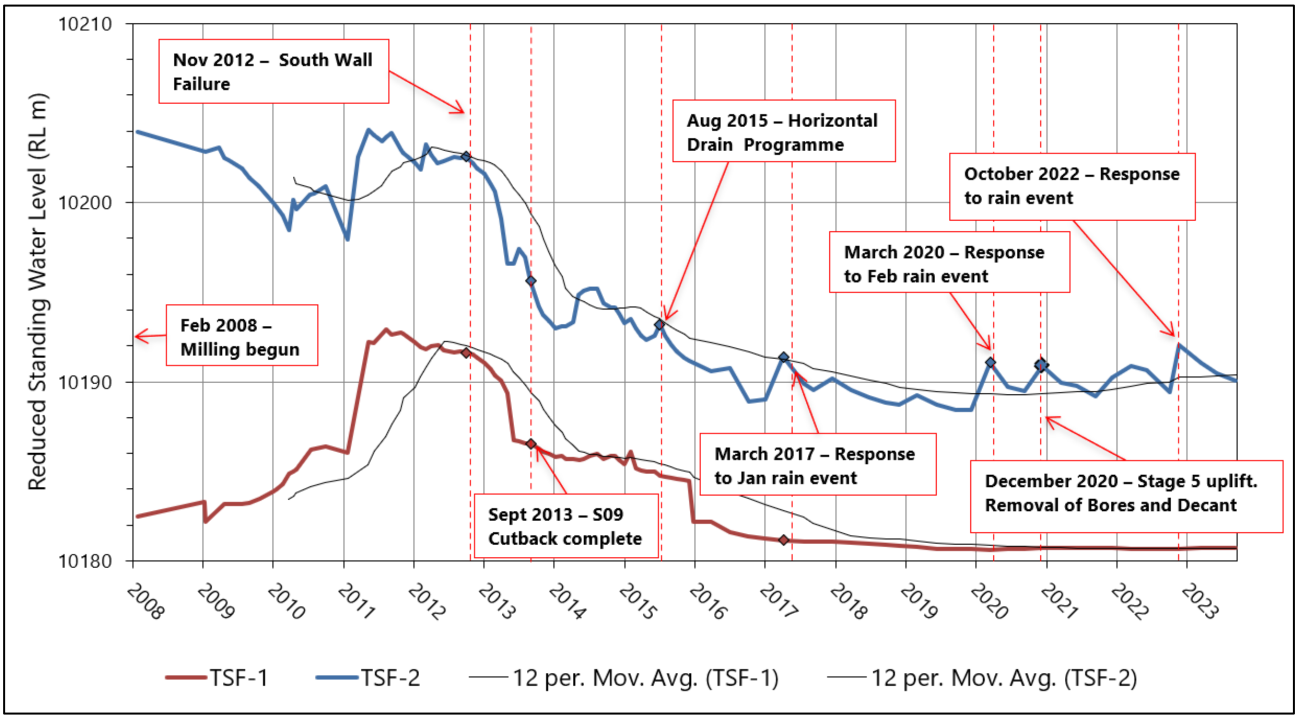


Figure 5.6 Historical water levels in groundwater monitoring bores TSF-1 & TSF-2 (Source BHP)

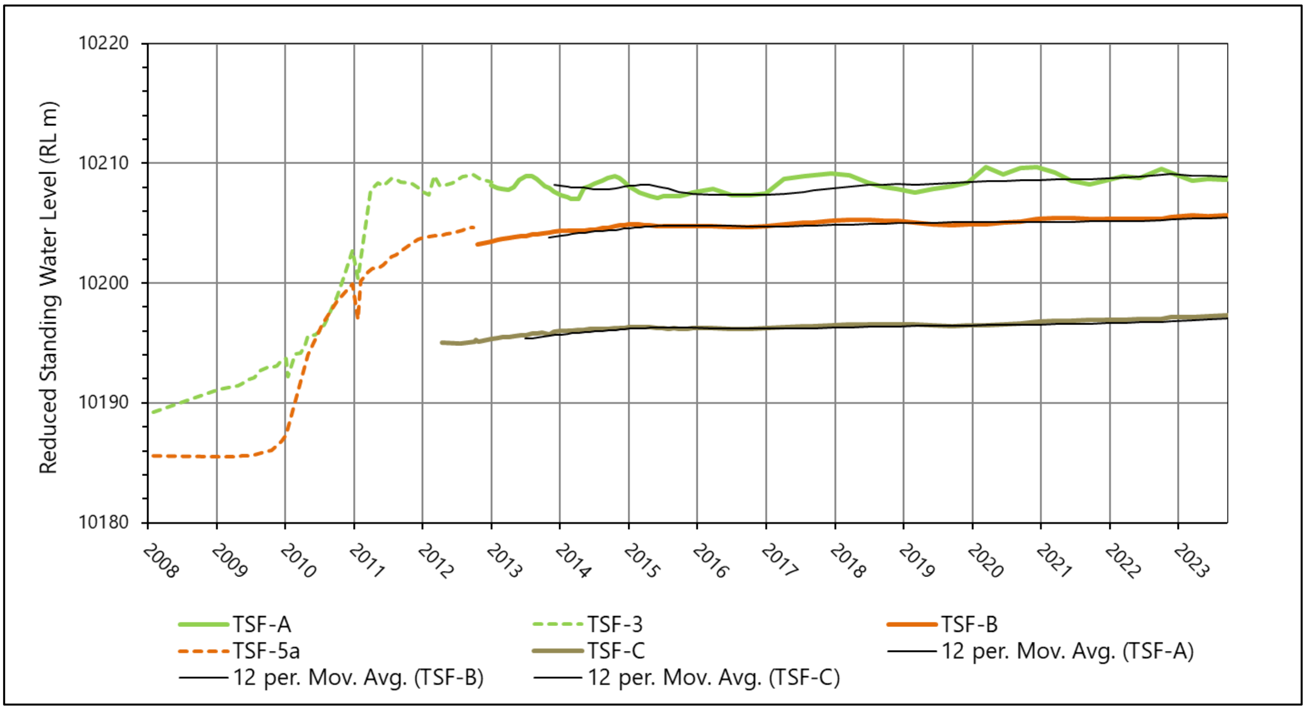


Figure 5.7 Historical water levels in the groundwater monitoring bores TSF-A, TSF-B, TSF-C, TSF-3, & TSF-5a (Source BHP)

It is notable that the historical groundwater levels in TSF-A has been at around RL 10 209 or RL 10 210 m since 2011. The ground surface in the vicinity of TSF-A is at around RL 10 213 to 10 214 m, suggesting the groundwater level is approximately 3 to 4 m below surface. Notwithstanding, other groundwater monitoring wells around the TSF are at an elevation of RL 10 204 m or less. This suggests that the average groundwater mound level may be within the "normal operating zone" under RL 10 204 m, and so the trigger level for the 'groundwater mound' is considered to be in the 'normal' operating zone of the TARPs. In any case, reasons for the constantly high groundwater level at TSF-A are worth exploring.

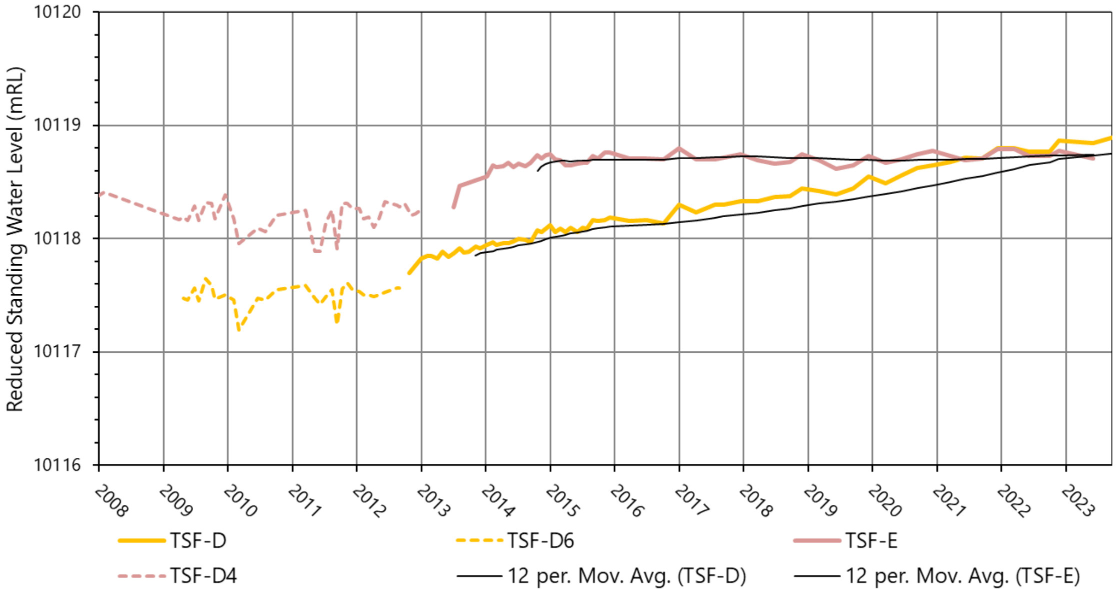


Figure 5.8 Historical water levels in groundwater monitoring bores TSF-D, TSF-E, TSF-D4 & TSF-D6 (Source BHP)

The groundwater bores TSF-D and TSF-E are screened in the basement rock units, ~80 m beneath the TSF. Figure 5.8 is plotted on a different scale for this reason, and the fluctuations of water level in these wells are not connected to the shallow wells shown in Figure 5.7.

5.3 Groundwater quality monitoring

BHP undertakes groundwater sampling and analytical laboratory testing from monitoring bores TSF-A, B, C, D, E, 1 and 2 to measure the concentration of sodium, copper, and pH levels. Data is collected quarterly or six-monthly, and results from March, June, September, and December 2023 were reviewed in conjunction with data from previous years.

BHP also requested a groundwater quality assessment undertaken by Land and Water Consulting (LWC) to assess changes in the quality of groundwater surrounding the TSF with some of the typical the data presented in Figure 5.9 to Figure 5.12. Note that other graphs with monitored chemistry data are provided in Appendix B. The report summarised the environmental outcome as no reduction in groundwater quality affecting suitability for water uses due to seepage from TSF or acid rock drainage from the IWL.

Specific assessment by LWC has been conducted with respect to the relatively high copper and low sodium concentration from TSF-A presented in Figure 5.9 and Figure 5.11. The groundwater quality report summarises a down-hole camera investigation that was undertaken to assess the integrity of the TSF-A well casing. The report indicated that the longer-term trends for copper and sodium appear to be associated with rainfall infiltration rather than seepage from the TSF or issues attributed to well installation. As there is no change in environmental outcome, we recommend that BHP continues to undertake the monitoring as per its current regime.

Notwithstanding the prior study by LWC, there are continued fluctuations in sodium and copper concentrations in TSF-A. WSP recommends further assessment of groundwater well TSF-A in the context of the readings in the other wells.

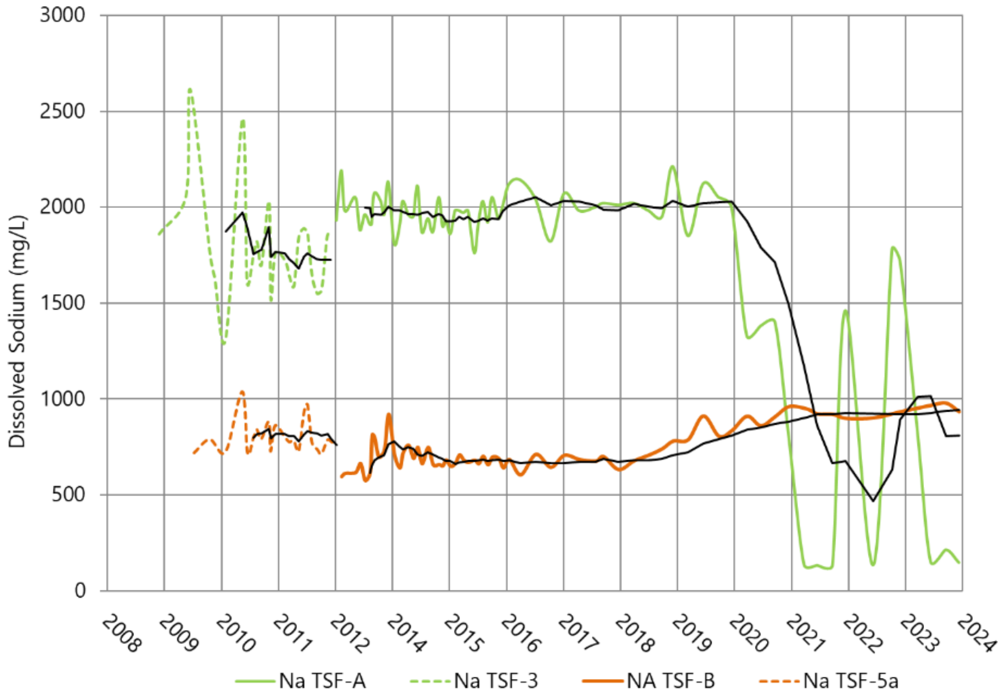


Figure 5.9 Historical levels of dissolved sodium in TSF-A & B (Source BHP)

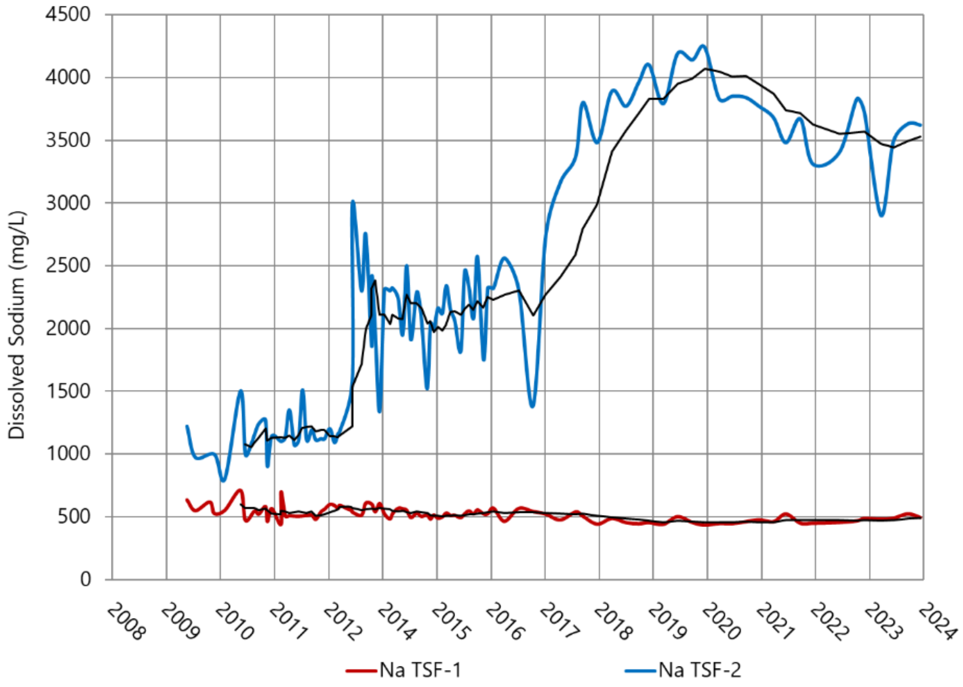


Figure 5.10 Historical levels of dissolved sodium in TSF-S1 & S2 (Source BHP)

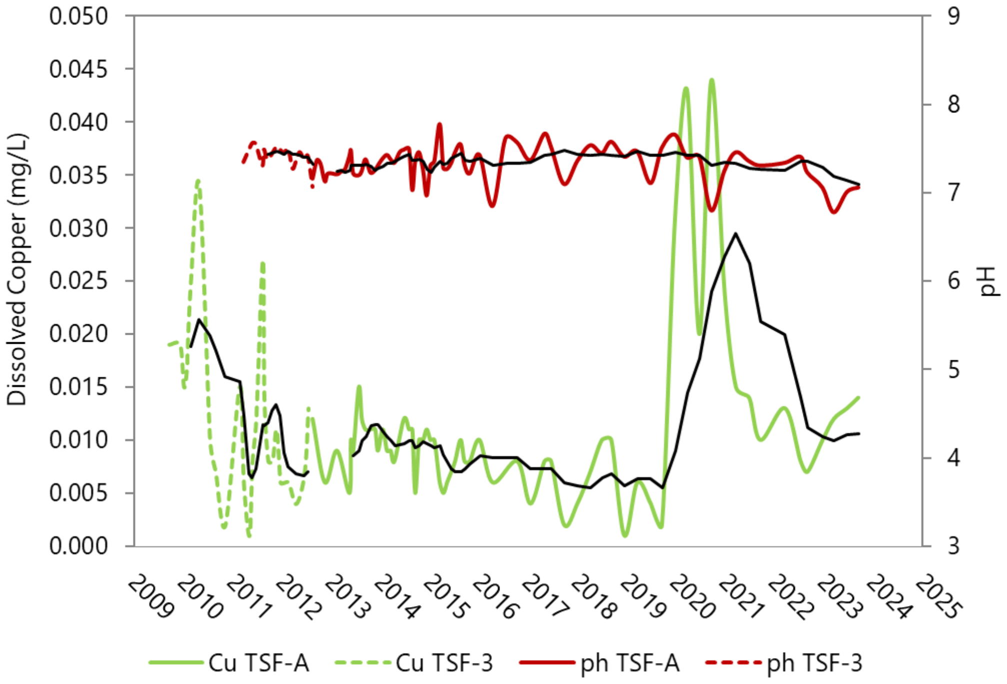


Figure 5.11 Historical levels of dissolved copper and pH in TSF-A (Source BHP)

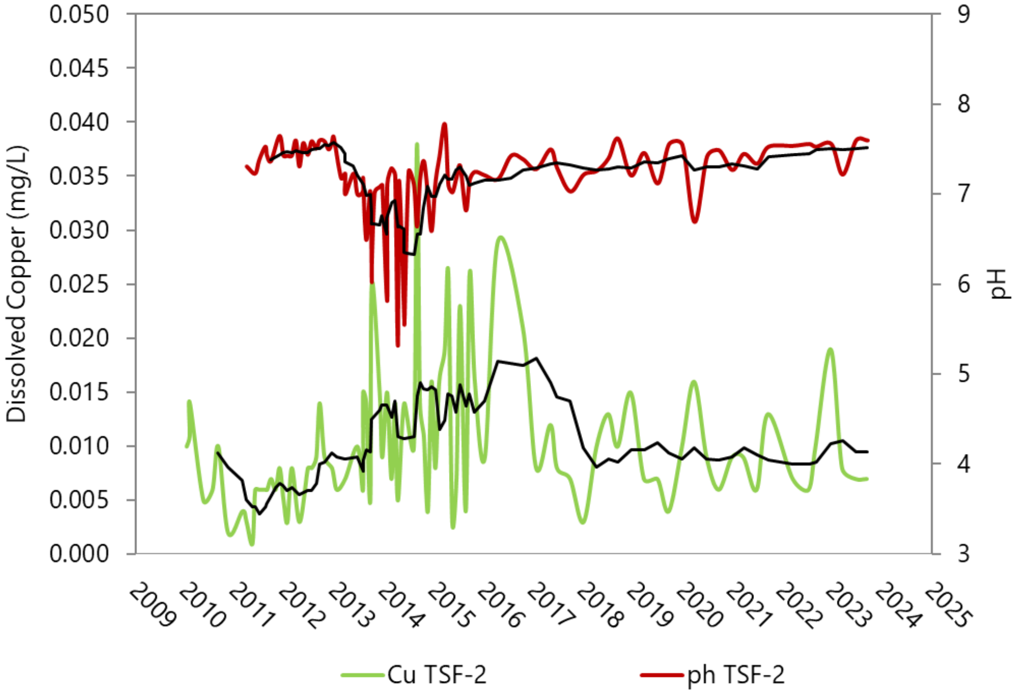


Figure 5.12 Historical levels of dissolved copper and pH in TSF-2 (Source BHP)

5.4 Perimeter embankment movement monitoring

There are 30 prisms monitoring movement of the TSF perimeter embankment via a central automated survey station (Leica TM30). An example of this deformation monitoring is presented in Figure 5.13 for the second quarter (left) and third quarter (right) of 2023. Figure 5.13 indicates no significant prism movement.

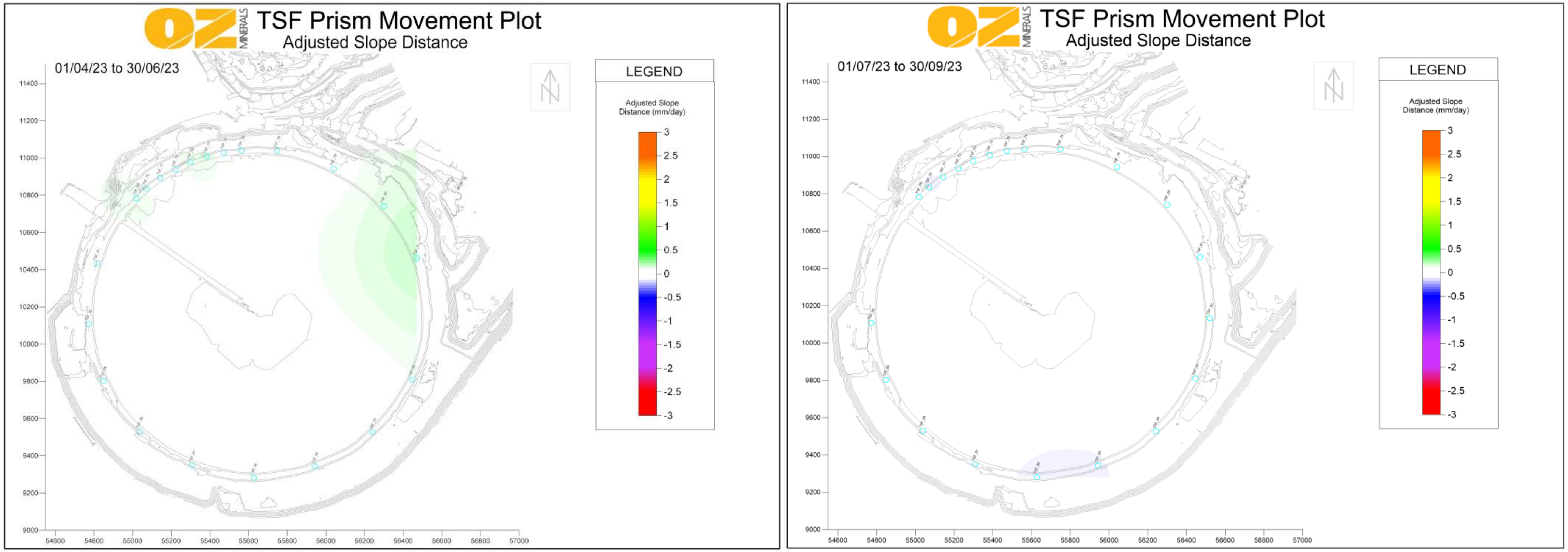


Figure 5.13 Prism movement in the TSF Q2 2023 (left) and Q3 2023 (right) (Source BHP)

5.5 Tailings beach monitoring

Figure 5.14 presents the tailings surface contours generated by WSP, based on survey data from 11 November 2023. The different colour bands are representative of 1 m contours. The contour surveys demonstrate that uniform deposition occurred throughout the tailings surface, with some minor beach development around the perimeter embankment near the spigot discharging locations.

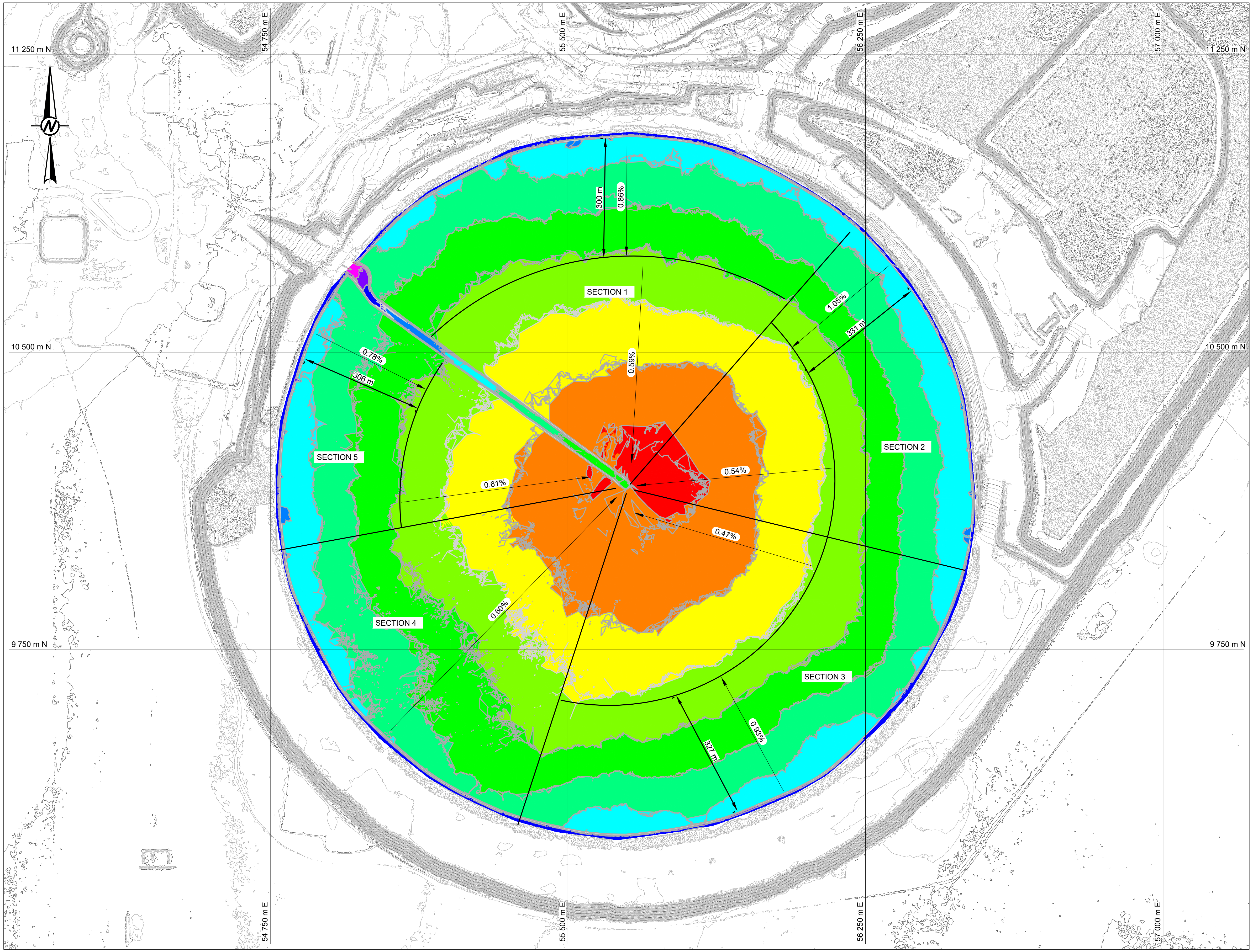
We divided the tailings beach into five zones of varied beach slopes, with these slopes summarised in Table 5.1.

Table 5.1: November 2023 tailings beach slope summary

SECTION	FIRST BEACH PORTION		SLOPE OF SECOND BEACH PORTION (%)
	Length (m)	Slope (%)	
Section 1	300	0.86	0.59
Section 2	331	1.05	0.54
Section 3	327	0.93	0.47
Section 4	Full beach	0.60	N/A
Section 5	306	0.78	0.61

We used these beach slopes to generate a model of the tailings beach at the end of Stage 5 deposition, which indicates a remaining storage capacity of 5.8 Mm^3 of tailings. Based on the predicted tailings generation rates for 2024 and 2025, we anticipate that the freeboard limit of tailings solids at 0.3 m below the crest would be reached by approximately August 2025.

Based on our observations in the January 2024 inspection, BHP has demonstrated good pond control and deposition practice during 2023.



DECEMBER 2023 STORAGE CAPACITY

RANGE	COLOR
10232.00 TO 10233.00	🟥
10233.00 TO 10234.00	🟧
10234.00 TO 10235.00	🟨
10235.00 TO 10236.00	🟩
10236.00 TO 10237.00	🟩
10237.00 TO 10238.00	🟩
10238.00 TO 10239.00	🟦
10239.00 TO 10240.00	🟦
10240.00 TO 10241.00	🟦
10241.00 TO 10242.00	🟪
10242.00 TO 10243.00	🟪
10243.00 TO 10245.00	🟥

CLIENT
OZ MINERALS PROMINENT HILL OPERATIONS PTY LTD.

PROJECT
PROMINENT HILL TAILINGS STORAGE FACILITY

CONSULTANT

YYYY-MM-DD	2024-03-12
DESIGNED	HL
PREPARED	JB
REVIEWED	BT
APPROVED	BT

TITLE
DECEMBER 2023 STORAGE CAPACITY ASSESSMENT

PROJECT NO.	DOC	REV.	FIGURE
PS209546	0001	A	**5.14**

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5.6 Freeboard capacity

Two different storm events were modelled on top of the November 2023 surveyed tailings beach to provide an indication of the available flood storage capacity. The modelling indicates that the freeboard capacity is sufficient to store the 72-hour duration probable maximum flood.

Table 5.2 Summary of runoff volumes

STORM EVENT	COLOUR	RAINFALL DEPTH (mm)	REPORTING VOLUME (x10^6 m^3)
PMP, 72-hour	🟦	810	2.0
1 in 100 AEP, 72-hour	🟦	186	0.5

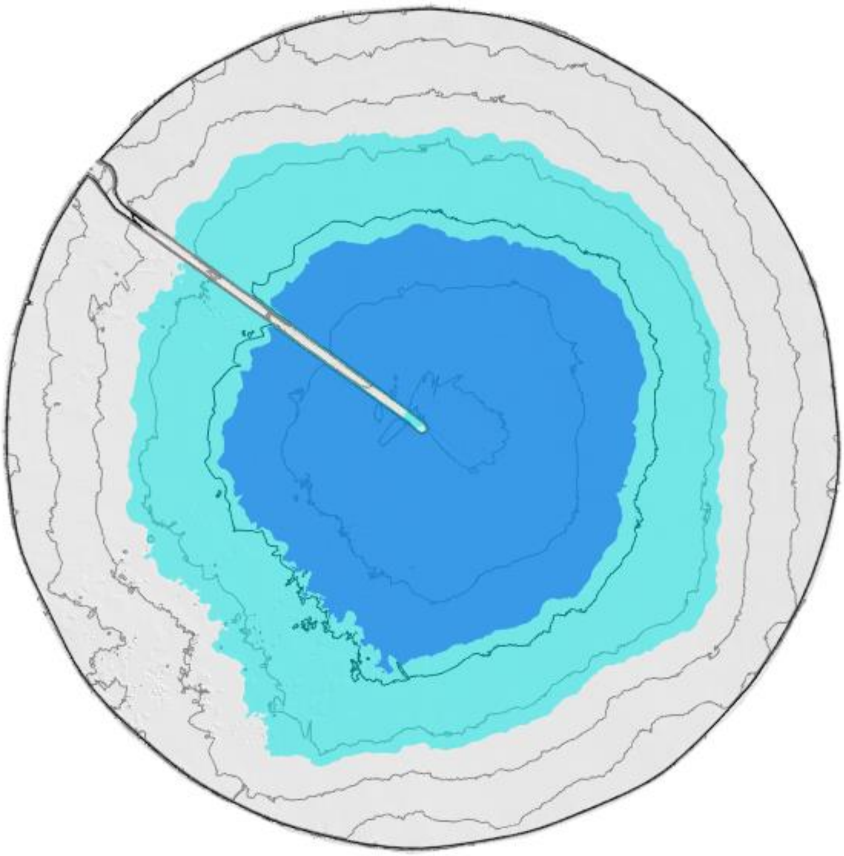

Figure 5.15 TSF flood capacity using aerial survey data from November 2023

6 Design reconciliation

6.1 Tailings properties

Laboratory tests are undertaken to provide up-to-date information on tailings being delivered to the TSF. A tailings sample was provided by BHP to WSP's laboratory in Perth for testing, which was received in August 2023. The laboratory testing report (WSP, 2024b) was published outside of the review period. Notwithstanding, the tailings sample was collected in 2023 and the geotechnical results are presented in Table 6.1 and Table 6.2. Note that report also includes geochemical characterisation, which is not summarised in this report.

Table 6.1 Summary of geotechnical classification testwork results

	2018 CPTU INVESTIGATION	**SAMPLE MARCH 2022**	**2022 CPTU INVESTIGATION**	**SAMPLE AUGUST 2023**
% passing 300 microns	-	100	-	99
% passing 150 microns	-	94	-	89
% passing 75 microns	65 to 77 (average 70)	83	65 to 72 (average 68)	72
% passing 2 microns	10 to 14 (average 12)	23	15 to 16	11
Particle density	3.16 to 3.54 (average 3.32)	3.22	3.24 to 3.44 (average 3.36)	3.36
Liquid Limit (%)	16 to 17	24	18 to 20	19
Plastic Limit (%)	13	16	12 to 14	Non-plastic
Plasticity Index (%)	3 to 4	8	5 to 6	Non-plastic
Linear Shrinkage (%)	1.5	4.0	1.0 to 2.5	1.0
Unified soil classification system description	-	(CL) Silty CLAY, with sand, low plasticity, reddish brown, fine to medium grained sand	-	(ML) SILT, non-plastic, red brown, with fine to medium grained sand

Table 6.2 Summary of dry density testwork results

	2018 CPTU INVESTIGATION	SAMPLE MARCH 2022	2022 CPTU INVESTIGATION	SAMPLE AUGUST 2023
Dry density at ~zero vertical effective pressure (t/m^3)	-	-	-	1.29
Settled dry density (t/m^3)	-	1.21	-	1.53
Shrinkage limit density (t/m^3)	-	1.97	-	2.03
Dry density at 200 kPa vertical effective pressure (t/m^3)	-	-	-	2.08
Dry density from undisturbed tube samples collected from within the TSF (t/m^3)	2.10 to 2.36 (average 2.23)	-	2.12 to 2.36 (average 2.21)	-

WSP was advised that on the day of the sample collection for the August 2023 sample, the Malu paste plant was operational, which is the case approximately 90% of the time, i.e. it was ‘normal’ operations. The geotechnical properties of the tailings sample are in line with expectations based on the past history of sampling and testing, with the exception of the March 2022 sample, as noted earlier. We consider the March 2022 sample to be somewhat of an anomaly and not generally representative of the geotechnical properties of the tailings stored in the TSF. It is noted that the August 2023 sample is non-plastic, whereas samples from 2018 and 2022 had a plasticity index of between 3 to 6. The testwork presented in this section has been undertaken at WSP’s laboratory in Perth and has adopted consistent test methods. The Atterberg Limits test results plot consistently in the CL to ML region of the Casagrande Plasticity Chart.

6.2 Tailings production

The historical tailings deposition data from 2009 until end of 2023 is presented in Table 6.3.

Table 6.3 Total tailings production for the period 2015 to December 2022

YEAR	ANNUAL TAILINGS PLACEMENT (T)	CUMULATIVE TAILINGS PLACEMENT (T)
2009	6,360,209	6,360,209
2010	8,999,655	15,359,864
2011	9,687,595	25,047,459
2012	9,445,970	34,493,429
2013	9,321,906	43,815,335
2014	9,386,150	53,201,485
2015	10,004,455	63,205,940
2016	8,254,879	71,460,819
2017	8,338,646	79,799,465
2018	8,125,163	87,924,628
2019	8,167,262	96,091,890
2020	7,478,308	103,570,198
2021	6,923,986	110,494,184
2022	6,835,369	117,329,553
2023	5,243,524	122,483,077

The data provided indicates that the average slurry density of the tailings as a percentage of solids by weight ranged from 50.8% to 62.3% with an average of 58.3% solids. As shown in Figure 6.1, the solids concentration of the tailings slurry in the month of September was considerably lower than the other months of 2023. BHP trialled lowering the tailings density instead of separately flushing water to the TSF. BHP advised that the trial did not work and reverted to previous operating practice.

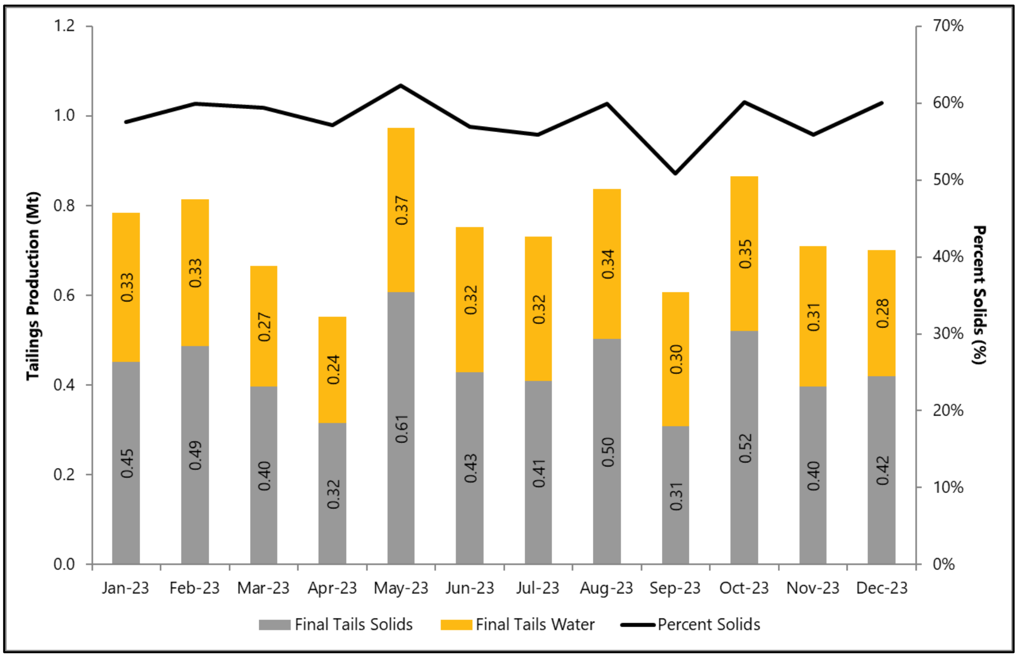

Figure 6.1 Tailings production and percentage of tailings solids for 2023

6.3 In situ tailings density

A reconciliation of the in-situ density of the tailings within the TSF for the first half of 2023 was based on tailings production data provided by BHP. An update of the reconciled dry densities was provided by BHP of the tailings for the period October 2017 to June 2023 are summarised in Table 6.4.

Table 6.4 Summary of reconciled in-situ dry densities (source BHP)

DATE	STORAGE CAPACITY REDUCTION (Mm^3)	TAILINGS SOLIDS (Mt)	RECONCILED IN-SITU DRY DENSITY (t/m^3)
October 2017	3.57	8.40	2.36
May 2018	2.12	5.23	2.46
May 2019	3.17	7.20	2.27
April 2020	4.16	8.88	2.14
April 2021	2.66	6.82	2.56
June 2022	3.57	8.40	2.36
June 2023	2.12	5.23	2.46

The reconciled in situ density for June 2023 is 2.46 t/m^3, which is similar the estimated dry densities for previous years. Notwithstanding, the tube density sampling throughout the TSF in the 2018 and 2022 CPTu investigations indicate an average stored dry density between 2.23 and 2.21 t/m^3 (individual samples ranging from 2.10 to 2.36 t/m^3). An average stored dry density of 2.2 t/m^3 has been adopted since 2016 as the predicted stored density for capacity calculations. This value should continue to be checked as the laboratory testing on the sample from 2023 indicated that this density may not be able to continue to be achieved. We note the limitations of this recommendation, as the laboratory test work performed on one sample at a point in time and does not account for field conditions. Notwithstanding, laboratory testwork like that conducted on samples from March 2022 and August 2023 should continue to be undertaken every two years to improve the knowledge base on the tailings density.

6.4 Slope stability

6.4.1 Baseline

In response to the BHP 90-day review (BHP, 2023),WSP prepared a report in November 2023 (WSP, 2023b) that provided a summary of the previous stability assessments undertaken for the open pit and IWL including background on the change in standards adopted in the assessment, due to the change in ownership, proposed parameters to be adopted in baseline stability analyses, and presented an opinion on the current factor of safety (FoS) for each of the four cross-sections considered for both peak and post-peak conditions.

6.4.2 Sensitivity

Following on from the baseline report, WSP prepared a sensitivity assessment report (WSP, 2024a), which acknowledged and discussed uncertainty associated with the input parameters applied to materials in the base model and presented slope stability analyses for the Prominent Hill IWL undertaken for a plausible range of parameters for each material. The sensitivity assessment was used to identify sensitive model inputs, with recommendations provided to improve confidence in the choice of these parameters, develop an improved understanding of how the embankment system responds to various inputs, and identify key areas for monitoring.

6.4.3 Outcomes and recommendations

A key recommendation following the slope stability assessments performed in late 2023 and early 2024 was to undertake intrusive geotechnical investigations to improve the understanding of the IWL embankments, the near-surface foundation units and the phreatic surface.

7 Trigger action response plan

BHP has implemented Trigger Action Response Plans (TARPs) that outline procedures to be undertaken when certain conditions are encountered outside the normal operational requirements. We note that these TARPs were significantly updated in early 2024, though the 2023 TARPs are reported against for the reporting period herein.

The review of the TSF operational data for 2023 against the BHP parameters in Table 7.1 indicates that the TSF is operating in the ‘normal operating zone’. The pumped tailings slurry percentage dropped to the ‘unsafe operating zone’ for September 2023, but was corrected, as discussed in Section 6.2. The pumped tailings slurry is estimated to be 58.3% on average, however dropping to an average of 50.8% in September 2023.

Aerial surveys between 8 March 2023 and 11 November 2023 have indicated that the average freeboard across the entire crest has decreased by 0.56 m, indicating a rate of rise of 0.82 m/year between the time period.

Table 7.1 BHP Operating Limits and Triggers

CRITERIA	NORMAL OPERATING ZONE	TROUBLESHOOTING ZONE	BUFFER ZONE	UNSAFE OPERATING ZONE
TSF supernatant pond area and distance from crest	<25 ha	<140 ha	100 m to wall	<100 m to wall
TSF solids freeboard	>1-year residual TSF capacity	<1-year residual TSF capacity	0.3 m	<0.3 m
TSF beach rate of rise	Single year value: 1.5 m per annum	Single year value: 1.8 m per annum	3 year moving average: 1.8 m per annum	3 year moving average: >1.8 m per annum
TSF groundwater mound level	< RL 10 204 m AHD	RL 10 209 m AHD	RL 10 214 m AHD	>RL 10 219 m AHD
Pumped tailings slurry % solids	1 month average: ≥58% solids	1 month average: <57% solids	1 month average: <56% solids	1 month average: <55% solids

8 Recommendations

WSP’s 2021 annual operational review of the TSF (WSP Golder, 2022a), the 2022 mid-year operational review (WSP Golder, 2022b), the 2022 annual operation review of the TSF (WSP, 2023a) and the 2023 mid-year operational review (WSP, 2023d) presented several recommendations. These recommendations, and additional items identified as part of this review on the operation and design of the TSF are presented in Table 8.1 along with comments on their status.

Table 8.1 Previous recommendation and reviews

ITEM	RECOMMENDATION	STATUS	BHP RESPONSE
2021 annual operational review (WSP Golder, 2022a)			
1	Undertake a study to commence ‘closing the gap’ for compliance with GISTM, as OZ Minerals indicated to WSP that it aims to comply with this standard. This would continue on from the preliminary gap analysis that was undertaken in mid-2021. A key aspect of this study would be scoping studies required to support a change in consequence category. Other work by WSP has recommended that a ‘Low’ consequence category could be adopted based on there being no credible failure modes for catastrophic release of tailings. However, the basis for there being no credible failure modes could have improved confidence with a quantitative risk assessment that estimates the probability of failure (and release of tailings) by overtopping, piping erosion and embankment instability (slope failure)	Open	Accepted; Preliminary gap analysis conducted. Further work to be conducted in 2022 and 2023. Expected compliance with GISTM in 2024.

ITEM	RECOMMENDATION	STATUS	BHP RESPONSE
2	OZ Minerals indicated that it has actioned installing a flow meter on the flushing pump. WSP recommends considering alternative locations to pump the excess thickener overflow water.	Closed	Flow meter installation complete.
3	Revise the 2021 water balance to adopt a specific gravity of solids of 3.22 in accordance with the laboratory testing undertaken.	Closed	Accepted; SG of ore is variable between 3.2 and 3.6. Will adopt 3.22 and update accordingly with mineralogy reports.
4	Review requirement to test the Malu overflow tailings.	Closed	Accepted; Testing of overflow tailings will no longer be conducted.
2022 mid-year operational review (WSP Golder, 2022b)			
5	OZ Minerals to consider an assessment of the remaining life of the geomembrane in the raw water and enviro dams. WSP Golder to provide proposal in 2023.	Open	Accepted; Testing of membrane will occur in 2024.
6	The frequency of testing for monitoring bores TSF-A, B, C, D, E, 1 and 2 should be changed from quarterly to biannually as per requested by the OZ Minerals environmental team. Monitoring bores TSF-D and E will no longer be tested for dissolved sodium and copper concentrations.	Closed	No change, BHP still conducts quarterly monitoring.
2022 annual operational review (WSP, 2023a)			
7	Damp patches were observed near the horizontal bore exits in the south pit wall failure area, along with an accumulation of soil at the joint of the bores and mining hose. We recommend classification testing be undertaken on the soil collecting at the horizontal bore exits to assess its providence. We recommend that OZ Minerals continues to monitor the south pit wall failure area and collection sump for any signs of change.	Closed	This was undertaken in 2023. Testing confirmed that the soil was dust from the pit and not tailings. No further action required.
8	The parameter values used in the water balance and rate of rise estimation should be regularly revisited and updated based on up-to-date measurements and laboratory test results. WSP recommends that laboratory testing for solids specific gravity, particle density and dry density be	Open	An updated water balance using Goldsim is being prepared in 2024 to assist with GISTM compliance. The project also includes a climate change assessment and adaptive management plan.

ITEM	RECOMMENDATION	STATUS	BHP RESPONSE
	undertaken and will provide OZ Minerals with a scope of work for this.		
9	Stop manual survey pick up to assess deformation of the TSF embankment and reinstate monitoring prisms at the TSF.	Closed	Monitoring prisms are functional. No further action required.
2023 mid-year operational review (WSP, 2023d)			
10	Further interrogation of aerial survey in Q3 or Q4 of 2023 to review beach slope of southern side of the TSF and estimate the remaining storage life of Stage 5 with improved confidence.	Closed, refer to Section 5.5.	N/A
11	Water balance is to be actioned	Open	Refer Item 8
2023 annual operational review (this report)			
12	Undertake a geotechnical investigation to improve estimates of factor of safety for slope stability.	Accepted	Works to be undertaken in first half of 2024
13	Complete the installation of flow meters on the horizontal bores to monitor flow on individual drains, and reconcile the flow against deposition records from spigots in the TSF.	Accepted	-
14	Prepare an internal BHP work instruction for tailings testwork to be undertaken two-yearly. The next testwork program should be undertaken in 2025.	Accepted	Next tailings sample to be provided in January 2025 alongside the 2024 annual review.
15	Follow up on groundwater well TSF-A to understand the cause of erratic sodium and copper concentrations, and the high groundwater level.	Accepted	WSP will prepare a proposal for BHP to address this recommendation.

9 Summary

In general, WSP is satisfied that the Prominent Hill TSF meets the tailings storage requirements of the processing plant. The TSF is being operated in accordance with the design.

10 Closing

This report summarises the 2023 operational review of the Prominent Hill TSF. The reader’s attention is drawn to the Limitation Statement presented in Appendix C of this report. Please contact the undersigned if you require any further elaboration.

11 References

BHP. (2023). *OZ Minerals Tailings Review Report - Carrapateena and Prominent Hill, Report Ref. RevB, Aug 2023.*

ICMM. (2020). *Global Industry Standard on Tailings Management.* International Council on Mining and Metals.

OZ Minerals. (2022). *Prominent Hill Program for Environment Protection and Rehabilitation.*

WSP. (2023a). *Tailings Storage Facility 2022 Operational Review.* PS133590-001-R-Rev0, dated 11 May 2023.

WSP. (2023b). *Prominent Hill Integrated Waste Landform Slope Stability Assessment for Stage 5 Operation.* PS206490-WSP-ADL-MNG-REP-0001 Rev0, dated 2 November 2023.

WSP. (2023c). *Prominent Hill Integrated Waste Landform - GISTM Consequence Category Assessment.* PS135398-WSP-ADL-MNG-MEM-0008 Rev1, dated 3 November 2023.

WSP. (2023d). *Prominent Hill Tailings Storage Facility - 2023 Mid-Year Operational Review.* PS204040-WSP-ADL-MNG-MEM-00001 Rev0, dated 17 November 2023.

WSP. (2024). *Prominent Hill Tailings Storage Faciilty Integrated Knowledge Base Report.* RevB, dated 1 March 2024.

WSP. (2024a). *Prominent Hill Integrated Waste Landform Slope Stability Sensitivity Assessment.* PS206940-WSP-ADL-MNG-REP-0002 Rev0, dated 9 February 2024.

WSP. (2024b). *Prominent Hill Tailings Storage Facility Tailings laboratory testing.* PS204163-WSP-ADL-MNG-REP-00001 RevA, dated 27 February 2024.

WSP Golder. (2022a). *Tailings Storage Facility 2021 Operational Reivew, Prominent Hill Operations.* PS130157-001-R-Rev0, dated 9 September 2022.

WSP Golder. (2022b). *Prominent Hill Tailings Storage Facility - 2022 Mid-Year Operational Review.* PS133957-001-M-Rev0, dated 1 November 2022.

Appendix A

PEPR – Mine Leases and Outcome Measurement Criteria (OMC)

The Prominent Hill mine, covering an area of approximately 78.5 km^2, operates under the Mining Lease (ML) 6228, which was granted by the Department of Primary Industries and Resources of South Australia (now Department for Energy and Mining) in August 2006. Supporting infrastructure and associated construction and maintenance operations, were obtained under various Miscellaneous Purpose Licenses (MPLs) and Extractive Mineral Leases (EMLs) under the mining Act 1971 (SA).

A condition of the ML required the Prominent Hill mine to operate in accordance with an approved Mining and Rehabilitation Program (MARP) of 2006 and its update in 2009 to include the development and operation of an underground mine. An amendment to the Mining Act of 1 July 2011 removed the reference to MARPs and introduced the Program for the Environment Protection and Rehabilitation (PEPR) in 2017. OZ Minerals prepared a PEPR in accordance with the Ministerial Determination 005.

A summary of TSF compliance against the PEPR 2022 is provided in Table A.1. A list of 2022 PEPR conditions and the assessment criteria are presented within this appendix.

Table A.1 TSF requirement compliance against PEPR 2022

GROUPED CONDITION NO.	GROUPED LEASE CONDITIONS	COMMENT BASED ON REVIEW
GC15	The Lessee must, in constructing, operating and post mine closure ensure no long-term adverse effect on aquatic fauna and habitat biodiversity (including riparian vegetation) due to seepage from Tailings Storage Facility.	Not within WSP scope
GC22	The Lessee must control erosion on the external slopes of the Integrated Waste Landform (IWL).	Rock in place around full perimeter and no evidence of erosion
GC23	The Lessee must ensure that the slopes of the perimeter embankment on the Integrated Waste Landform (IWL) are stable post-closure even under seismic conditions.	2022 CPT REPORT
GC24	The Lessee must take responsibility for the Integrated Waste Landform (IWL) (including the tailings) until such time that it can be demonstrated that the waste is in a form that is safe, non-polluting, and stable post-closure, and will not cause any impacts to the surrounding environment or create potential legacy issues for future generations.	Ongoing

GROUPED CONDITION NO.	GROUPED LEASE CONDITIONS	COMMENT BASED ON REVIEW
GC25	The Lessee must undertake revegetation trials and if successful, incorporate revegetation of the Integrated Waste Landform (IWL) into the MARP closure plan.	Planned to be undertaken as part of closure planning
GC26	The Integrated Waste Landform (IWL) must be designed, constructed, operated, and decommissioned in accordance with Tailings Management Guidelines as approved from time to time by the Chief Inspector of Mines in consultation with the Environment Protection Authority.	This condition has been met to date
GC29	The Lessee/Licensee must provide to the Director of Mines a Mining and Rehabilitation Compliance Report (MARCR) on operations carried out on the Lease/Licence and compliance with the approved PEPR. The MARCR must be submitted every year, within 2 months after the anniversary of the date the Lease/Licence was granted, or at some time agreed with the Director of Mines in accordance with guidelines approved by the Director of Mines. The Lessee/Licensee agrees that the MARCR will be made available to the public in a manner and form as determined by the Director of Mines. The MARCR must include a geotechnical and operational audit of the Integrated Waste Landform undertaken by an independent certified geotechnical engineer.	This report forms an interim report, as part of BHP governance process

Appendix B

2023 Production and Operational Data

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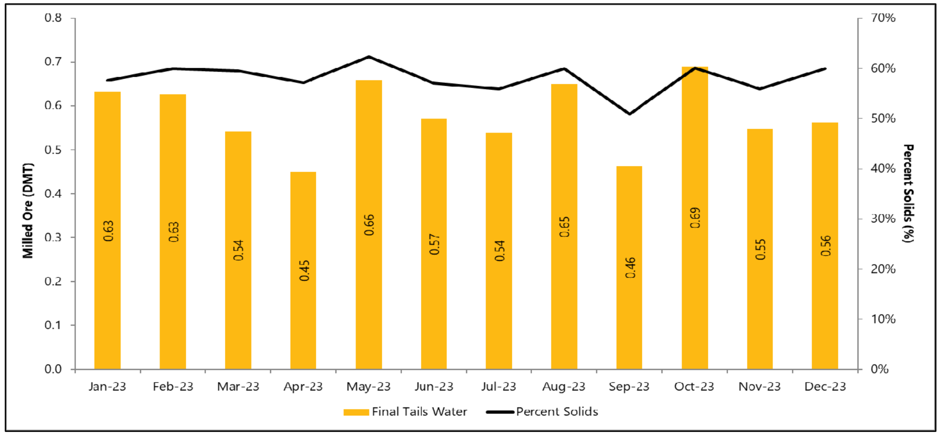

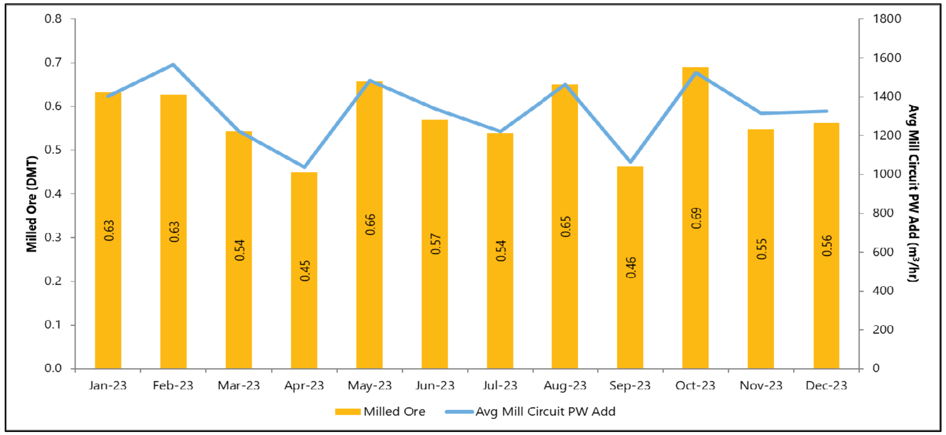

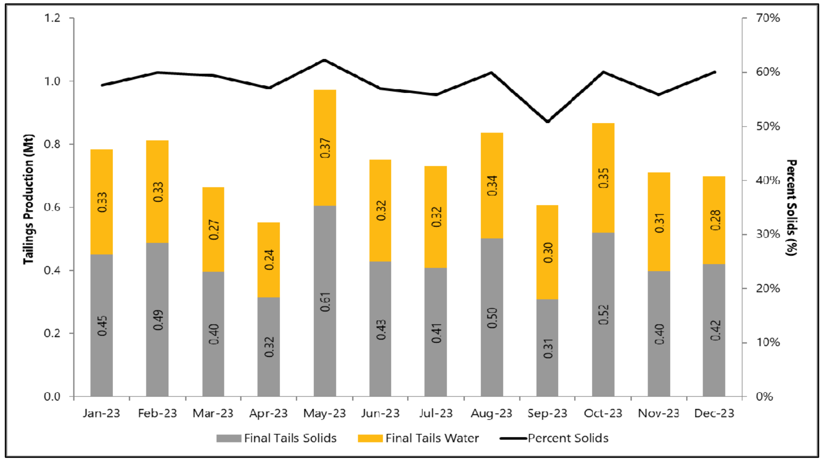

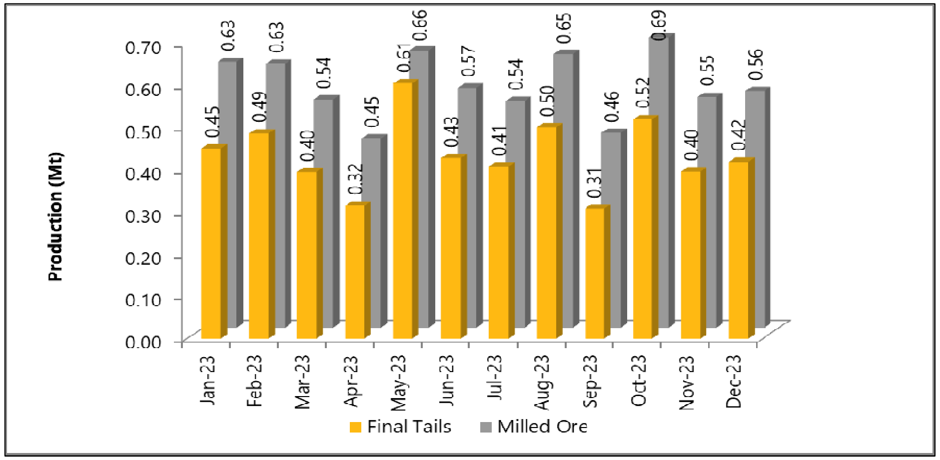

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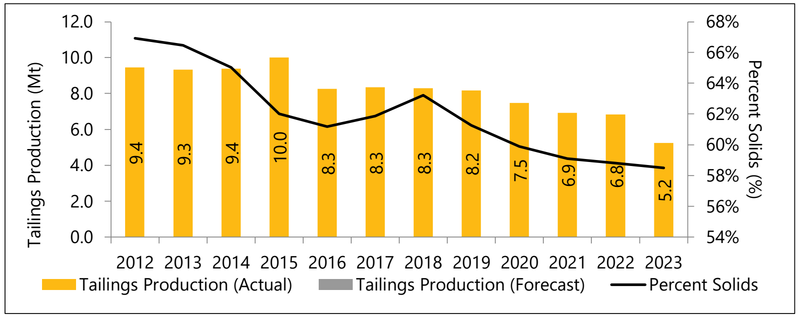

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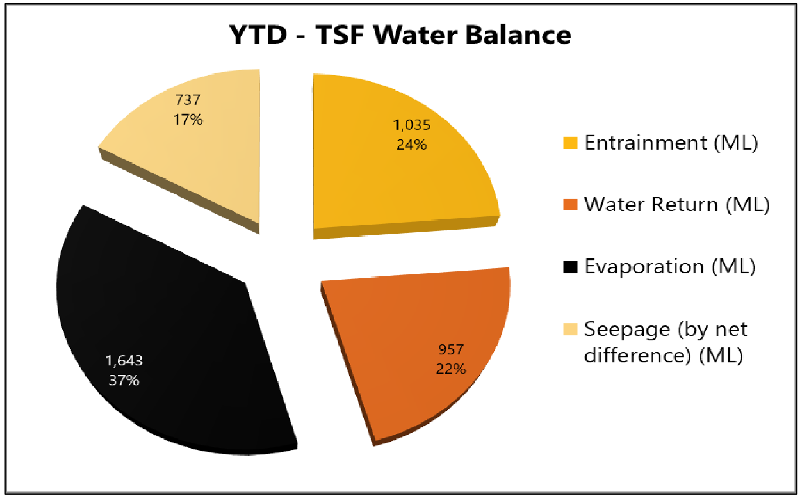
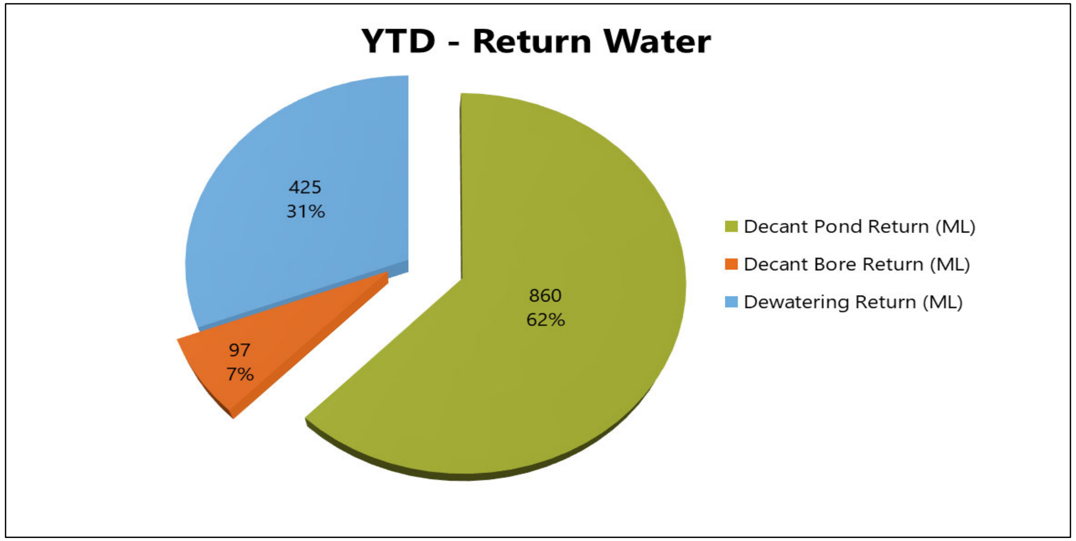


YTD - Return Water



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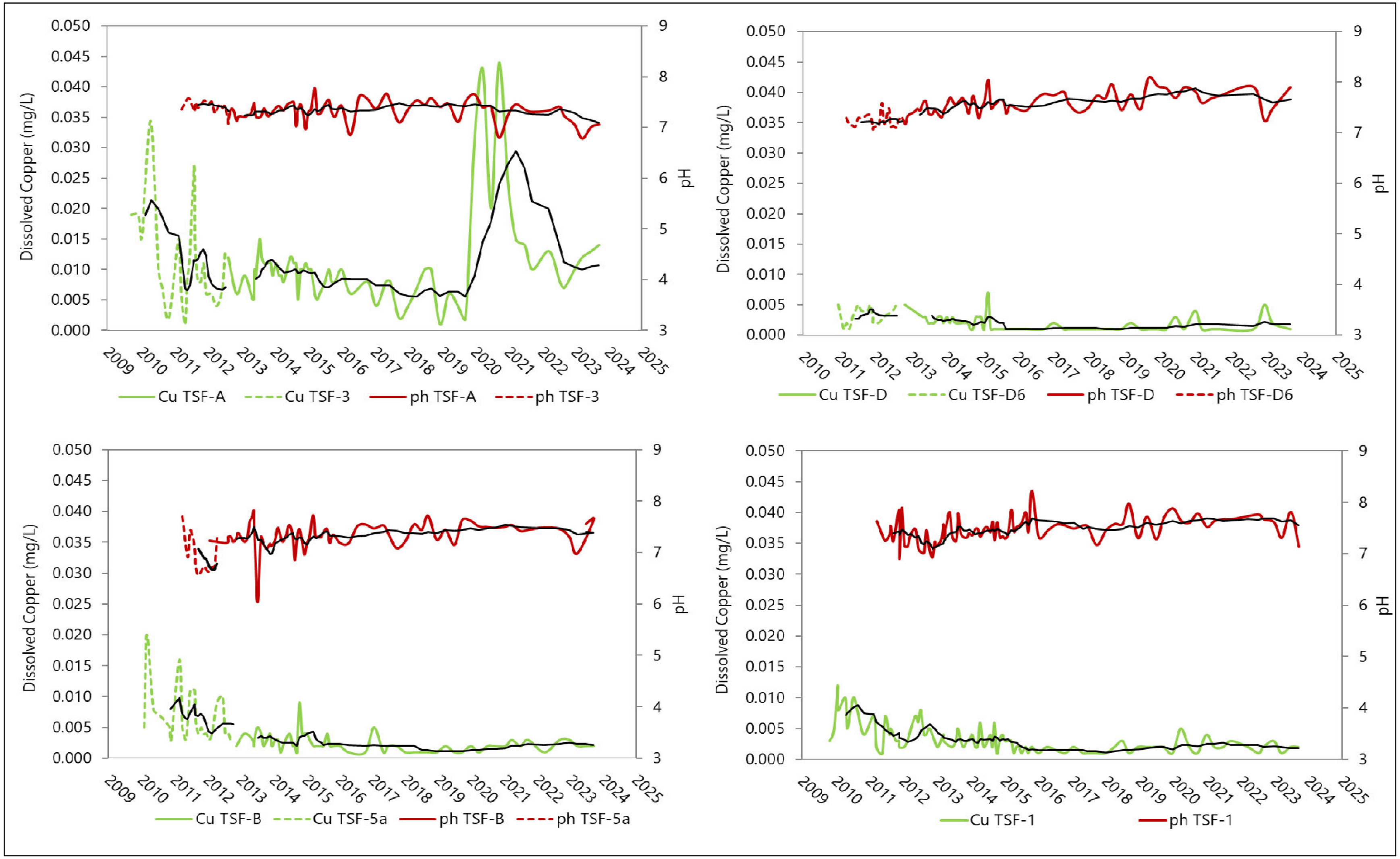

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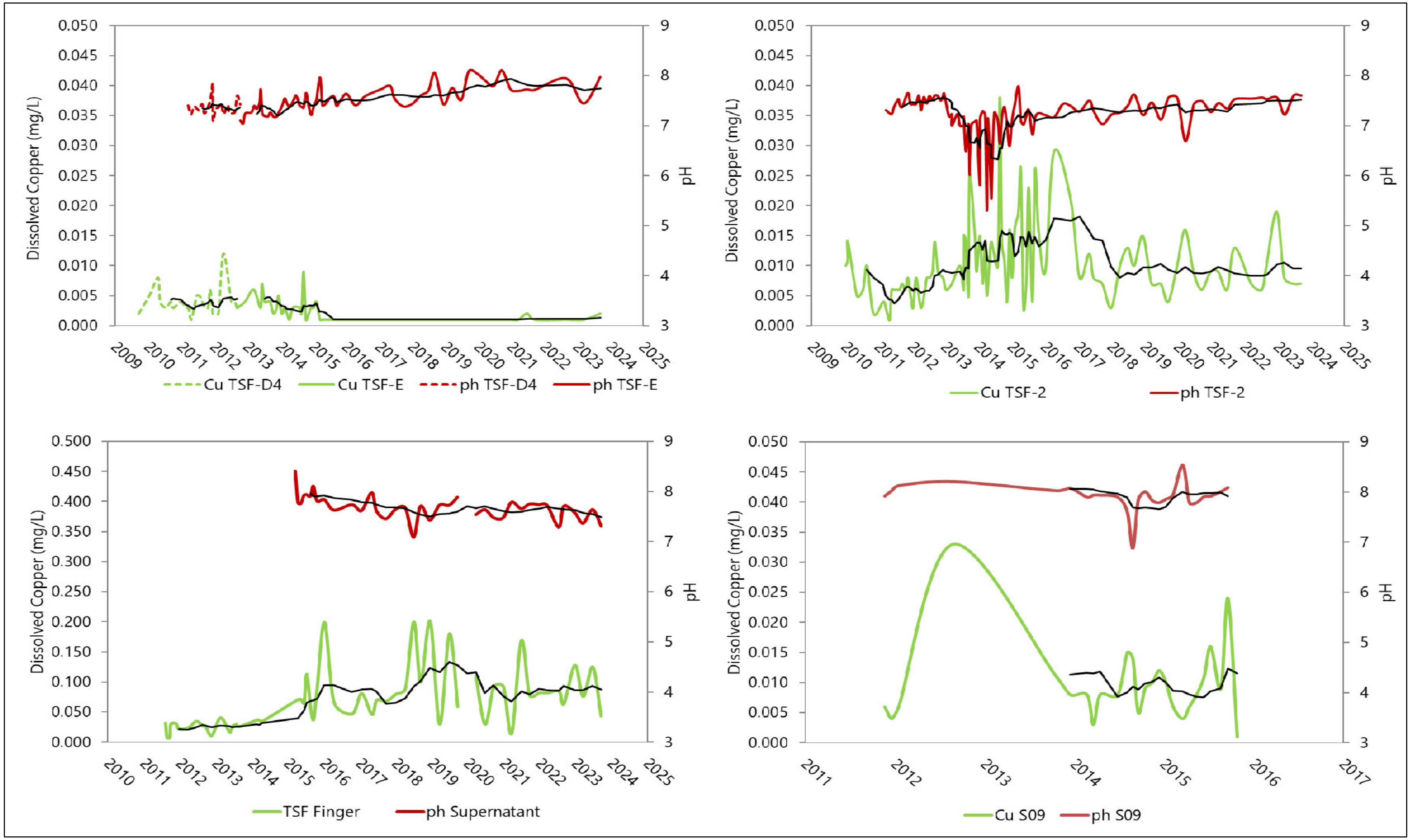

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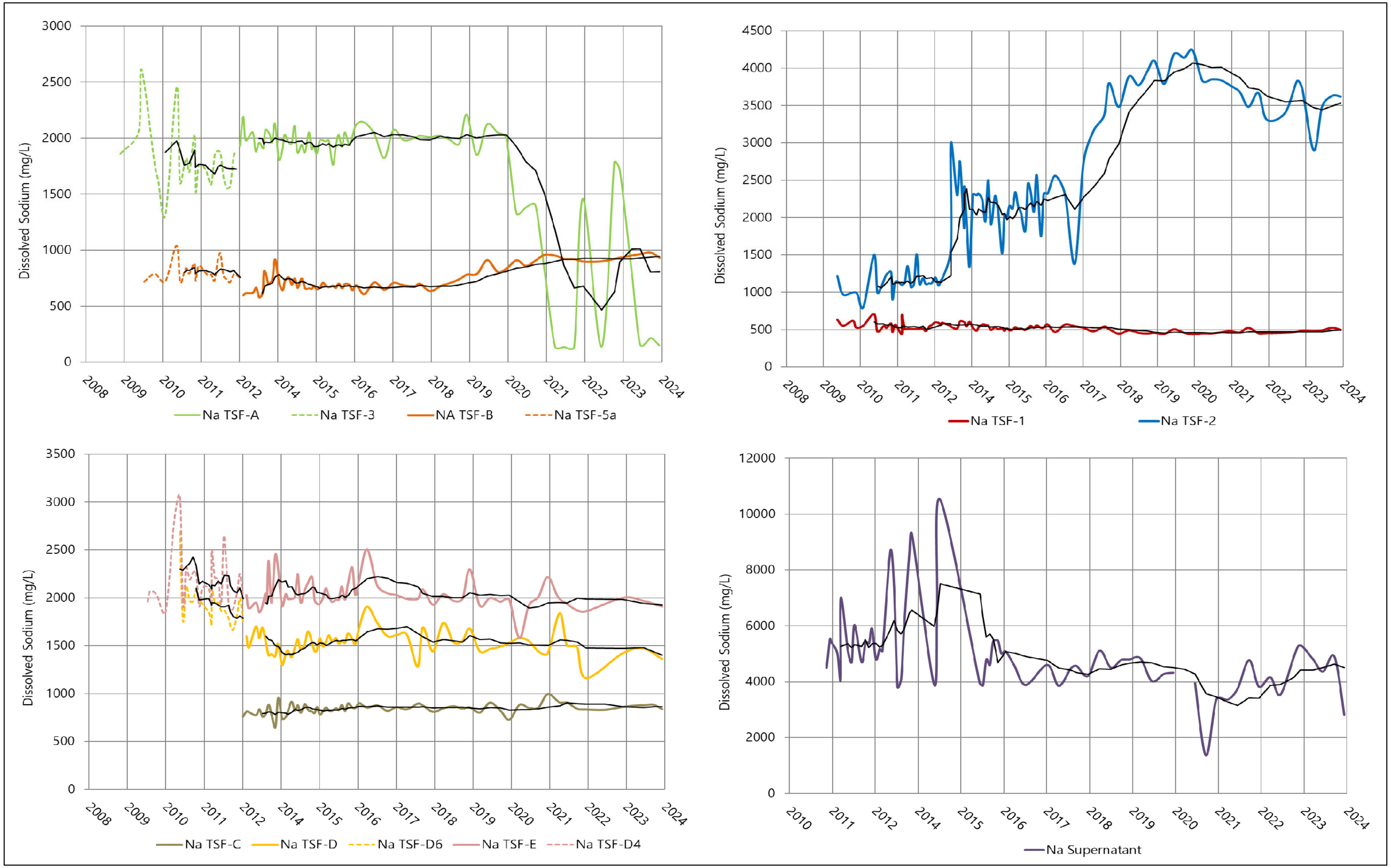

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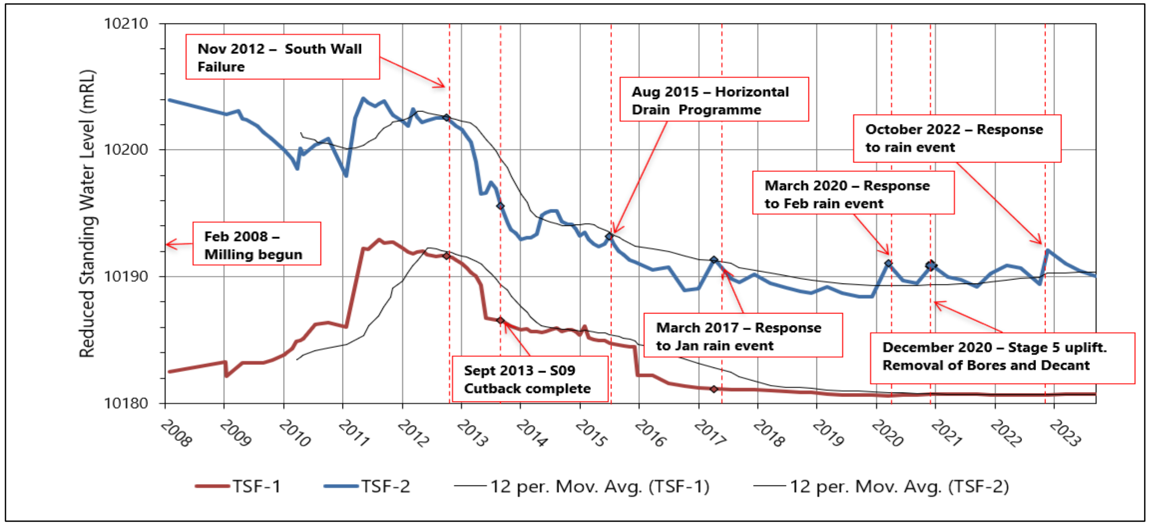

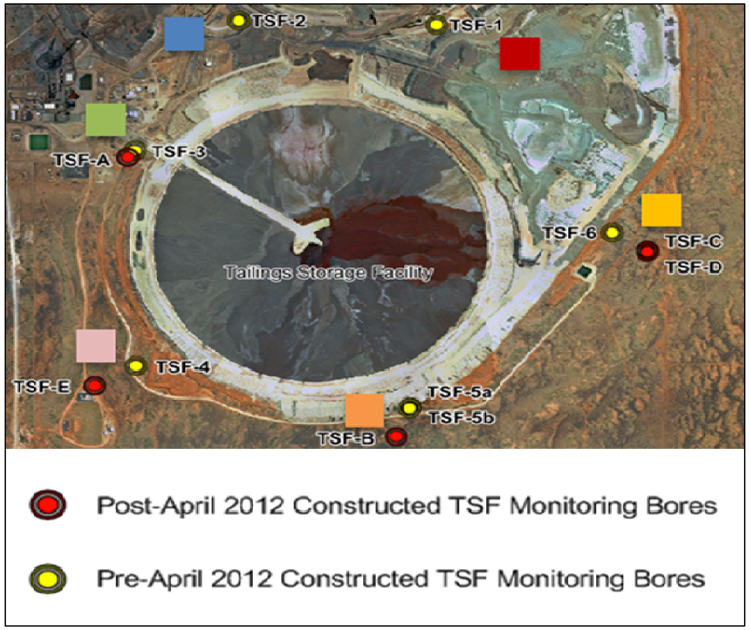

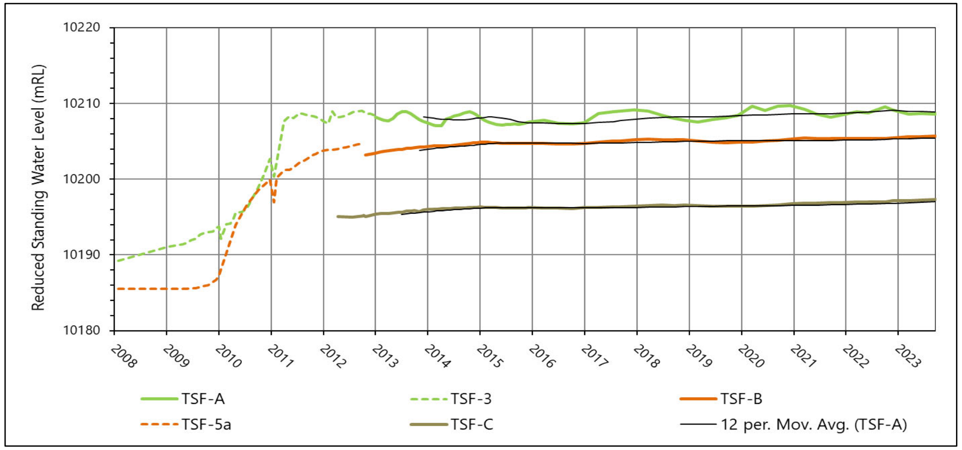

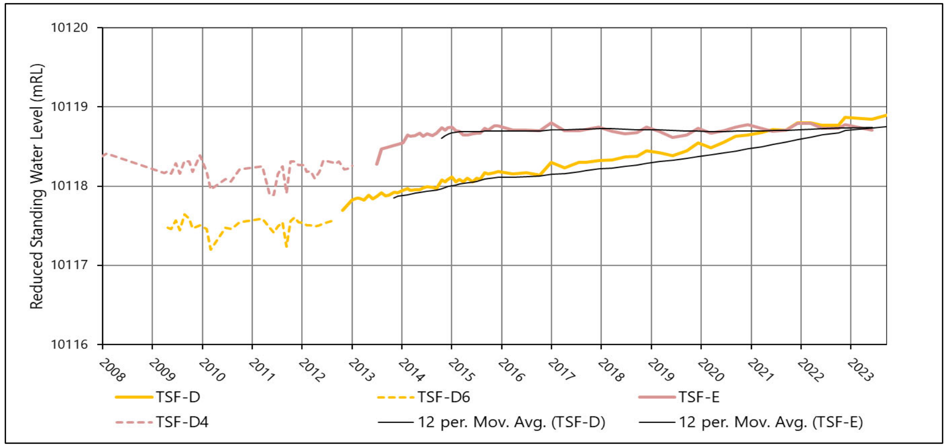

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Appendix C

Important Information

Limitation Statement

PERMITTED PURPOSE

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions*) are based in whole or in part on information provided by the Client and other parties identified in the report (*Information),* those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the Report.

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Appendix E. Prominent Hill Aerial Imagery 2024

Prominent Hill - June 2024

Appendix F. 2024 Compliance Report – Water Resource Works Approval 396907 Prominent Hill (Ecological Australia 2024)

2024 Compliance Report
Water Resource Works Approval 396907
Prominent Hill

Document Control History

Rev	Description	By	Reviewed	Approved	Date
0	New Document	**Sophie Pyrke (ELA),** **Erica Holt (ELA)** **Jasmine Richards (ELA)**	**Tina Law (BHP)** **Helene Wipf (BHP)**	**Tina Law (BHP)**	21 August 2024

Table of Contents

1 Introduction

On 2 May 2023 BHP Group Limited completed the acquisition of OZ Minerals Limited. The Prominent Hill operation has been developed and operated by OZ Minerals Prominent Hill Operations Pty Ltd wholly owned by OZ Minerals Limited. The Prominent Hill site has been integrated into the BHP Copper South Australia (SA) assets, also incorporating BHP's Carrapateena mine, Olympic Dam mine and Oak Dam exploration site. Copper SA falls under the BHP Minerals Australia business portfolio which also incorporates Western Australia Iron Ore, Nickel West, Coal, Mt Arthur Coal and Operations Services.

BHP Group Limited (herein referred to as BHP) has completed the annual groundwater review for the Prominent Hill Project (the Project) water supply, as required under Condition 16 of Water Resources Works Approval 396907 associated with Water Licence (WL) 396811.

This groundwater review has assessed all groundwater monitoring results, including water level and water quality data, collected during the review period of 1 July 2023 to 30 June 2024.

Background information for the Project area regarding setting, climate and the regional hydrogeology can be referred to in any of the following documents:

- Previous Prominent Hill Water Compliance Reports (i.e. 2010 to 2023)
- Water Licence 396811
- Water Resources Works Approval 396907
- Prominent Hill Conceptual Hydrogeological Model Review (ELA, 2016b)
- The OZ Minerals Prominent Hill Water Licence 396811 monitoring plan (OZ Minerals, 2023)
- Prominent Hill Program for Environment Protection and Rehabilitation (OZ Minerals, 2022).

Appendix A contains maps of locations and the study areas discussed within this report. Appendix B contains summary information for all groundwater wells (including well identification, location and unit number) reviewed in this report.

2 South Australian Regulatory Review

BHP did not receive feedback from the Department for Environment and Water (DEW) following the submission of the 2022/23 Prominent Hill annual groundwater compliance report for regulatory review. As such no feedback has been included within this report.

This report presents the groundwater monitoring results of the 2023/24 reporting year. Any comments received from DEW regarding this reporting period will be addressed during the next reporting period (2024/25).

3 Water Licence

The Prominent Hill mine is located within the Far North Prescribed Wells Area (FNPWA) of South Australia's Arid Lands Region. Groundwater abstraction for use at the Prominent Hill mine is regulated by the FNPWA Water Allocation Plan (WAP), the Project's individual Water Licence (WL 396811) and the projects Water Resource Works Approval (WRWA 396907).

This annual groundwater use and monitoring review is a requirement of Condition 16 of WRWA 396907:

- **Condition 16:** *"The holder of this works approval must submit an Annual Water Use Report in a form approved by the Minister on or before 31 December and will include: i. the volume of water actually taken through a water accounting mechanism during the water use year at monthly intervals; ii. the salinity of the water taken from the aquifer measured once throughout the water use year; additionally, if the taking of water from the well results in a salinity rise of greater than 10%, in relation to the groundwater salinity measured over the preceding 5 years at the point of taking, the cause for the rise may be required to be investigated by the holder of this approval".*

In addition, Condition 8 of the WRWA requires "*The licensee is to provide an update to the numerical modelling of the Virgo and Aries borefields, incorporating all monitoring results, to the Department every two years.*" The numerical groundwater model was updated by IGS in 2023 and will be completed again in 2025.

Table *3-1* presents a summary of Prominent Hill's compliance status against all conditions outlined in WRWA 396907.

Table *3-1 Compliance conditions*

Condition Number	Condition Description	Compliance
1	Water must not be taken unless distributed through a watertight delivery system.	Compliant
2	No water is to be abstracted from the Cadna-Owie Formation/Algebuckina Sandstone Aquifer (Eromanga Basin Aquifer).	Compliant
3	The taking of water from the Aries, Virgo and Taurus borefields must not cause the aquifer pressure in the Cadna-owie Formation/Algebuckina Sandstone Aquifer (Great Artesian Basin Aquifer) to be reduced by greater than 0.5 metres at a distance of 5 kilometres from the Great Artesian Basin springs, based on monitoring of adjacent regional monitoring wells.	Compliant
4	No more than 9,490,000 kilolitres per annum is to be taken for mining purposes from wells within the Aries and Virgo borefields designated area ("footprint), identified in Figure 1 and Appendix 1 as previously supplied with your licence. The quantity of water	Compliant. Water only taken from Aries production wells, as Virgo no longer operational.

Condition Number	Condition Description	Compliance
	taken for each month must not exceed an average of 26 megalitres per day.	
5	No more than 219,000 kilolitres per annum is to be taken for camp water purposes from the two wells within the Taurus borefield listed as Production Wells in Appendix 3 to Appendix 1 as previously supplied by your license. Once the Production Wells in the Taurus borefield are decommissioned the 219,000 kilolitres of water per annum for camp water purposes can be taken from wells within the Aries borefield.	Compliant – Taurus now decommissioned.
6	The approval holder must ensure that aquifer drawdown for wells defined as "Class B" in section 3.3 of the monitoring plan, does not exceed the specified threshold.	Compliant
7	The approval holder must adhere to all monitoring and reporting requirements as detailed in the Program for Environment, Protection & Rehabilitation (PEPR) and notify the Department if there is any change to the PEPR.	Compliant
8	The holder of the works approval is to provide an update to the numerical modelling of the Virgo and Aries borefields, incorporating all monitoring results, to the Department every two years.	Compliant
9	The holder of the works must implement the monitoring program specified in the document titled "Water Licence 41028 Monitoring Plan" issue date May 2014 Document No 4.7.1 PLN002.	Compliant – Latest document dated 2023
10	The headworks of the well/s from which the water is taken pursuant to this approval must be maintained and constructed so that the extraction of water from the well can be accounted for without interference.	Compliant.
11	This approval will expire on 30 June following a change in ownership or, in the case of a pastoral lease, a change in the holding of that lease (e.g., by expiry, cancellation, relinquishment or surrender), unless this approval has been varied to reflect that change.	Compliant.
12	The maximum annual water extraction limit for the works listed on this approval will reduce in response to a permanent reduction in the water access entitlement (either through transfer or surrender) associated with this approval.	Compliant
13	For the purposes of this approval, the term 'per annum' means the period between 1 July in any calendar year to 30 June in the following calendar year.	Compliant
14	Water must only be taken from nominated works described in this approval.	Compliant.
15	The holder of this Water Resource Works Approval must comply with the provisions of the Water Allocation Plan for the Far North Prescribed Wells Area 2021 or as amended.	Compliant.

Condition Number	Condition Description	Compliance
16	The holder of this works approval must submit an Annual Water Use Report in a form approved by the Minister on or before 31 December and will include: i. the volume of water actually taken through a water accounting mechanism during the water use year at monthly intervals; ii. the salinity of the water taken from the aquifer measured once throughout the water use year; additionally, if the taking of water from the well results in a salinity rise of greater than 10%, in relation to the groundwater salinity measured over the preceding 5 years at the point of taking, the cause for the rise may be required to be investigated by the holder of this approval	Compliant.
17	Meters used to measure water taken through the works specified on this approval must be installed consistent with the South Australia Licensed Water Use Meter Specification published to the Department's website.	Compliant
18	The taking of water from the wells authorised by this approval must not exceed the maximum annual water extraction limit of 9709000 KL/annum.	Compliant
19	This approval enables the taking of water from wells located within the associated Mining Lease for Prominent Hill Mine (ML6228) only.	Compliant

Notes: 1. The new document control number for the Water licence 396907 Monitoring plan is now PH-9999-SEC-PLN-0034

4 Monitoring Activities

During the reporting period (1 July 2023 to 30 June 2024) BHP undertook groundwater monitoring at the following wells, with the locations of the wells provided in Appendices A1 to A4:

- 36 Borefield performance wells (33 Aries and 3 Virgo wells)
- 28 regional environmental monitoring wells (including leading indicator wells for the Borefields) and
- 26 third party wells.

Leading indicator wells provide an early indication of potential impacts from the mining operation.

5 Borefield Performance Monitoring

5.1 Overview

Boorthanna Formation groundwater conditions (volumes of groundwater abstracted and water quality produced) are monitored at production wells via flow meters. Groundwater levels and their response to abstraction operations are monitored at nearby observation wells, located near the production wells (~10 m from the production well). The following presents a summary of results from each monitoring component. Water quality is measured from water samples taken at the production well headwork. Field parameters, such as pH are measured with a calibrated, handheld probe immediately upon collection. Preserved water bottles are utilised for collection of water to send for laboratory analysis for other water ions at a National Association of Testing Authorities (NATA) accredited laboratory.

Maps showing well locations are presented in Appendix A; a summary of all wells is presented in Appendix B, while monitoring data are presented graphically in Appendix C1, including hydrographs and plots for water quality and major ions where applicable.

Water quality data was not collected for the Virgo Borefield production wells due to production wells being non-operational during the monitoring period. Water levels are stable and data is presented graphically in Appendix C3.

5.2 Groundwater Abstraction

During the reporting period, total abstraction from the Aries Borefield was approximately 4,284.32 ML. the total licence allocation for the period is 9,709 ML, divided into camp water (350 ML) and mining (9,359 ML). The abstracted volume is approximately 44.1% of the available water allocation, as stipulated under WRA 396907. As mentioned, the Virgo Borefield was not in use during this reporting period, with pumping suspended in early 2014, as such no data is presented relating to the Virgo Borefield. Table 5-1 presents a summary of water abstraction from Aries Borefield.

Table 5-1 Aries Borefield groundwater abstraction totals

Production well	Total abstraction (ML)	Average daily abstraction per well (ML/day)
Aries 1	135.7	0.37
Aries 2	197.3	0.54
Aries 3	126.2	0.34
Aries 4[1]	0.00	0.00
Aries 5	428.1	1.17
Aries 6	409.4	1.12
Aries 7	320.3	0.88
Aries 8	494.6	1.35
Aries 9[1]	0.00	0.00
Aries 10	297.4	0.81
Aries 11	614.4	1.68
Aries 12	225.3	0.62
Aries 13	212.7	0.58
Aries 14	103.0	0.28
Aries 15	229.1	0.63
Aries 16	490.7	1.34
Total[2]	**4,284.3**	**11.71**

Note: 1. Aries 4 and 9 was not operational during the reporting period. 2. Table subject to rounding errors.

5.3 Groundwater Levels and Field Parameters

As outlined in the WL 396907 Monitoring Plan PH-9999-SEC-PLN-0034 (OZ Minerals, 2023), BHP has undertaken monitoring at the Aries and Virgo observation wells (water levels) and production wells (Aries only) (water chemistry), installed within the Boorthanna Formation. Trigger levels are not applicable at these wells.

The groundwater monitoring results (groundwater level and field parameters) collected during the 2023/24 reporting period show:

- Aries wells (Boorthanna Formation):
  - Groundwater levels have generally remained stable and within historical variation for all Aries Borefield well data. Fluctuations observed throughout the reporting period can be attributed to changes within the borefield pumping schedule. This is evident in the Aries-4 well, where the water level is shown to recover since pumping ceased in early May 2023.
  - Electrical conductivity (EC) values have generally remained within historical variation and are stable.
  - Aries-4 appears to have a very slight downwards trend for EC, though this is still well within historical variation.

  - All Aries Borefield wells displayed a slight increase in pH levels during the June 2024 monitoring round. The values are within historical variation, however it should be monitored and investigated if the increase continues.
- Virgo wells (Boorthanna Formation):
  - The Virgo wells continue to show recovering groundwater levels following the cessation of pumping (2014). Water levels in these wells appear to be stabilising.
  - BHP did not collect field parameters (EC and pH) from the Virgo production wells as these were not in operation during the reporting period.

Hydrographs for all Aries and Virgo observation and production wells (where monitored) are presented in Appendix C1. Note that a hydrograph for Aries-10 is not included as there is no monitoring well located near this production well.

5.4 Laboratory Analysis

The groundwater monitoring program includes collection of water samples from Aries Borefield production wells and analysis of samples for major ions (Cl^-, Ca, SO_4^{2-}, K, Na, $CaCO_3$ and Mg).

Groundwater major ion concentrations are presented in Appendix C2. Results remained stable and within historical variation for all Aries wells for this monitoring period.

6 Regional Environmental Monitoring

6.1 Overview

Regional environmental monitoring of groundwater within the Boorthanna Formation and non-artesian Eromanga Aquifer is undertaken to identify regional impacts that may be occurring as a result of groundwater abstraction for the mine site and confirm that these impacts are within those approved (i.e. those stated within the approved PEPR).

The following presents a summary of results from each monitoring component. All monitoring is presented graphically in Appendix C, including hydrographs of water levels and plots for water quality.

6.2 Aries Borefield Leading Indicator Wells

6.2.1 Water Level Monitoring

Groundwater levels within the Boorthanna Formation are monitored at four leading indicator wells within the Aries Borefield (AMD-1, AMD-2, AMD-3 and AMD-4). Groundwater levels within the non-artesian Eromanga Aquifer are monitored in two leading indicator wells within the Aries Borefield (AMS-1 and AMS-2). Monitoring results are presented graphically in Appendix C4. The leading indicator wells are located approximately 5 to 10 km outside of the Aries Borefield extent (refer to Aries map in Appendix A) and are assigned drawdown thresholds. These thresholds are based on numerical groundwater modelling (at licenced capacity) with the aim to provide an early warning if the aquifer system(s) are not responding as per modelled predictions.

Table 6-1 presents a summary of the drawdown levels observed in relation to the set threshold levels, for all Aries Borefield leading indicator wells. It is noted that (formerly) OZ Minerals received approval from DEW during 2021 to increase the drawdown threshold at the AMD-2 leading indicator well to 34.7 m (from 27.3 m). Ongoing exceedances of the drawdown threshold at AMD-2 triggered investigative studies to be undertaken by SKM (2013) and LWC & ELA (2018). These studies suggested the original threshold was too low and did not accurately represent the groundwater drawdown anticipated during the life of mine (LOM). Table 6-1 includes the updated drawdown threshold for AMD-2.

Table 6-1 Aries leading indicator monitoring thresholds

Well ID	Unit number	Formation/aquifer	Drawdown threshold (m)	Observed drawdown at end of review period (m)	Water level at end of review period (mAHD)
AMD-1	603800165	Upper Boorthanna	25.9	13.30	63.03
AMD-2	603800177	Upper Boorthanna	34.7	22.44	64.42
AMD-3	613800091	Lower Boorthanna	39.1	-1.17	68.48
AMD-4	603800198	Upper Boorthanna	50.5	40.58	31.36
AMS-1	613800067	Non-artesian Eromanga	0.1	0.06	75.33
AMS-2	603800199	Non-artesian Eromanga	0.1	-0.97	89.88

The following trends were observed in the leading indicator wells within the Aries Borefield:

- Boorthanna Formation:
    - Groundwater levels within AMD-1 have gradually been declining, however they appear to have stabilised during this reporting period, with levels remaining well within drawdown threshold limits.
    - AMD-2 groundwater levels continue to rise from last year’s reporting period.
    - The groundwater level in AMD-4 has decreased to 40.58 m in June 2024, this is still well below the drawdown trigger of 50.5 m for AMD-4.
    - AMD-3 water level remains stable.
- Non-artesian Eromanga Aquifer:
    - No change to water levels observed in AMS-1 and AMS-2. Both continue to be stable and within drawdown threshold limits.

6.2.2 Water Quality Monitoring

For the leading indicator wells during the reporting period:

- Boorthanna Formation:
    - AMD-1 water quality remains stable and within historical variation.
    - AMD-2 and AMD-3 display a continuing decline in EC, although results remain within historical variation. The pH results are relatively consistent, however this reporting period observed a slight decrease from last reporting period. The pH levels will continue to be monitored for a potential declining trend.
    - AMD-4 displays a decline in EC and increase in pH, however still within historical variation.
- Non-artesian Eromanga Aquifer:
    - EC and pH for AMS-1 and AMS-2 remained within historical variation, though EC records appear to display a minor increasing trend. This will continue to be monitored.

6.3 Regional Leading Indicator Wells

6.3.1 Water Level Monitoring

Groundwater levels were monitored and assessed against their drawdown thresholds (see Appendix C5 within the following seven regional leading indicator wells and two aquifers, located approximately 15 to 50 km outside the Aries Borefield:

- Boorthanna Formation:
    - RMD-1
    - RMD-3
    - RMD-4.
- Non-artesian Eromanga Aquifer:
    - RMS-1
    - RMS-3
    - RMS-4.

All regional leading indicator wells have drawdown threshold levels based on numerical groundwater modelling. These threshold levels aim to provide an early indication if aquifer systems are not responding in line with the model predictions.

Table *6-2* presents a summary of the drawdowns measured at the regional leading indicator wells against their drawdown thresholds for the reporting period. No drawdown threshold was exceeded during the reporting period.

Table 6-2 Summary of drawdown measurements at regional leading indicator wells

Well ID[1]	Unit number	Formation/aquifer	Drawdown threshold (m)	Observed drawdown at end of review period (m)	Water level at end of review period (mAHD)
RMD-1	613800070	Upper Boorthanna	7.3	-0.21	52.40
RMD-3	613900046	Upper Boorthanna	10.2	6.60	58.06
RMD-4	613800098	Upper Boorthanna	24.2	8.98	57.50
RMS-1	613800071	Non-artesian Eromanga	0.1	0.08	51.81
RMS-3	613900047	Non-artesian Eromanga	0.1	-0.11	60.94
RMS-4	613800090	Non-artesian Eromanga	0.2	0.04	58.81

The following trends were observed from the water level data in **Table *6-2***:

- Boorthanna Formation:
    - RMD-1 groundwater level remains stable, and within drawdown limits.
    - RMD-3 and RMD-4 groundwater levels continue to show a gradual declining trend (however in the most recent monitoring round they appear to be stabilising). Drawdown thresholds were not exceeded at either well.
- Non-artesian Eromanga Aquifer:
    - RMS-3 and RMS-4 groundwater levels remained stable and within historic variation at the end of the reporting period.
    - RMS-1 displays a slight decline trend, however it is still within historic variation and does not exceed the drawdown threshold, with an observed drawdown of 0.08 m in April 2024.

6.3.2 Water Quality Monitoring

For the leading indicator wells during the reporting period:

- Boorthanna Formation:
    - Water quality data for RMD-1, RMD-3 and RMD-4 remains within historical variation. RMD-1 whilst showing an upwards trend for EC still remains within historical variation.
- Non-artesian Eromanga Aquifer:
    - RMS-1 and RMS-3 show water quality values all within historical variation.
    - RMS-4 has a steady EC, however the pH level has continued a decreasing trend to 4.83, which is the lowest recorded observation of pH in the well. This should continue to be monitored and investigated if the decreasing trend continues.

6.4 Environmental Monitoring Wells

A further nine environmental wells are also monitored by BHP on a yearly basis as per the WL 396811 Monitoring Plan, however these wells do not have drawdown threshold criteria. Groundwater levels and water quality indicators were monitored and assessed against historical variability within the following environmental indicator wells (see Appendix C5):

- Boorthanna Formation:
  - RMD-5
  - RMD-6
  - RMD-7
  - Gemini-1
  - Taurus-2
  - BFMW01.
- Non-artesian Eromanga Aquifer:
  - RMS-2
  - RMS-7.
- Andamooka Limestone:
  - RMD-2.

6.4.1 Water Level Monitoring

The following trends were observed in the water level data:

- Boorthanna Formation:
  - Water levels have remained stable and within historical variation for RMD-5, RMD-6 and Taurus-2 during the reporting period.
  - Groundwater levels continue to recover at the RMD-7 and Gemini-1 wells and appear to be stabilising.
  - BFMW01 continues to recover from the last reporting period.
- Non-artesian Eromanga Aquifer:
  - Groundwater levels in RMS-2 continue to be somewhat erratic, though they remain within historic variation. The increasing trend, noted in the last reporting period has not continued. RMS-2 is very responsive to recharge, with rainfall levels correlating to fluctuations in standing water level (SWL).
  - RMS-7 water level remained stable and within historical variation during the reporting period.
- Andamooka Limestone:

  - The water level remained stable in RMD-2 with no significant change. The recorded drawdown is 0.30 m compared with 0.23 m last reporting period.

6.4.2 Water Quality Monitoring

The following trends were observed for water quality:

- Boorthanna Formation:
  - Gemini-1 and Taurus-2 have shown a declining pH level trend for the previous three monitoring rounds, however a slight increase has been observed during this reporting period (when compared to last reporting period). The pH is within historical variation and will be monitored and investigated if the decline continues.
  - Water quality data for RMD-6, RMD-7 and BFMW01 remains stable and within historical variation.
  - The EC at RMD-5 continues to be somewhat erratic, and generally shows a declining trend.
- Non-artesian Eromanga Aquifer:
  - Water quality values at RMS-2 and RMS-7 remain stable and within historical variation.
- Andamooka Limestone:
  - RMD-2 water quality values are stable and within historical variation.

6.5 Virgo Leading Indicator Wells

6.5.1 Water Level Monitoring

Groundwater levels within the Boorthanna Formation are monitored at four leading indicator wells (VMD-1, VMD-3, VMD-4 and VMD-5). The groundwater level within the non-artesian Eromanga Aquifer is monitored in one centrally located leading indicator well (VMS-1). The leading indicator wells are located approximately 1 to 2 km outside of the Virgo Borefield extent (refer to Virgo map in Appendix A) and are assigned drawdown thresholds. These thresholds are based on numerical groundwater modelling simulations (at licenced capacity) and aim to provide an early warning that the aquifer systems are not responding to groundwater modelling predictions.

At the conclusion of the reporting period, no Virgo leading indicator well had triggered their drawdown threshold. **Table *6-3*** presents a summary of the drawdown levels observed during the reporting period in relation to the set drawdown threshold levels, for all Virgo leading indicator wells. See Appendix C6.

Table 6-3 Summary of drawdown levels for Virgo leading indicator wells

Well ID	Unit number	Formation/aquifer	Drawdown threshold (m)	Observed drawdown at end of review period (m)	Water level at end of review period (mAHD)
VMD-1	603800182	Upper Boorthanna	30.0	1.22	105.91
VMD-3	603800172	Upper Boorthanna	35.0	2.4	104.36

Well ID	Unit number	Formation/aquifer	Drawdown threshold (m)	Observed drawdown at end of review period (m)	Water level at end of review period (mAHD)
VMD-4	603800246	Upper Boorthanna	35.0	2.06	104.69
VMD-5	603800247	Upper Boorthanna	30.0	-1.09	108.54
VMS-1	603800248	Non-artesian Eromanga	0.1	0.04	111.41

The following trends were observed from the water level data in **Table *6-3***:

- Boorthanna Formation:
    - The Virgo Borefield was previously used intermittently to augment water supply and has not been in use since 2014. Therefore, continued recovery of groundwater levels was observed at leading indicator wells installed within the Boorthanna Formation during the reporting period (as indicated by hydrographs presented in Appendix C). Water levels are currently around 1-2 m below baseline levels (with the exception of VWM-5).
- Non-artesian Eromanga Aquifer:
    - No significant change to groundwater level has been observed within the non-artesian Eromanga Aquifer (VMS-1).

6.5.2 Water Quality Monitoring

For the leading indicator wells during the reporting period:

- Boorthanna Formation:
    - EC values for VMD-3 and VMD-5 remained stable since the last reporting period and within historical variation.
    - EC values for VMD-1 has increased over the last two reporting periods, with historical data for the well showing both rapid inclining and declining trends. The EC is still within historical variation. The EC will be monitored and investigated if the increase continues above historical variation.
    - VMD-4 wells show EC levels returning to within historical levels.
    - pH levels remain stable for all wells.
- Non-artesian Eromanga Aquifer:
    - No value for VMS-1 has been recorded since 2016 when production from the Virgo Borefield ceased, and collection of water quality at VMS-1 is not a requirement of the monitoring plan.

7 Existing Groundwater Users (Third Party Users)

7.1 Regional - Non-Artesian Eromanga Basin

7.1.1 Water Level Monitoring

BHP are required, under the conditions of section 7.2 of (formerly) OZ Minerals monitoring plan and the approved PEPR, to demonstrate that the operation of the borefields at Prominent Hill does not adversely impact existing/ third party groundwater users. To ensure that there is no impact to the ability of pastoralists to operate economically surrounding the mining tenements, BHP conducts groundwater monitoring at the following pastoral leases:

- Anna Creek
- Billa Kalina
- McDoual Peak (The Twins)
- Millers Creek and
- Mount Eba.

Condition 7 of WRA 396907 requires that BHP *"must adhere to all monitoring and reporting requirements as detailed in the Program for Environment, Protection & Rehabilitation (PEPR)"*. Under PEPR conditions, OZ Minerals (2022), there is no set drawdown threshold with respect to third party groundwater users. Groundwater level and quality data is collected from wells within each third-party lease to aid the regional hydrogeological understanding, and to fulfil individual pastoral agreements negotiated between BHP and the pastoralists.

Appendix C7 presents hydrographs showing groundwater level trends for all pastoral monitoring wells monitored by BHP, during the reporting period. The following trends were observed:

- Boorthanna Formation:
  - Groundwater levels within the Boorthanna Formation remain generally stable and within historical variation.
  - The groundwater level in Woolshed bore has declined back to historical levels after an elevated period in early 2020 to late 2022.
  - Groundwater levels and quality samples could not be obtained from CH-1 (Walsh's Well) after the first monitoring round in September 2023, due to the installation of a new pump by the pastoralist leaving little room to sample on headworks.
- Non-artesian Eromanga Aquifer:
  - Groundwater levels generally remain stable within the non-artesian Eromanga Aquifer. Water levels have not been collected from the Baldhill Solar Bore since April 2020 due to installation of infrastructure by the pastoralist preventing access.

  - ASMW04 (Hele Well) was noted as collapsed in October 2023, and therefore no monitoring occurred.
  - A groundwater level could not be obtained from Baldhill Windmill Bore in the April 2024 monitoring round, due to a mud layer at approximately 47 cm causing the dipper to sound.
  - The groundwater level in Bucklands Bore was elevated in October 2023, with little previous variation in water level. A groundwater level could not be obtained from Bucklands Bore during the April 2024 monitoring round.
  - Groundwater levels in the Twins Well have been increasing to January 2023 and have now stabilised.
  - A groundwater level could not be obtained from Banjo Bore in April 2024 as the dipper tape slackened at 60 m.
  - Sugarloaf well and North Well groundwater levels remain stable

7.1.2 Water Quality Monitoring

The following groundwater quality trends were observed for the existing user wells:

- Boorthanna Formation:
  - Water quality (EC and pH) remained stable and within historical variation for all wells.
- Non-artesian Eromanga Aquifer:
  - Water quality remained stable and within historical variation for all wells, with the exception of Bucklands Bore. In the previous reporting period, the pH at Bucklands Bore increased to 8.97, and was observed at 8.95 during this reporting period, up from 6.55 in prior reporting periods. This fluctuation is within historical levels but should continue to be monitored.
  - A groundwater sample was not obtained from No.5 South in the April 2024 monitoring round, as the infrastructure was disconnected by the pastoralist.
  - Water quality samples could not be obtained from Pipeline Dam Bore as the hydrasleeve was catching on pastoral infrastructure in the casing, however the water level remains stable.

7.2 Regional - Artesian Eromanga Basin

BHP undertake monitoring at one well located within the artesian Eromanga Aquifer (Margaret Creek Bore) in order to provide data against whether the Project is, or is not, having a measurable impact upon the Great Artesian Basin aquifer. There are no drawdown thresholds established for this well.

7.2.1 Water Level Monitoring

The Margaret Creek Bore reported a slight decline in groundwater levels for the reporting period, however the result remains within historical variation. The well head pressure gauge (used to calculate water level) has been replaced by DEW since the previous reporting period, due to the previous pressure gauge being non-operational.

7.2.2 Water Quality Monitoring

EC and pH collected for the Margaret Creek Bore remained stable for this reporting period when compared to historical records.

8 Forward Works Plan

The following actions have been identified as part of a forward work plan:

- Continue to review monitoring data regarding the increasing pH trend in the Aries Borefield wells and Buckland Bore in the annual report.
- Continue to review monitoring data regarding the declining pH trend in AMD-2 and AMD-3 in the annual report.
- Increase water quality monitoring (pH, EC and temperature) frequency in RMS-4 for three months to confirm the declining pH trend observed this reporting period.
- Continue to review monitoring data regarding the declining trend in EC in AMD2 and AMD-3 in the annual report.
- Continue to review monitoring data regarding the increasing trend in EC in VMD-1, AMS-1 and AMS-2 in the annual report.
- Investigate the third party wells that are unable to be sampled and determine if rehabilitation works are appropriate/ confirm that there is still an adequate spread of data regionally.

9 References

ELA (2016b) Prominent Hill Conceptual Hydrogeological Model Review, Report prepared for OZ Minerals by Eco Logical Australia Pty Ltd.

ELA (2017) 2017 Annual Water Licence 41028, Report prepared for OZ Minerals by Eco Logical Australia Pty Ltd.

ELA (2018) 2018 Annual Water Licence 41028, Report prepared for OZ Minerals by Eco Logical Australia Pty Ltd.

ELA (2020) 2020 Annual Water Licence 41028, Report prepared for OZ Minerals by Eco Logical Australia Pty Ltd.

ELA (2022), Prominent Hill PH-9999-SEC-PLN-0034 Water Licence 396811 Monitoring Plan, Report prepared for OZ Minerals by Eco Logical Australia Pty Ltd.

ELA (2023), Prominent Hill PH-0000-SEC-REP-1024 Compliance Report 2023 Water Resource Works Approval 396907, Report prepared for Oz Minerals by Eco Logical Australia Pty Ltd.

EMM (2021), Prominent Hill Expansion Groundwater Modelling, Report prepared for OZ Minerals Limited December 2021.

Jacobs (2016) Prominent Hill Mine Groundwater Model Update. Report prepared for OZ Minerals Ltd by Jacobs Pty Ltd.

OZ Minerals (2013) 2012 Annual Water Licence 41028.

OZ Minerals (2014), 2013 Annual Water Licence 41028.

OZ Minerals (2015a), 2014 Annual Water Licence 41028.

OZ Minerals (2015b), H1 2015 Annual Water Licence 41028.

OZ Minerals (2017), Prominent Hill Program for Environment Protection and Rehabilitation.

OZ Minerals (2022) Prominent Hill Program for Environment Protection and Rehabilitation.

OZ Minerals (2019) Prominent Hill PH-9999-SEC-PLN-0034 Water Licence 41028 Monitoring Plan Version 7.

OZ Minerals (2021), 2021 Compliance Report Water Licence 183346 Prominent Hill

OZ Minerals (2021a) Water Licence 396811

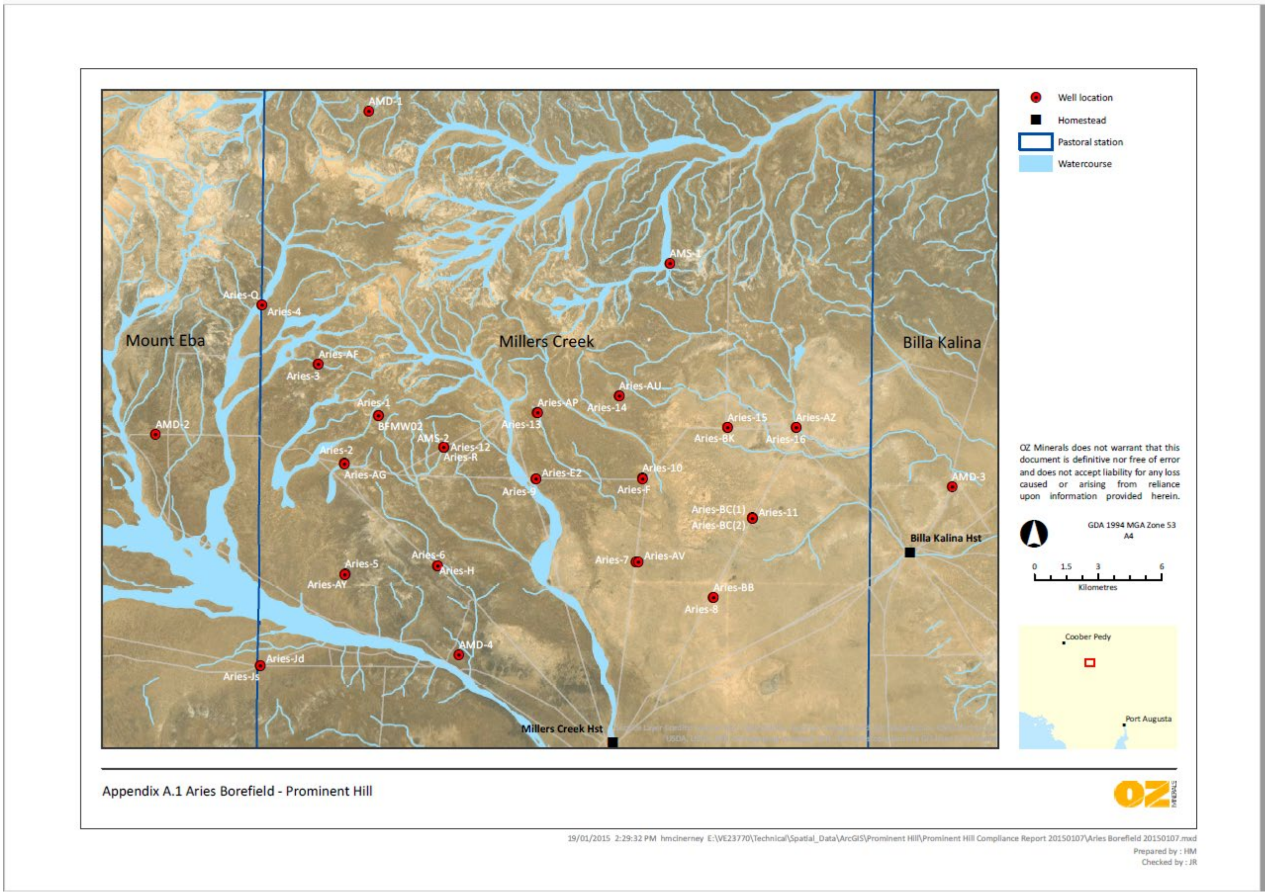
OZ Minerals (2022a) Water Licence 396907.

SKM (2012), 2011 Annual Water Licence 41028, Report prepared for OZ Minerals by Sinclair Knight Mertz Pty Ltd.

SKM (2011), 2010 Annual Water Licence 41028, Report prepared for OZ Minerals by Sinclair Knight Mertz Pty Ltd.

Appendix A Maps

Appendix A1 Aries Borefield



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Appendix A.1 Aries Borefield - Prominent Hill

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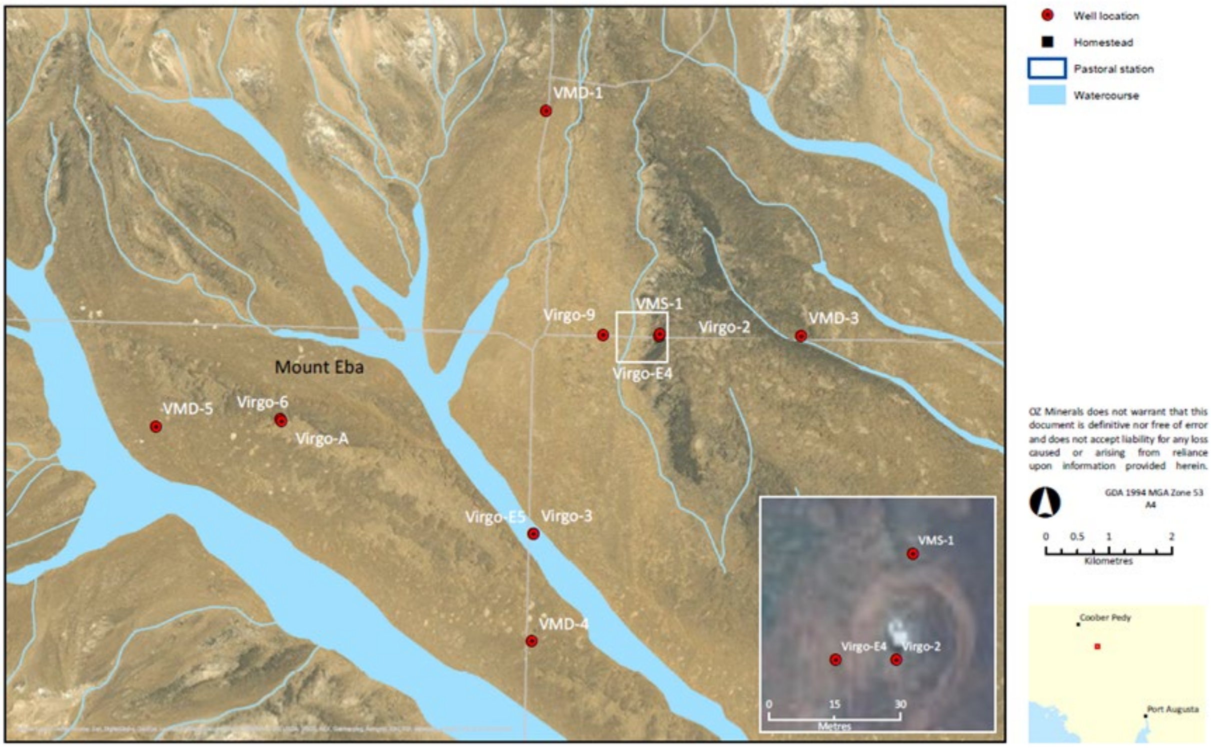
Prepared by : HM
Checked by : JR

Appendix A2 Virgo Borefield



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Appendix A.2 Virgo Borefield - Prominent Hill

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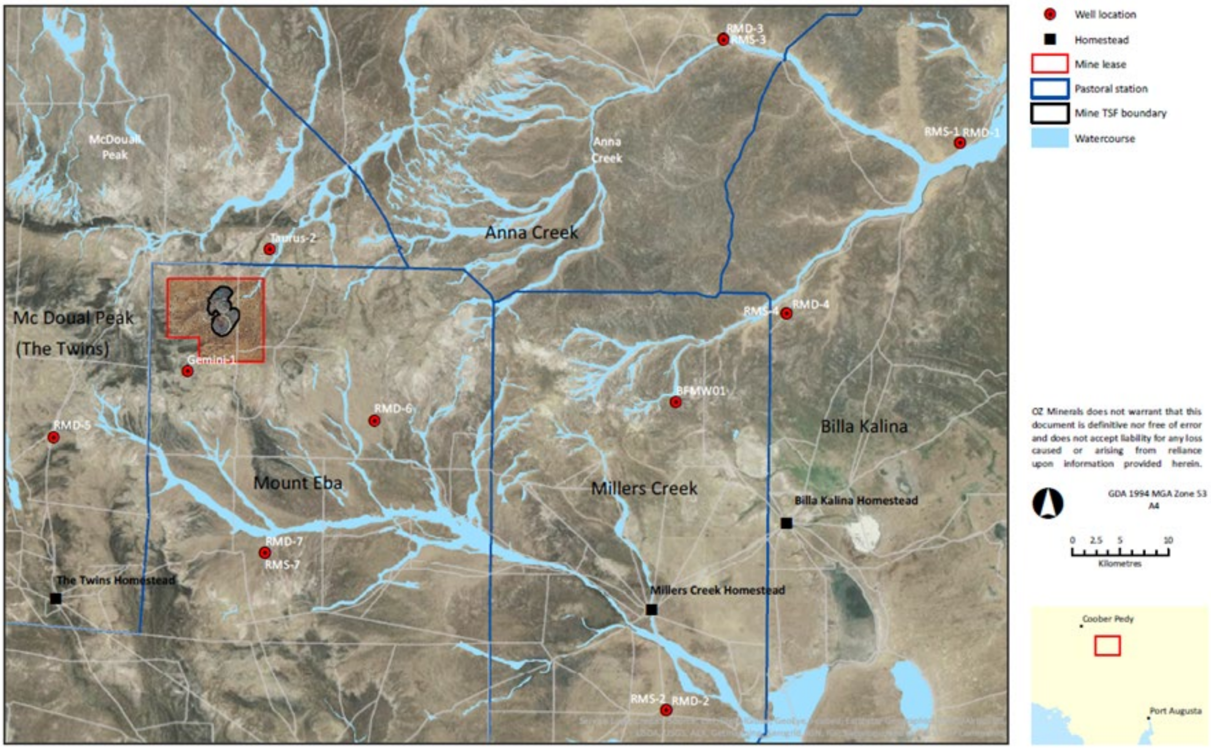
Prepared by : HM
Checked by : JR

Appendix A3 Regional Environmental Monitoring Wells



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Appendix A.3 Regional Environmental Monitoring Wells - Prominent Hill

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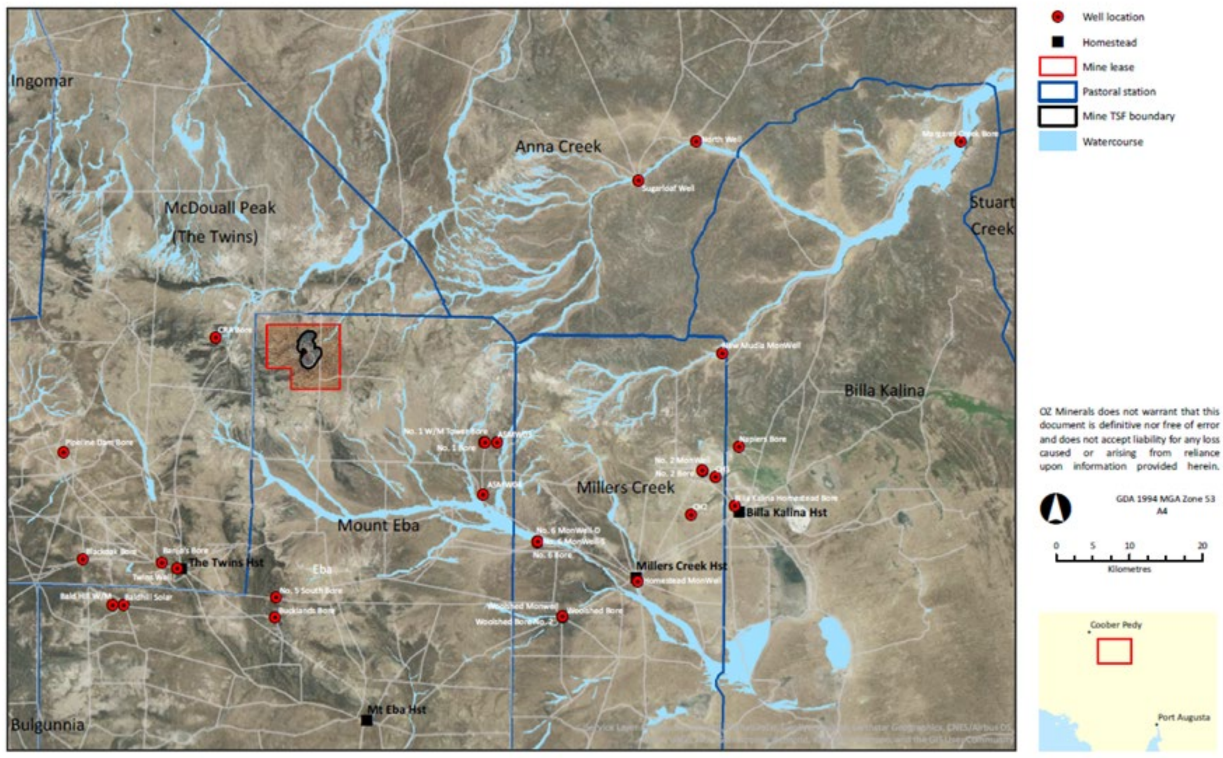
Prepared by : HM
Checked by : JR

Appendix A4 Third Party Users Monitoring Wells



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Appendix A.4 Third Party Users Monitoring Wells - Prominent Hill

19/01/2015 2:57:36 PM hmcinerney E:\VE23770\Technical\Spatial_Data\ArcGIS\Prominent Hill\Prominent Hill Compliance Report 20150107\Pastoral Map 20150107.mxd
Prepared by : HM
Checked by : JR

Appendix B Well Summary

Well ID	Map	Alternative Name	Permit number	Unit Number	Formation	Basin	Easting	Northing	Zone
AMD-1	AMD	Aries-AA	127047	603800165	Boorthanna	Arckaringa	588971	6710414	53
AMD-2	AMD	Aries-B	127076	603800177	Boorthanna	Arckaringa	578884	6695114	53
AMD-3	AMD	-	127122	613800091	Boorthanna	Arckaringa	616561	6692626	53
AMD-4	AMD	Aries-I	127052	603800198	Boorthanna	Arckaringa	593239	6684674	53
AMS-1	AMS	ASMW01	106222	613800067	Cadna-owie	Eromanga	603213	6703178	53
AMS-2	AMS	ASWM02	133168	603800199	Cadna-owie	Eromanga	592530	6694513	53
Aries-1	Aries	-	127043	603800190	Boorthanna	Arckaringa	589448	6696008	53
Aries-10	Aries	-	133177	613800083	Boorthanna	Arckaringa	601924	6693034	53
Aries-11	Aries	-	133176B	613800080	Boorthanna	Arckaringa	607129	6691120	53
Aries-12	Aries	-	133179	603800200	Boorthanna	Arckaringa	592536	6694516	53
Aries-13	Aries	-	133180	613800081	Boorthanna	Arckaringa	596927	6696120	53
Aries-14	Aries	-	133181	613800103	Boorthanna	Arckaringa	600801	6696922	53
Aries-15	Aries	Aries-15(3)	133182	613800092	Boorthanna	Arckaringa	605943	6695450	53
Aries-16	Aries	-	133183	613800094	Boorthanna	Arckaringa	609179	6695452	53
Aries-2	Aries	-	133169	603800202	Boorthanna	Arckaringa	587828	6693721	53
Aries-3	Aries	-	113170	603800201	Boorthanna	Arckaringa	586578	6698429	53
Aries-4	Aries	-	113171	603800215	Boorthanna	Arckaringa	583905	6701237	53
Aries-5	Aries	-	113172	603800205	Boorthanna	Arckaringa	587854	6688490	53
Aries-6	Aries	-	113173	603800217	Boorthanna	Arckaringa	592216	6688906	53

Well ID	Map	Alternative Name	Permit number	Unit Number	Formation	Basin	Easting	Northing	Zone
Aries-7	Aries	-	133174	613800082	Boorthanna	Arckaringa	601617	6689049	53
Aries-8	Aries	-	133175	613800106	Boorthanna	Arckaringa	605262	6687382	53
Aries-9	Aries	-	133193	613800120	Boorthanna	Arckaringa	596937	6692998	53
Aries-AF	Aries	-	127061	603800171	Boorthanna	Arckaringa	586597	6698444	53
Aries-AG	Aries	-	127062	603800169	Boorthanna	Arckaringa	587815	6693703	53
Aries-AP	Aries	-	127066	613800107	Boorthanna	Arckaringa	596957	6696134	53
Aries-AU	Aries	-	127068	613800108	Boorthanna	Arckaringa	600818	6696926	53
Aries-AV	Aries	-	127069	613800075	Boorthanna	Arckaringa	601721	6689068	53
Aries-AY	Aries	-	127071	603800168	Boorthanna	Arckaringa	587837	6688479	53
Aries-AZ	Aries	-	127072	613800109	Boorthanna	Arckaringa	609194	6695454	53
Aries-BB	Aries	-	127063	613800076	Boorthanna	Arckaringa	605279	6687390	53
Aries-BC(1)	Aries	-	127065	613800110	Boorthanna	Arckaringa	607107	6691163	53
Aries-BC(2)	Aries	-	127100	613800095	Boorthanna	Arckaringa	607111	6691145	53
Aries-BK	Aries	-	127106	613800101	Boorthanna	Arckaringa	605947	6695448	53
Aries-E2	Aries	-	127060	613800074	Boorthanna	Arckaringa	596879	6693008	53
Aries-H	Aries	-	127051	603800220	Boorthanna	Arckaringa	592233	6688909	53
Aries-Jd	Aries	Aries-J(Pp)	127046	603800175	Boorthanna	Arckaringa	583832	6684167	53
Aries-Js	Aries	Aries-J(Plb)	127044	603800176	Cadna-owie	Eromanga	583829	6684167	53
Aries-Q	Aries	-	121785	603800222	Boorthanna	Arckaringa	583912	6701256	53
Aries-R	Aries	-	127053	603800162	Boorthanna	Arckaringa	592516	6694502	53

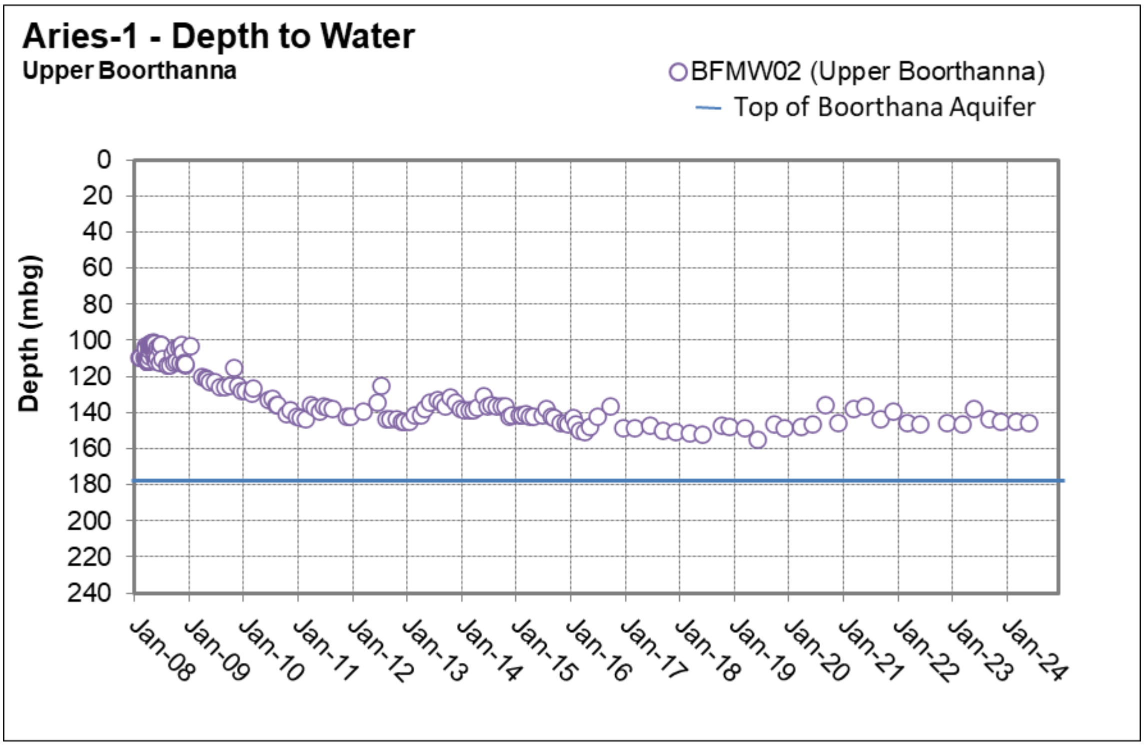
Well ID	Map	Alternative Name	Permit number	Unit Number	Formation	Basin	Easting	Northing	Zone
ASMW03	Regional	No1 Monitor Well	127083	603800210	Cadna-owie	Eromanga	581468	6698912	53
ASMW04	Regional	Hele Well	127085	603800211	Cadna-owie	Eromanga	579573	6691883	53
BFMW01	Regional	-	106223	613800068	Boorthanna	Arckaringa	603024	6702100	53
BFMW02	Regional	-	106221	603800147	Boorthanna	Arckaringa	589419	6695989	53
Gemini-1	Regional	CWS-1	115328	603800180	Boorthanna	Arckaringa	552081	6705416	53
Billa Kalina Homestead Bore	Third Party	-	-	-	Boorthanna	Arckaringa	614012	6690318	53
Homestead Monwell	Third Party	-	-	-	Boorthanna	Arckaringa	600742	6679971	53
Margaret Creek Bore	Third Party	-	1279	613900022	Cadna-owie	Eromanga	644875	6740092	53
Bucklands Bore	Third Party	-	-	-	-	Eromanga	551121	6675100	53
Baldhill Solar	Third Party	-	-	-	-	Eromanga	530461	6676778	53
Baldhill Windmill	Third Party	-	-	-	-	Eromanga	528940	6676778	53
No.5 South	Third Party	-	-	-	-	Eromanga	551287	6677737	53
CH1	Third Party	Walshs Bore	227759	613800126	Boorthanna	Arckaringa	611380	6694235	53
CH2	Third Party	-	227760	613800127	Boorthanna	Arckaringa	587000	6689147	53
New Mudla MonWell	Third Party	-	127108	613800099	Cadna-owie	Eromanga	612265	6711174	53
No2 Monwell	Third Party	-	127099	613800100	Boorthanna	Arckaringa	609520	6695141	53
No.6 Bore	Third Party	-	-	-	Boorthanna	Arckaringa	587021	6685307	53
No6 Monwell	Third Party	-	133194	603800206	Boorthanna	Arckaringa	587033	6685475	53
No6 Monwell	Third Party	-	133167	603800212	Cadna-owie	Eromanga	587035	6685469	53
North Well	Third Party	-	-	-	-	Eromanga	608696	6740082	53

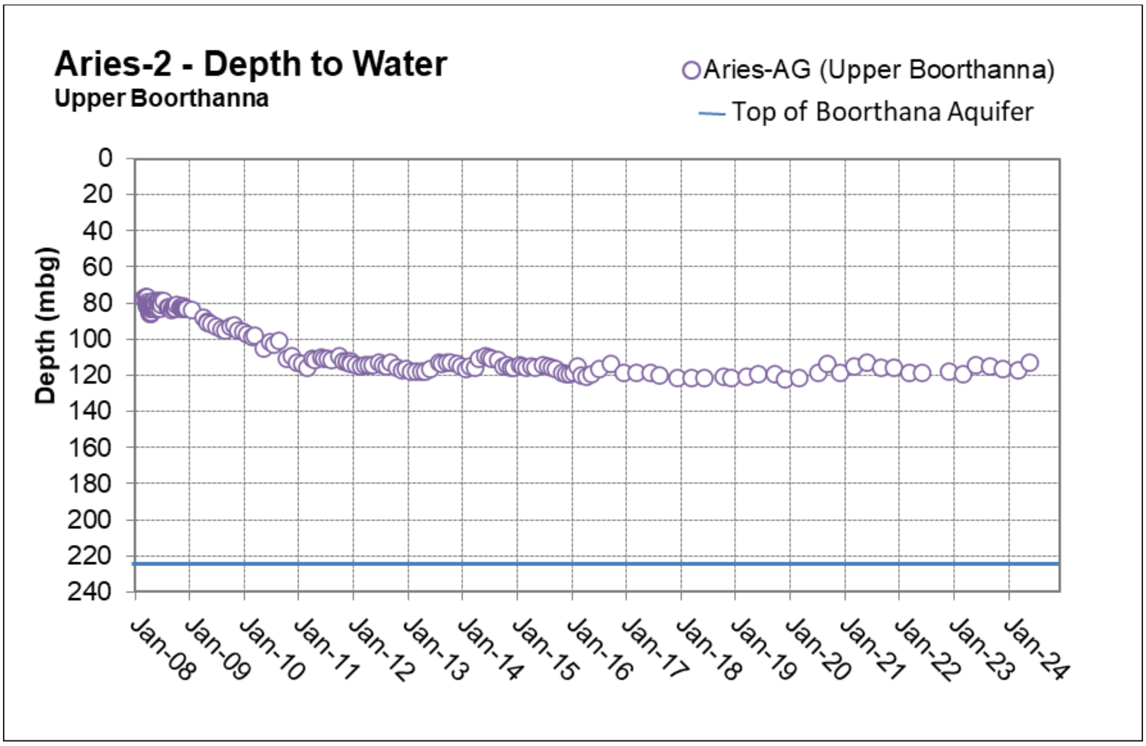
Well ID	Map	Alternative Name	Permit number	Unit Number	Formation	Basin	Easting	Northing	Zone
Sugarloaf Well	Third Party	-	-	-	-	Eromanga	600813	6734668	53
Twins Well	Third Party	-	-	-	-	Eromanga	537766	6681750	53
Banjo's Bore	Third Party	-	-	-	-	Eromanga	535656	6682535	53
Pipeline Dam Bore	Third Party	-	-	-	-	Eromanga	522220	6697696	53
RMD-1	RMD	-	122765	613800070	Boorthanna	Arckaringa	632684	6729151	53
RMD-2	Regional	-	121787	613700085	Boorthanna	Arckaringa	602032	6669999	53
RMD-3	RMD	-	144626	613900046	Boorthanna	Arckaringa	607990	6740032	53
RMD-4	RMD	-	127114	613800098	Boorthanna	Arckaringa	614606	6711376	53
RMD-5	Regional	-	144622	593800932	Boorthanna	Arckaringa	538105	6698492	53
RMD-6	Regional	Aries-O	127081	603800163	Boorthanna	Arckaringa	571579	6700258	53
RMD-7	Regional	Scorpio-E1	115321	603800187	Boorthanna	Arckaringa	560194	6686435	53
RMS-1	RMS	-	122764	613800071	Cadna-owie	Eromanga	632679	6729152	53
RMS-2	Regional	-	121788	613700086	Cadna-owie	Eromanga	602028	6670001	53
RMS-3	RMS	-	144625	613900047	Cadna-owie	Eromanga	607994	6740029	53
RMS-4	RMS	-	127113	613800090	Cadna-owie	Eromanga	614602	6711379	53
Taurus-2	Regional	-	115330	603800226	Boorthanna	Arckaringa	560660	6718071	53
Virgo-2	Virgo	-	120209	603800238	Boorthanna	Arckaringa	559009	6696441	53
Virgo-3	Virgo	-	120208	603800239	Boorthanna	Arckaringa	557008	6693304	53
Virgo-6	Virgo	-	120198	603800189	Boorthanna	Arckaringa	552982	6695114	53
Virgo-9	Virgo	-	120197	603800242	Boorthanna	Arckaringa	558111	6696452	53
Virgo-A	Virgo	-	120195	603800178	Boorthanna	Arckaringa	552997	6695086	53

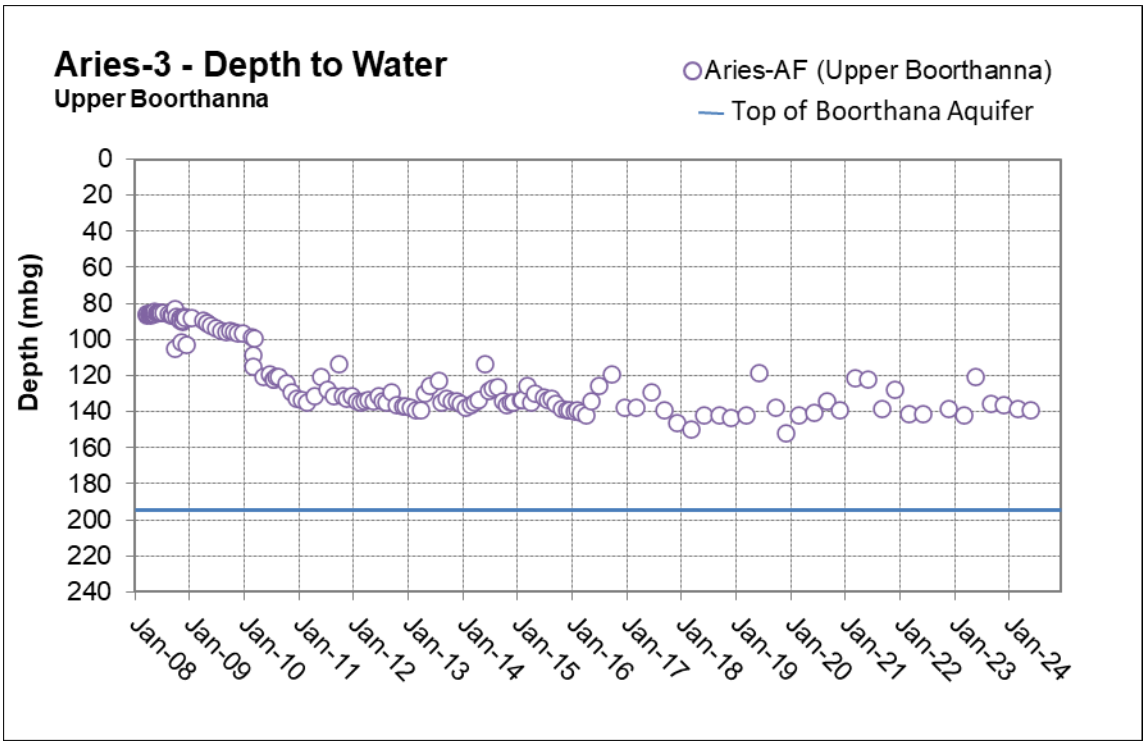
Well ID	Map	Alternative Name	Permit number	Unit Number	Formation	Basin	Easting	Northing	Zone
Virgo-E4	Virgo	-	115324	603800184	Boorthanna	Arckaringa	558995	6696441	53
Virgo-E5	Virgo	-	115323	603800244	Boorthanna	Arckaringa	557007	6693289	53
VMD-1	VMD	Virgo-E1	115326	603800182	Boorthanna	Arckaringa	557205	6700018	53
VMD-3	VMD	-	120201	603800172	Boorthanna	Arckaringa	561264	6696439	53
VMD-4	VMD	-	120205	603800246	Boorthanna	Arckaringa	556976	6691584	53
VMD-5	VMD	-	127088	603800247	Boorthanna	Arckaringa	550999	6695001	53
VMS-1	VMS	-	120204	603800248	Cadna-owie	Eromanga	559013	6696465	53
RMS-7	Regional	VMS-2	115320	603800185	Cadna-owie	Eromanga	560165	6686401	53
Woolshed Monwell	Third Party	-	127110	603700190	Boorthanna	Arckaringa	590440	6675235	53

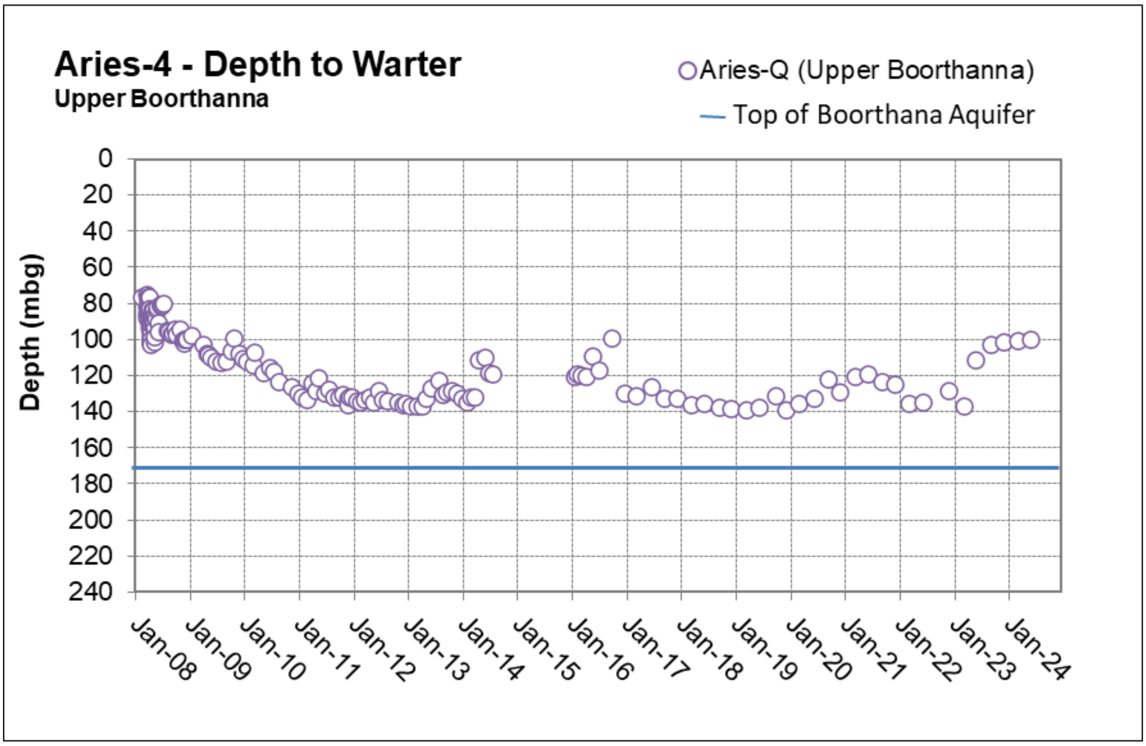
Appendix C Performance Monitoring Graphs

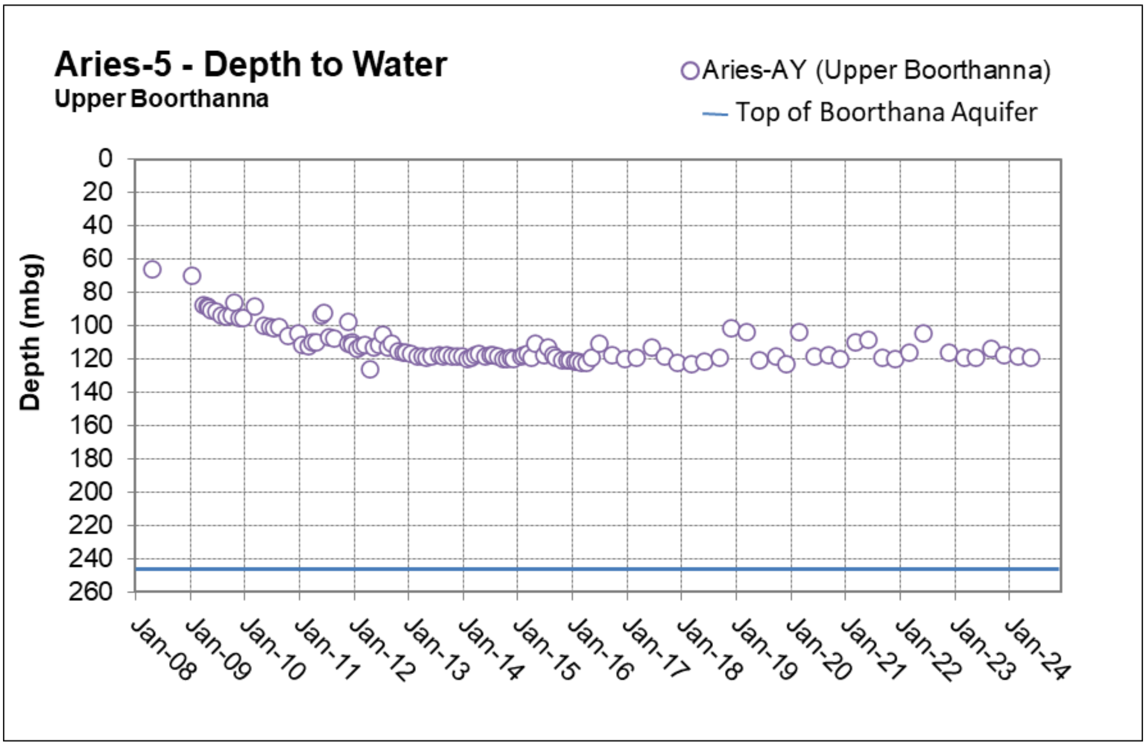
Appendix C1 Aries Production

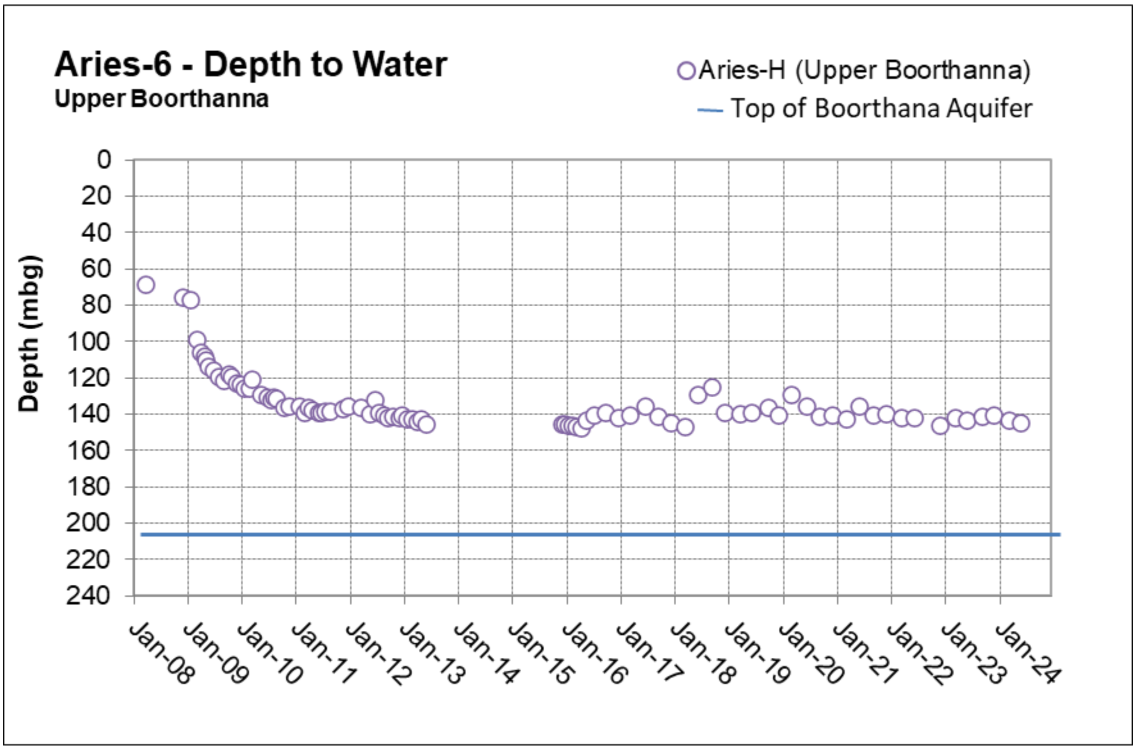


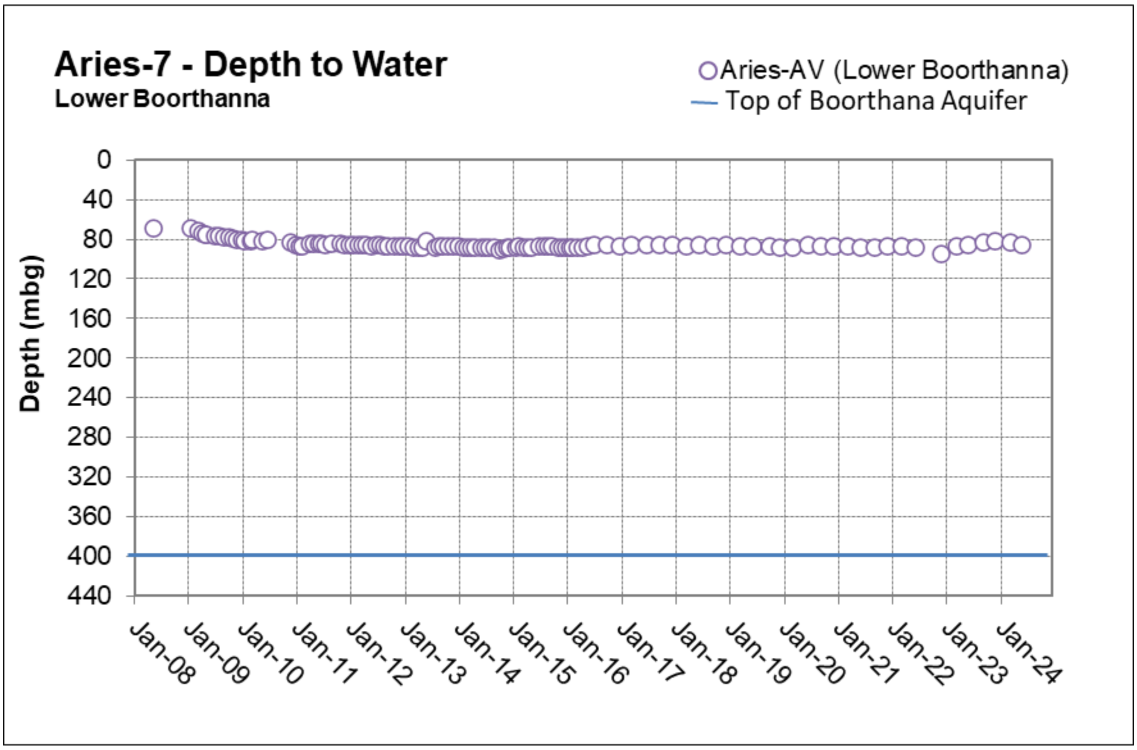


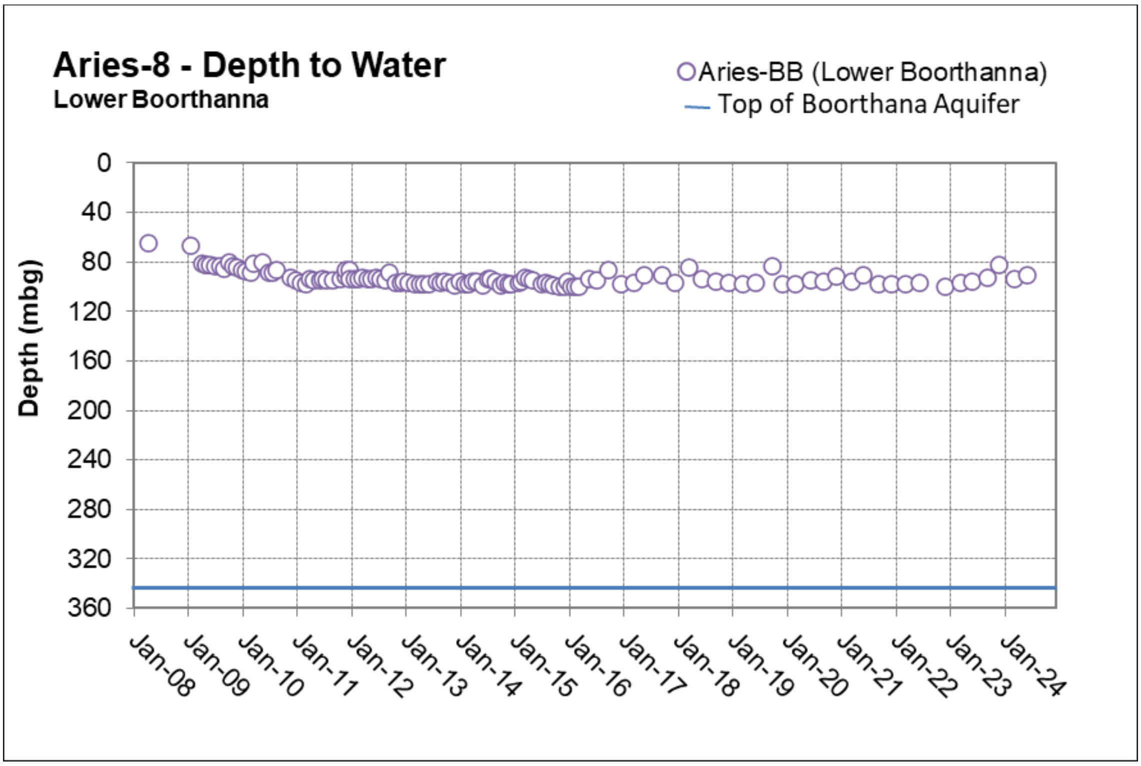

Aries-3 - Depth to Water
Upper Boorthanna
○Aries-AF (Upper Boorthanna)
— Top of Boorthana Aquifer
Depth (mbg)
0
20
40
60
80
100
120
140
160
180
200
220
240
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

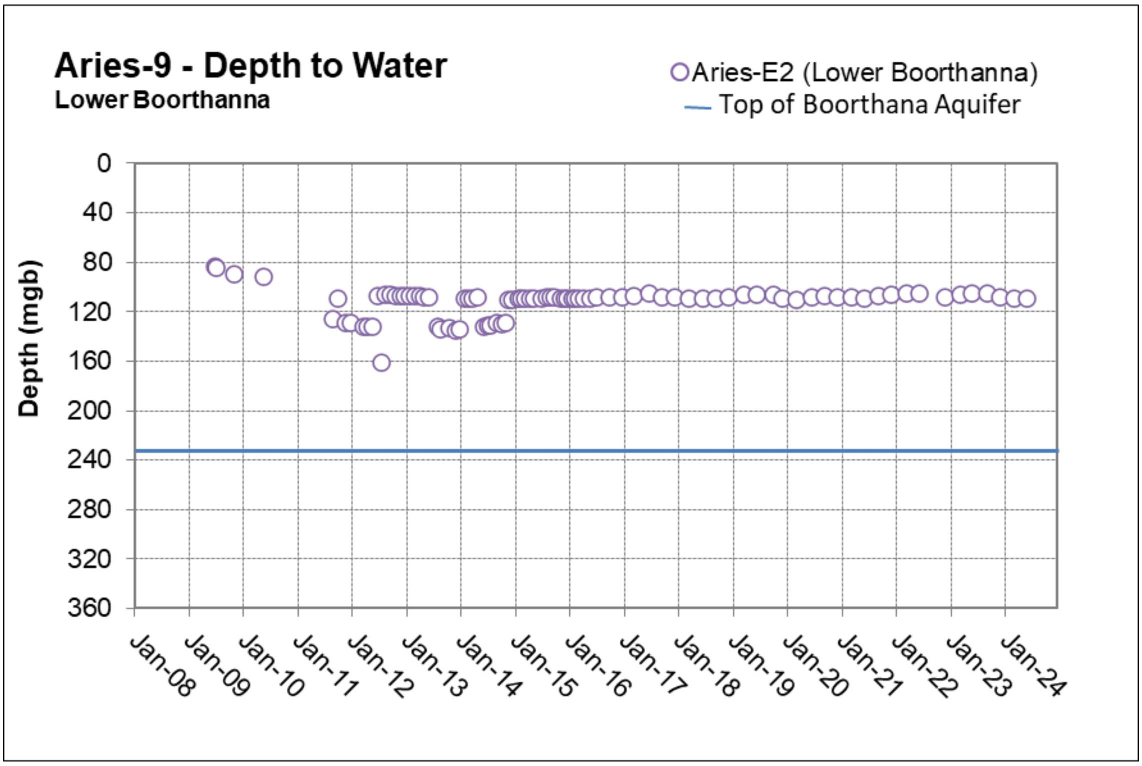

Aries-4 - Depth to Warter
Upper Boorthanna
○Aries-Q (Upper Boorthanna)
— Top of Boorthana Aquifer
Depth (mbg)
0
20
40
60
80
100
120
140
160
180
200
220
240
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

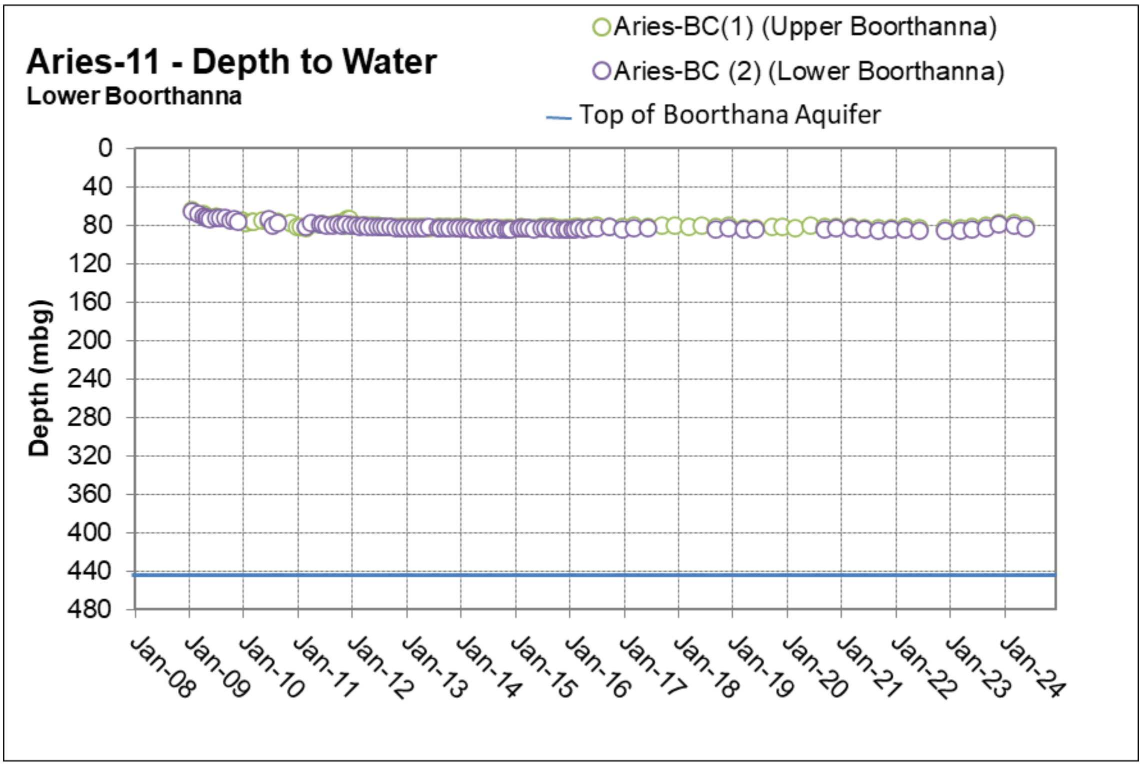

Aries-5 - Depth to Water
Upper Boorthanna
Aries-AY (Upper Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

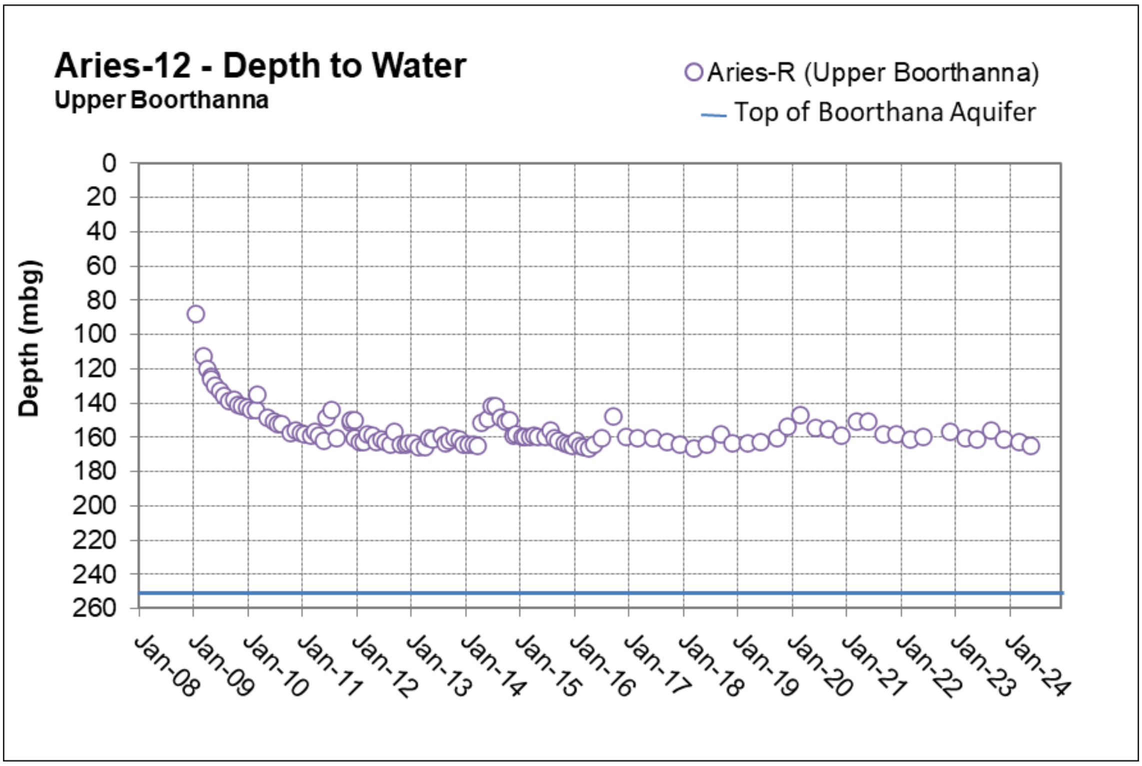

Aries-6 - Depth to Water
Upper Boorthanna
Aries-H (Upper Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
20
40
60
80
100
120
140
160
180
200
220
240
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

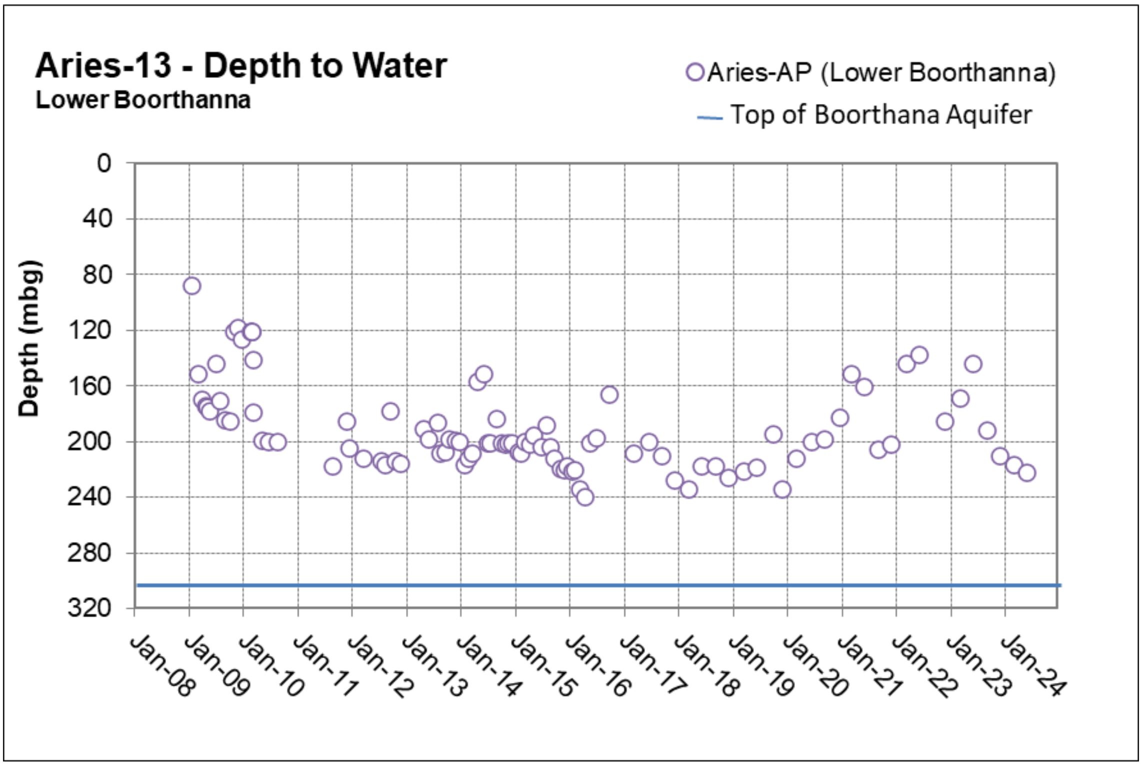

Aries-7 - Depth to Water
Lower Boorthanna
Aries-AV (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
360
400
440
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

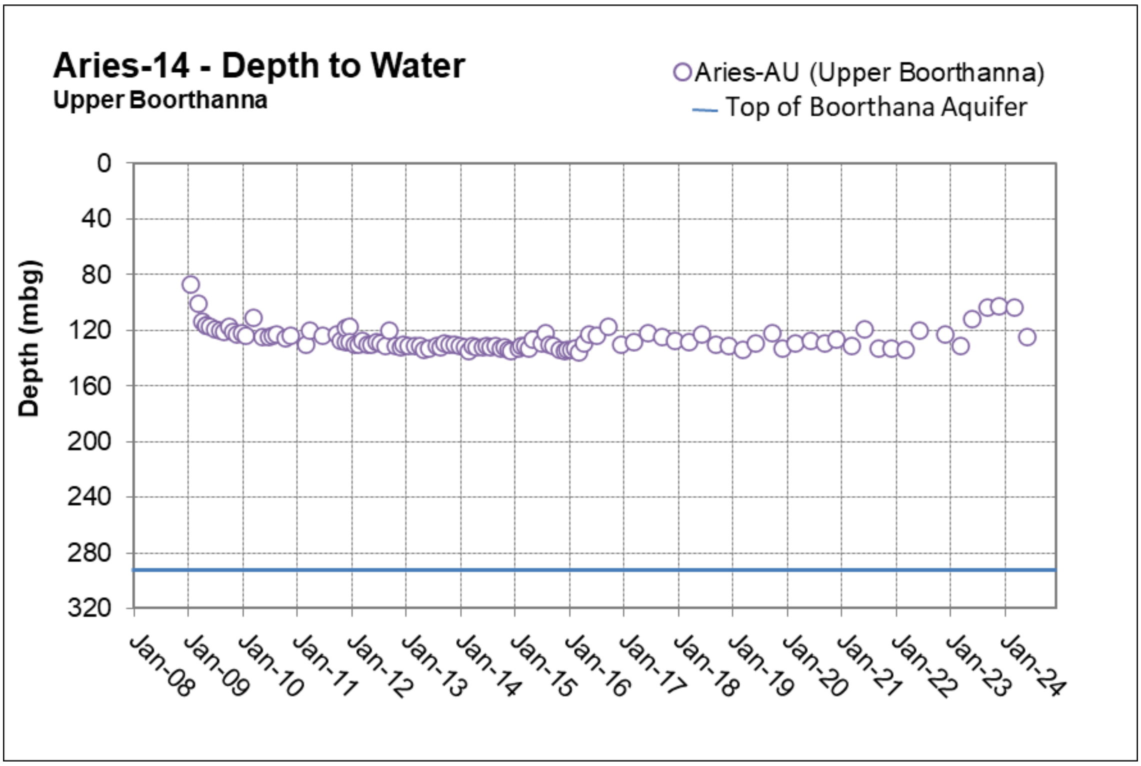

Aries-8 - Depth to Water
Lower Boorthanna
Aries-BB (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
360
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

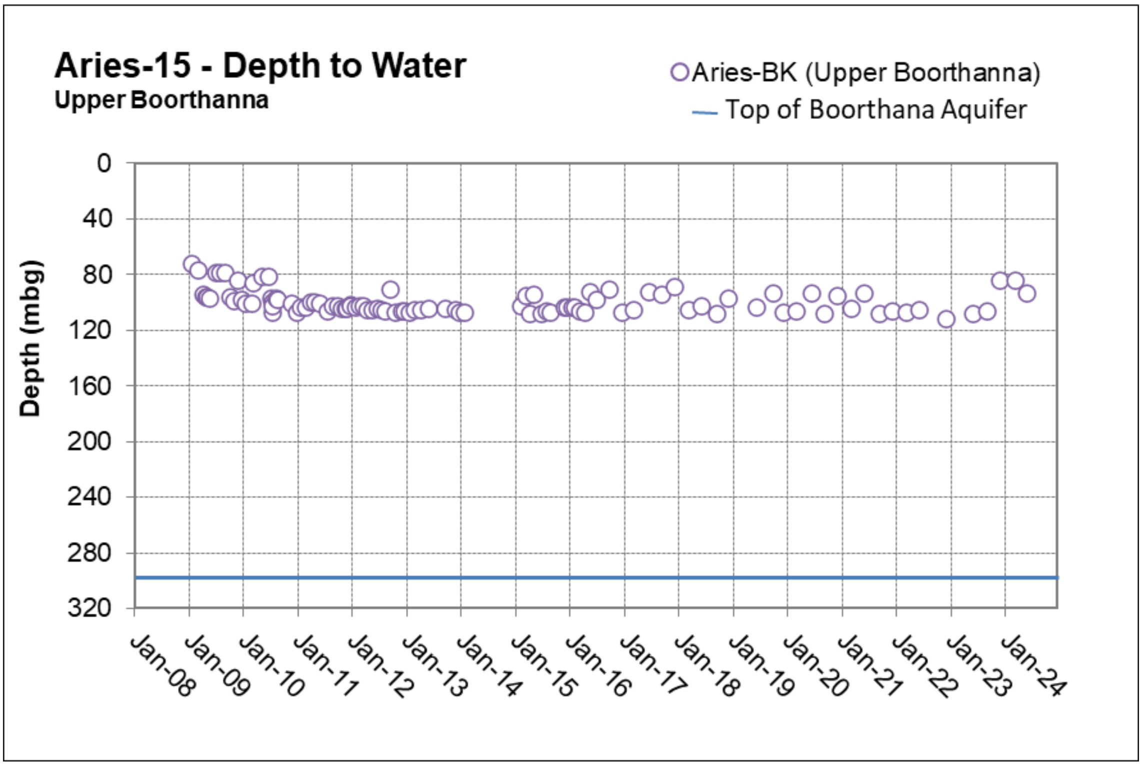

Aries-9 - Depth to Water
Lower Boorthanna
Aries-E2 (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mgb)
0
40
80
120
160
200
240
280
320
360
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-11 - Depth to Water
Lower Boorthanna
Aries-BC(1) (Upper Boorthanna)
Aries-BC (2) (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
360
400
440
480
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-12 - Depth to Water
Upper Boorthanna
Aries-R (Upper Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-13 - Depth to Water
Lower Boorthanna
Aries-AP (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-14 - Depth to Water
Upper Boorthanna
Aries-AU (Upper Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-15 - Depth to Water
Upper Boorthanna
Aries-BK (Upper Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
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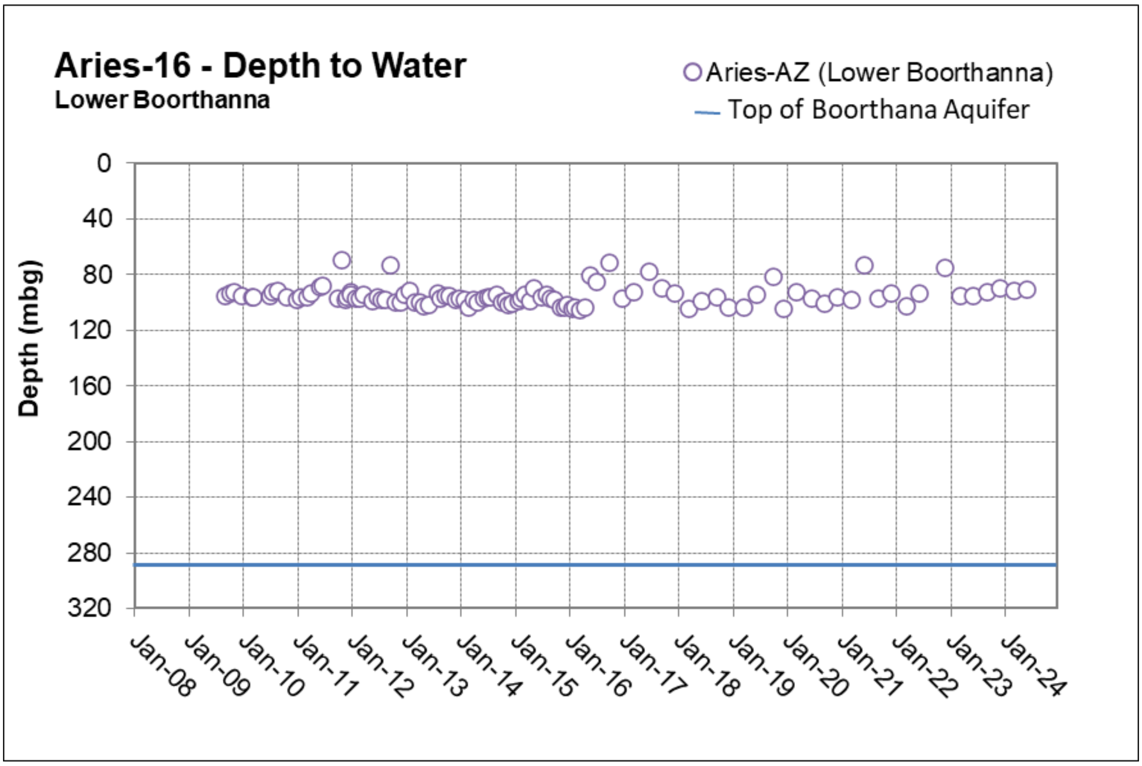
Jan-22
Jan-23
Jan-24


Aries-16 - Depth to Water
Lower Boorthanna
Aries-AZ (Lower Boorthanna)
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
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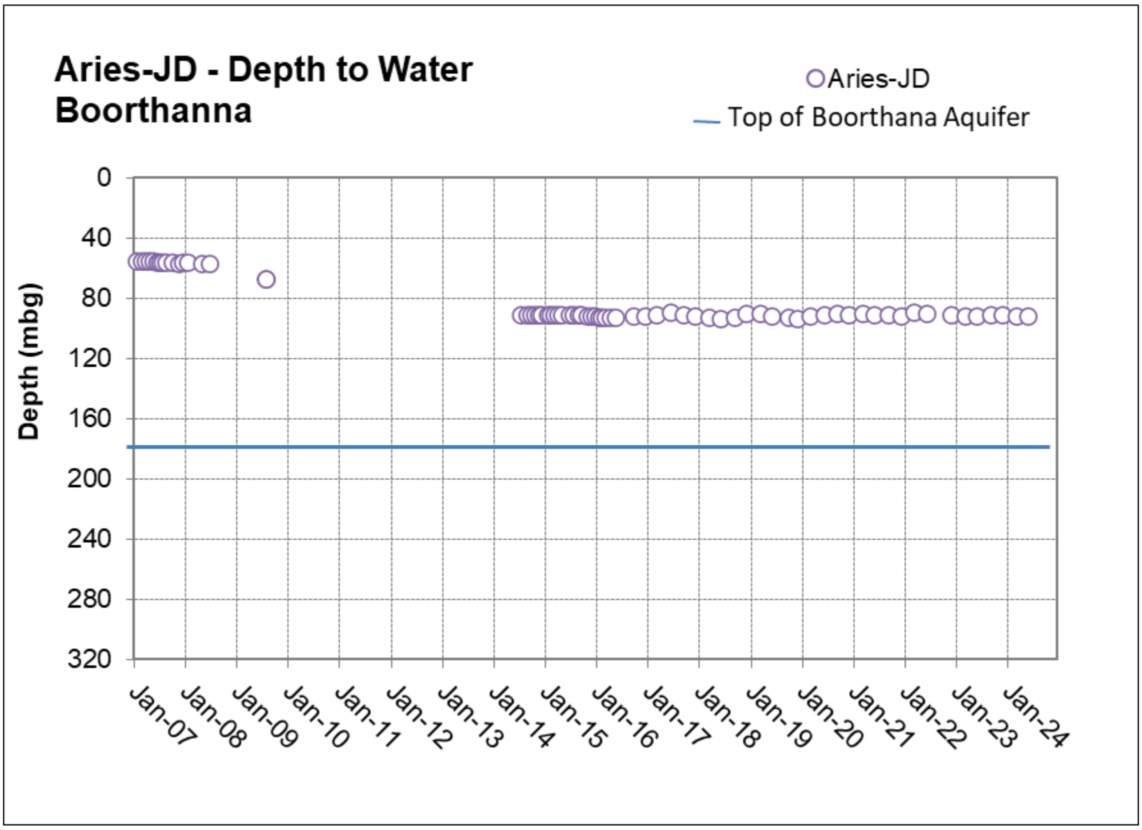
Jan-22
Jan-23
Jan-24


Aries-JD - Depth to Water
Boorthanna
Aries-JD
Top of Boorthana Aquifer
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
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Jan-19
Jan-20
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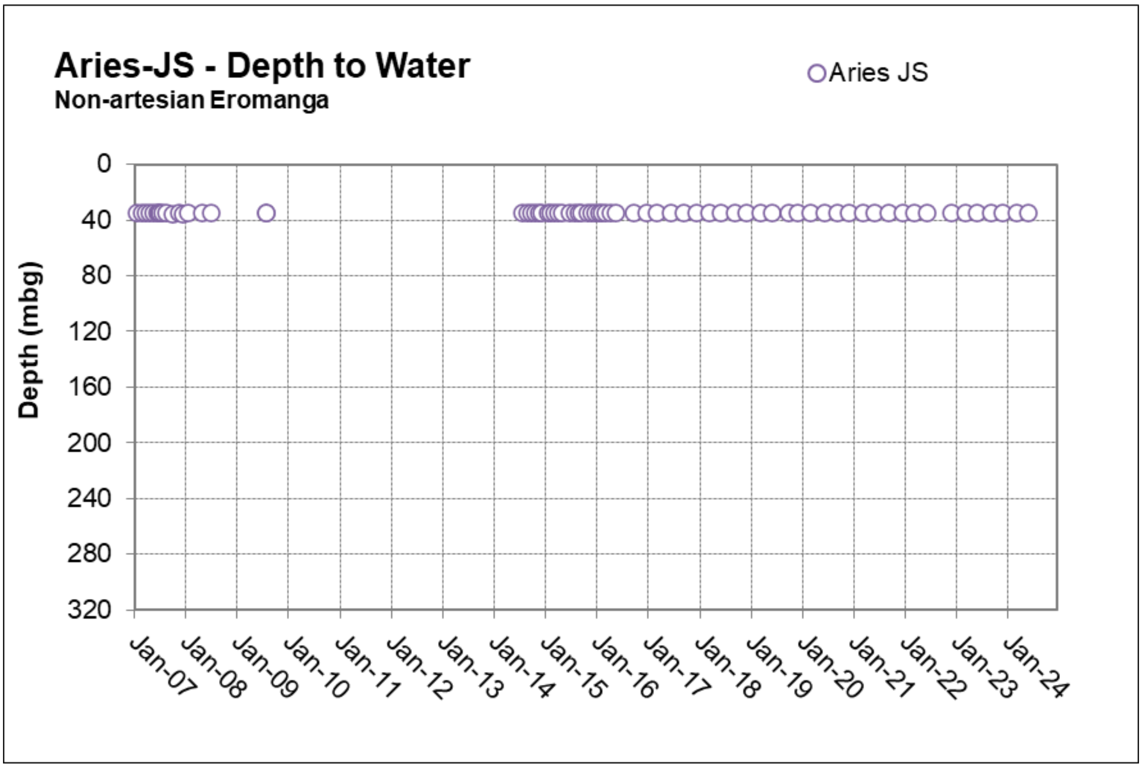
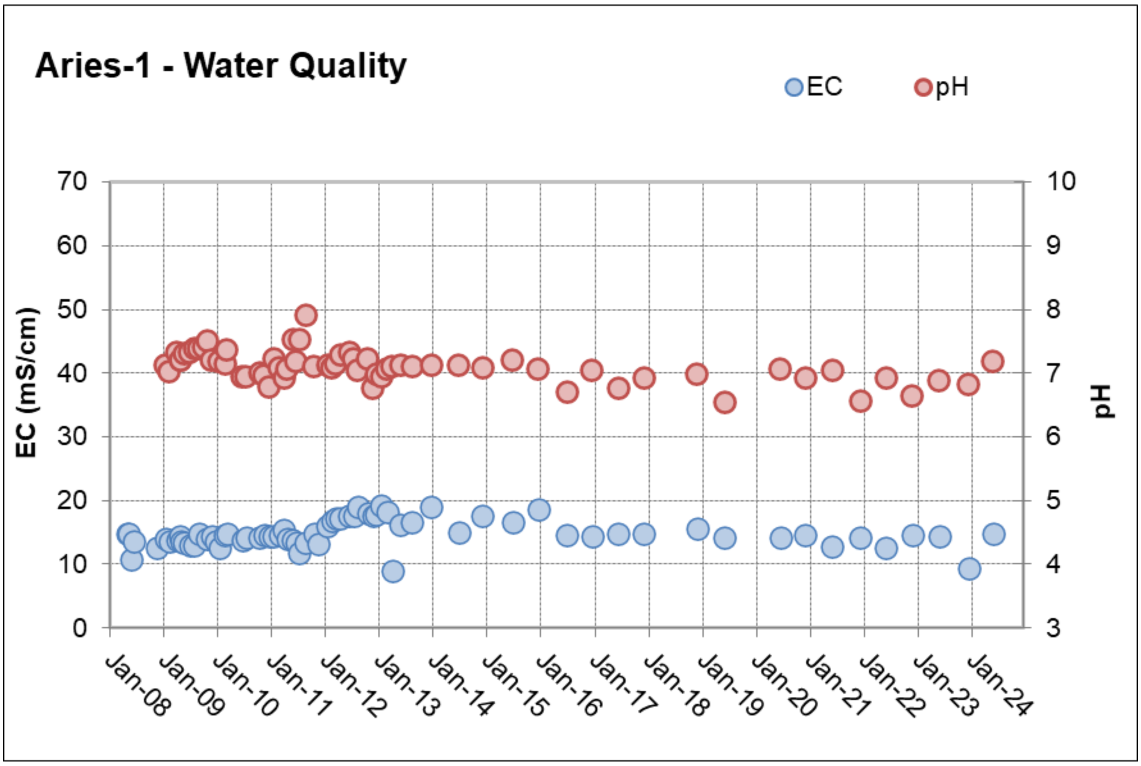
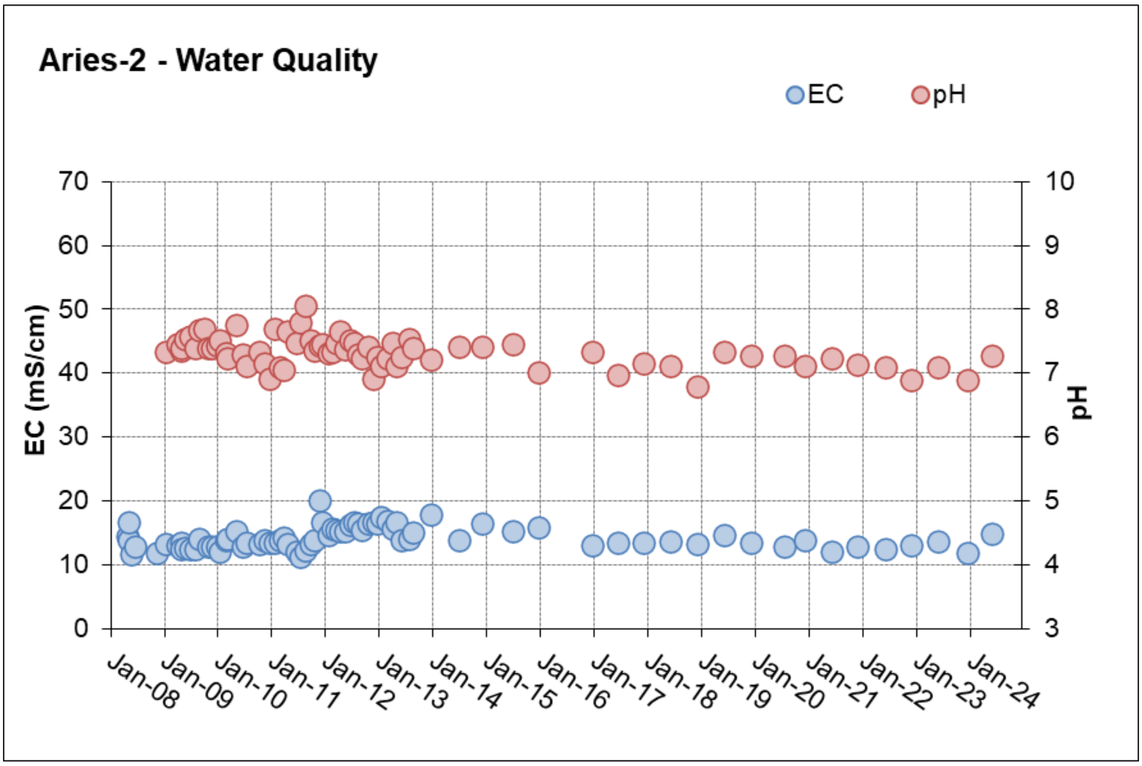
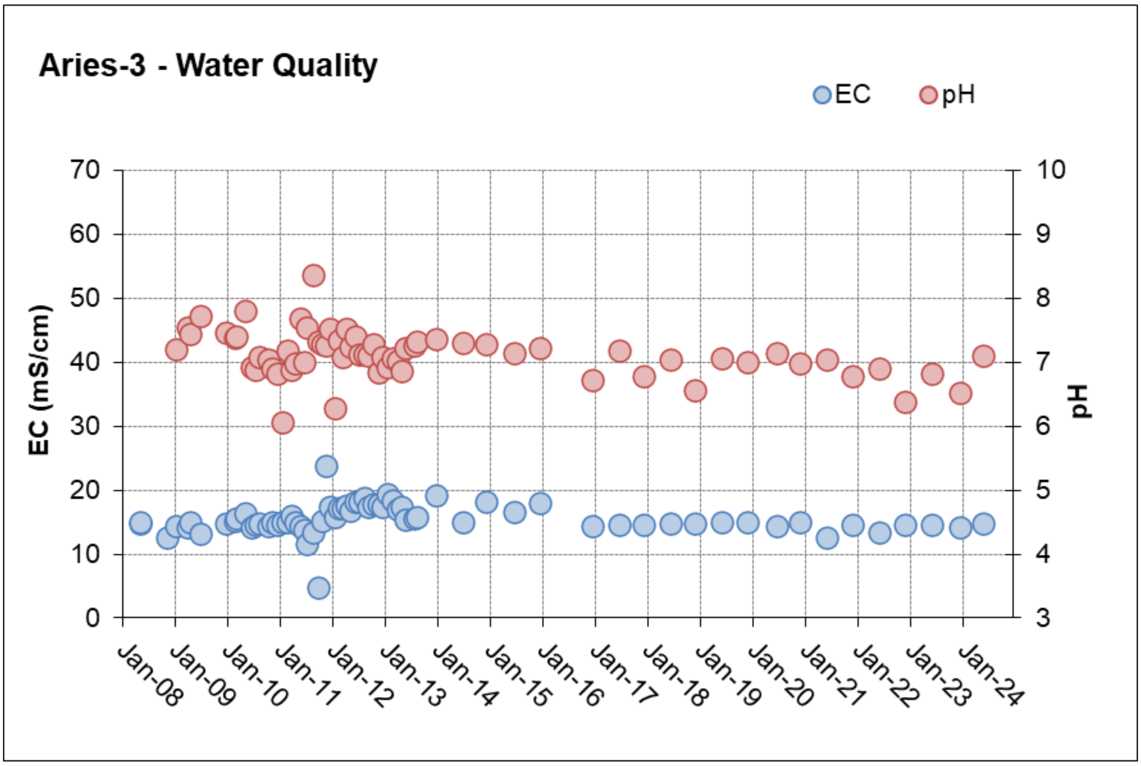
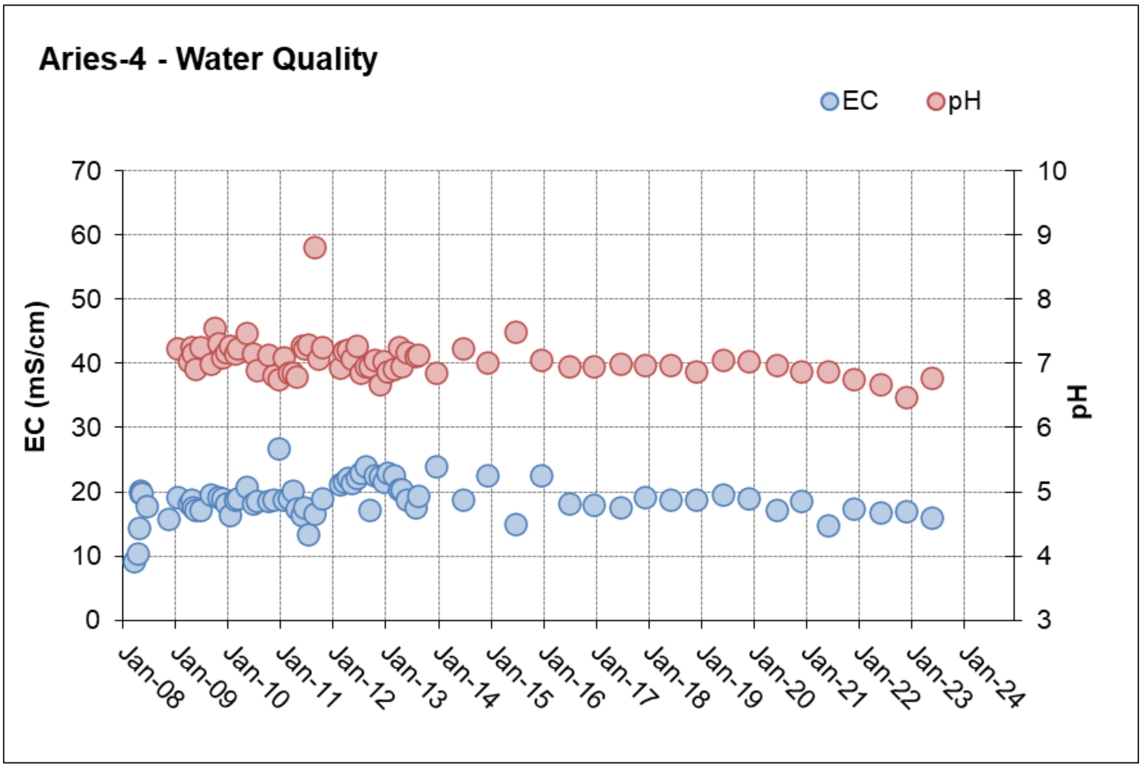
Jan-22
Jan-23
Jan-24

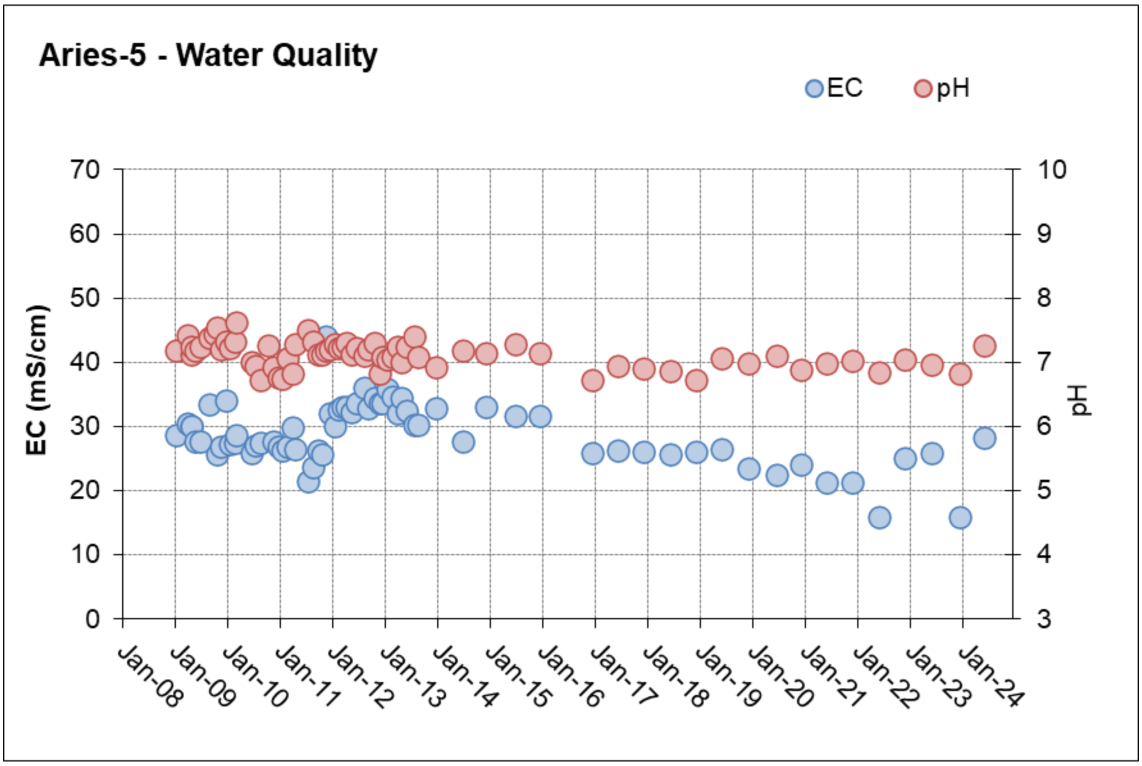

Aries-JS - Depth to Water
Non-artesian Eromanga
Aries JS
Depth (mbg)
0
40
80
120
160
200
240
280
320
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

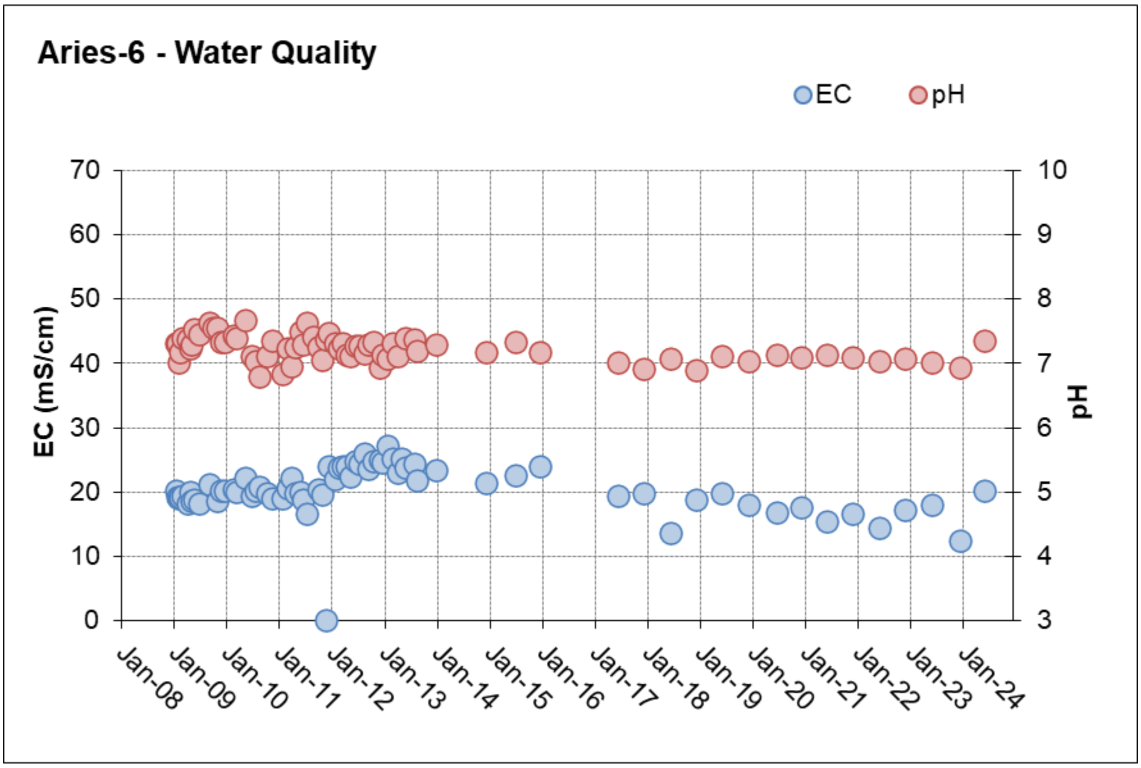

Aries-1 - Water Quality
EC
pH
EC (mS/cm)
0
10
20
30
40
50
60
70
pH
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

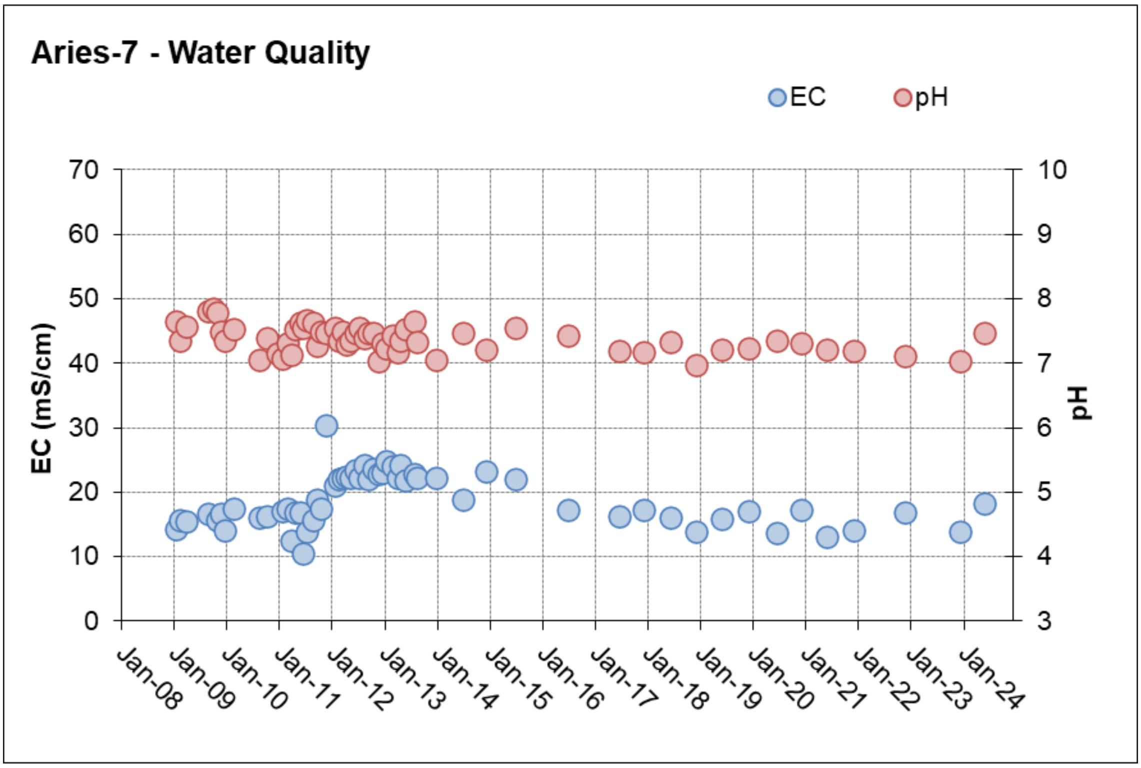

Aries-2 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

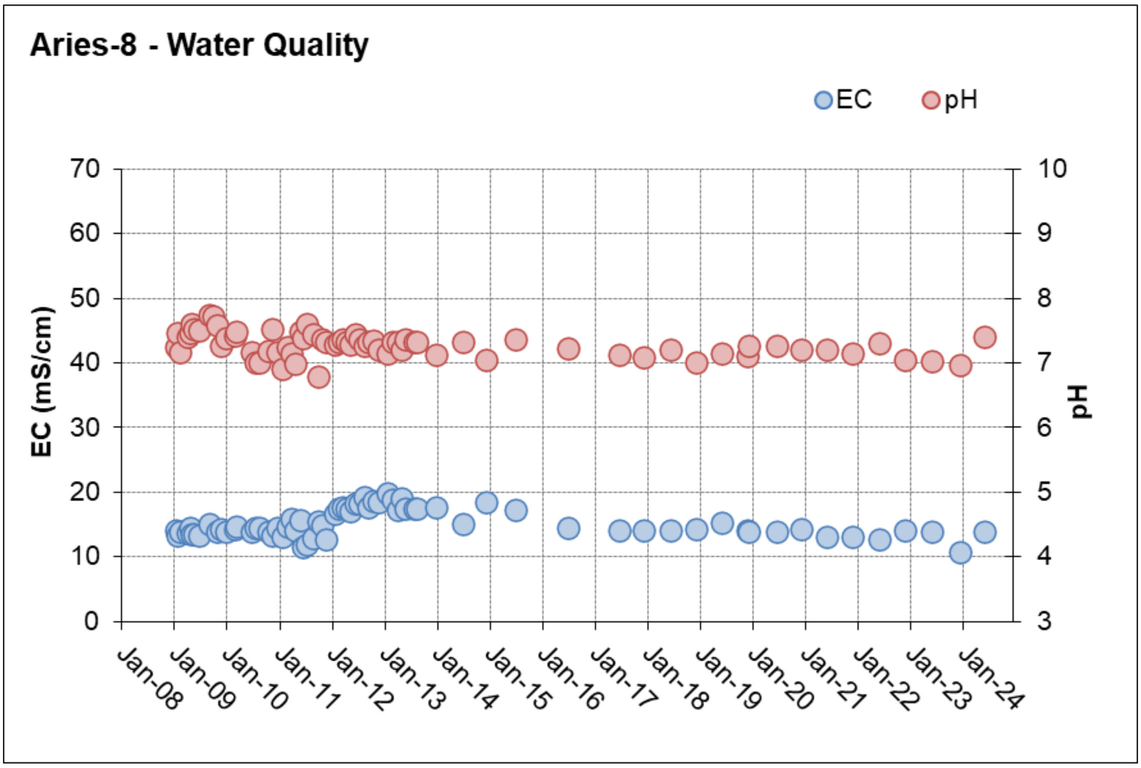

Aries-3 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

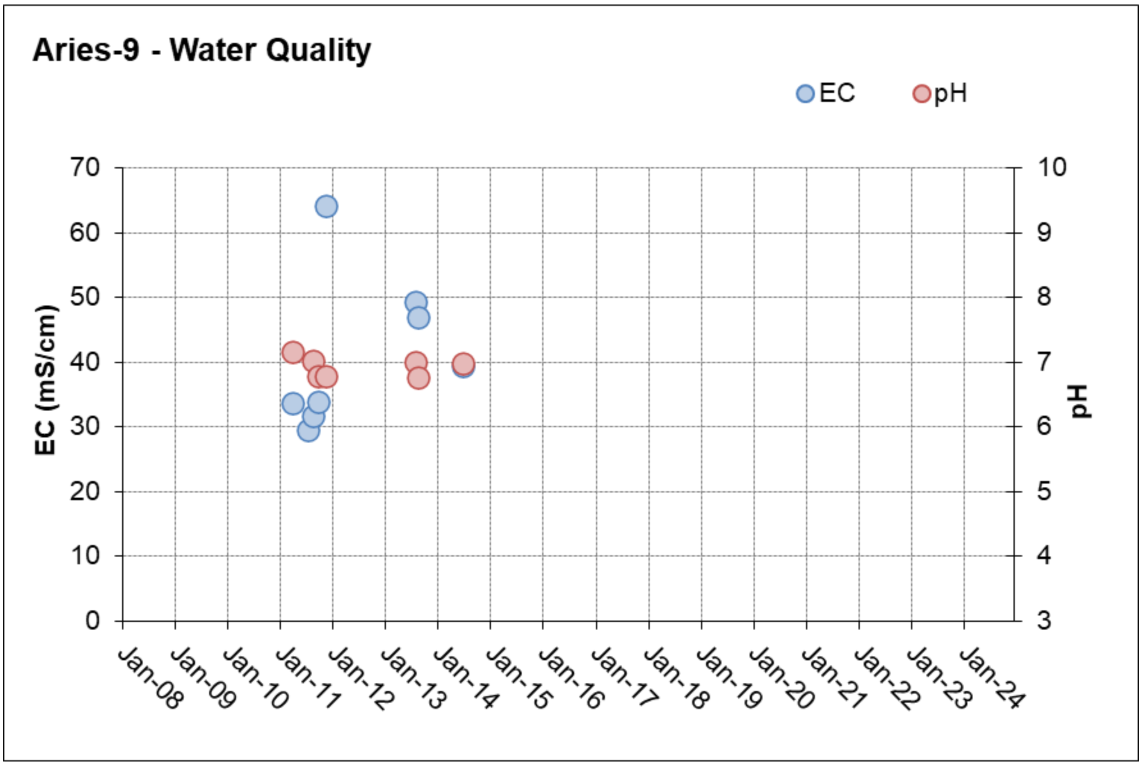

Aries-4 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

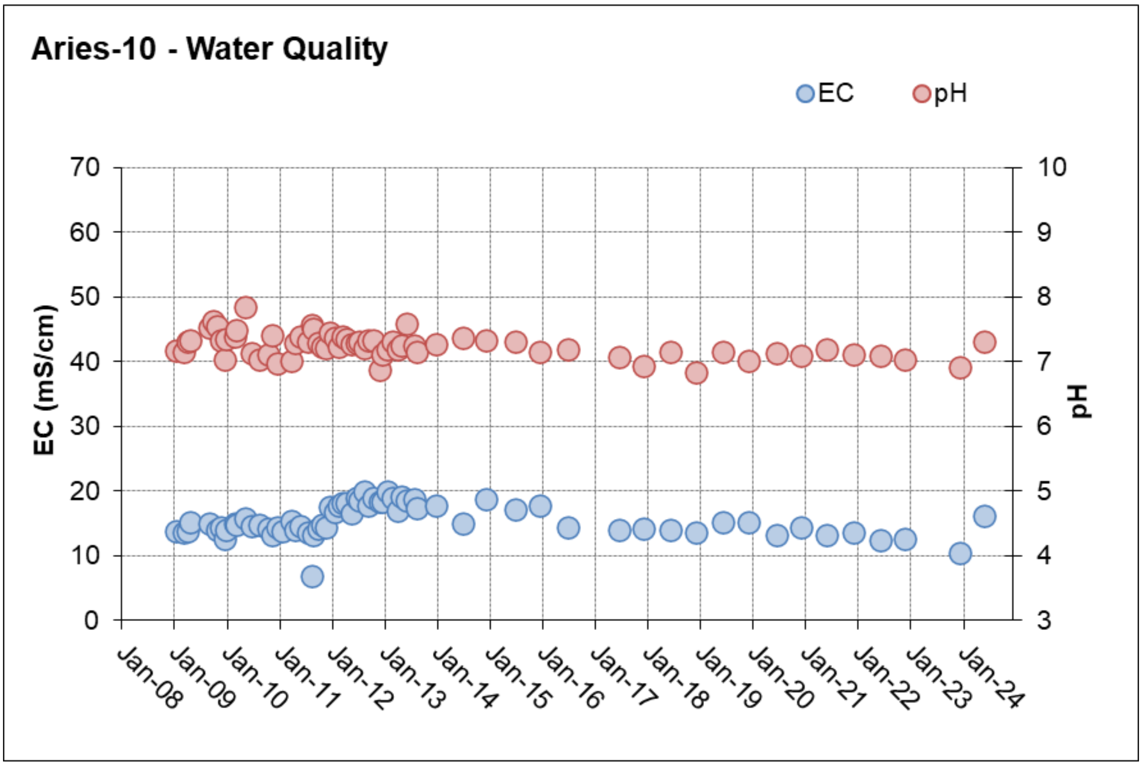

Aries-5 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

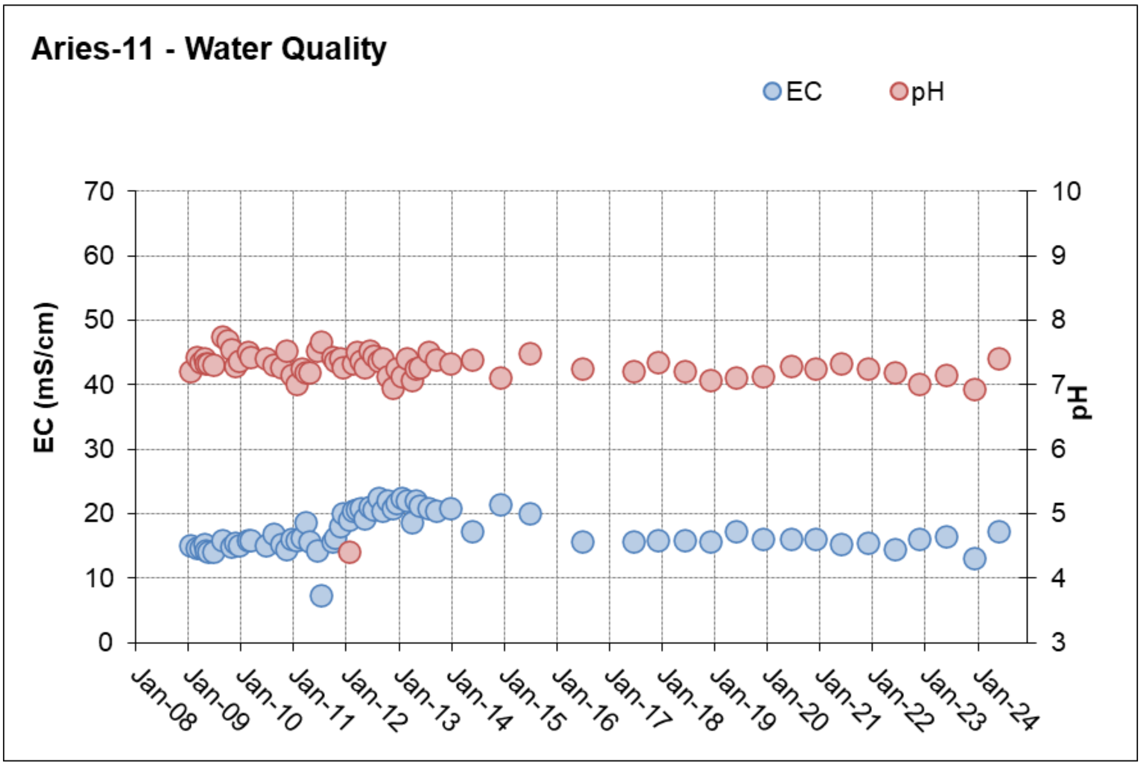

Aries-6 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

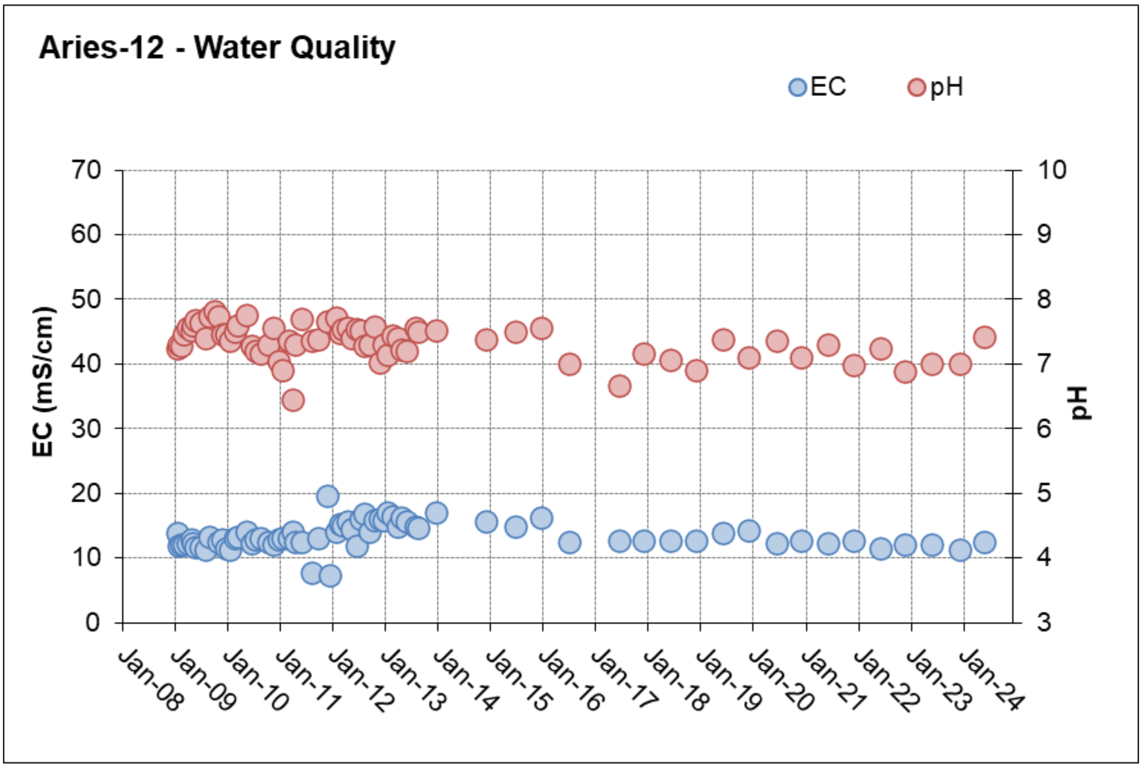

Aries-7 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

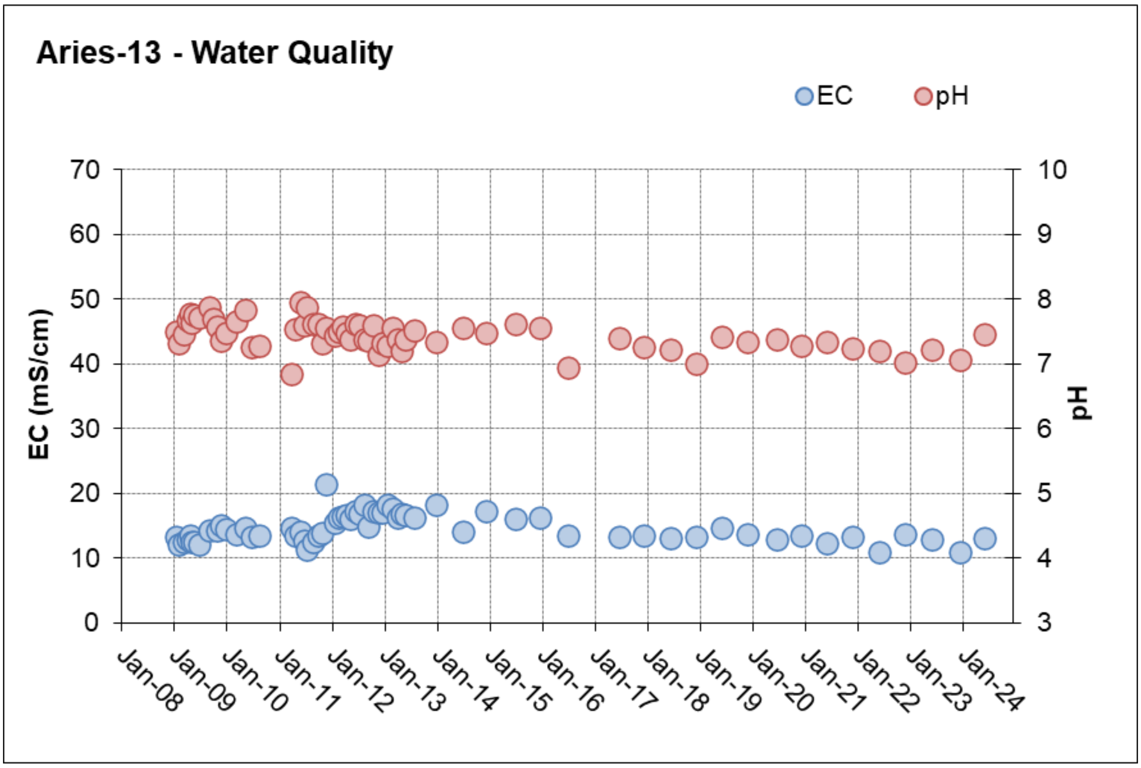

Aries-8 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

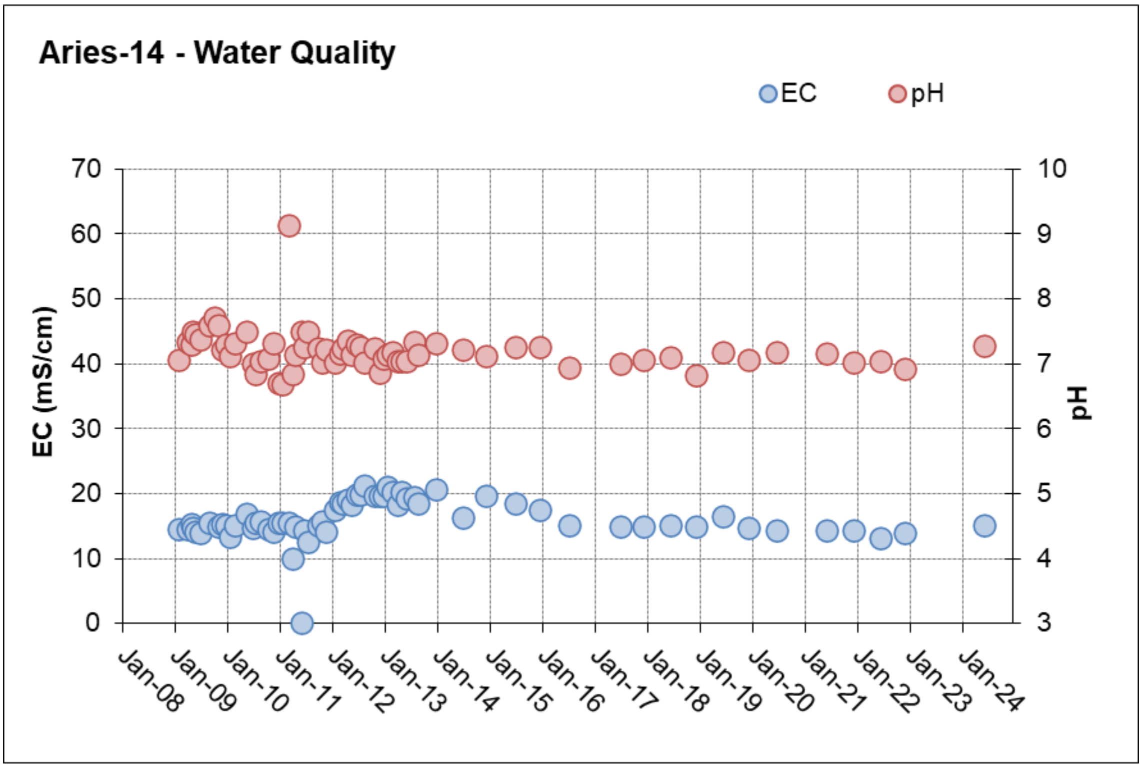

Aries-9 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

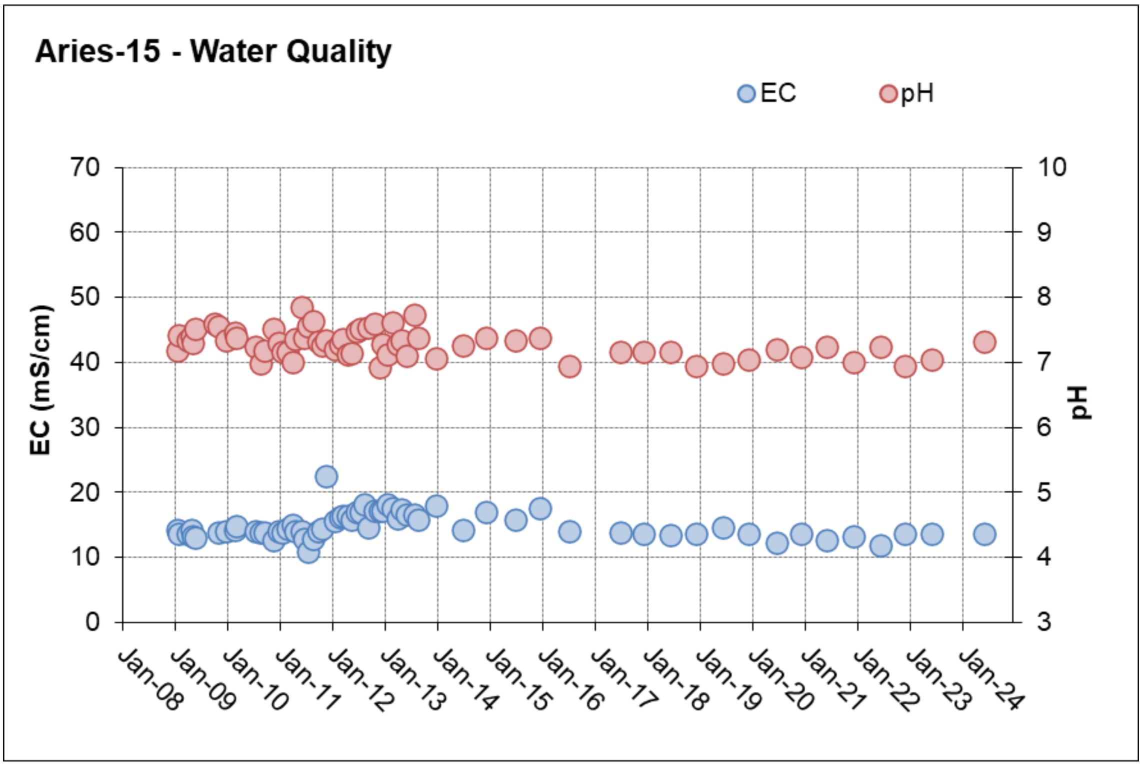

Aries-10 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

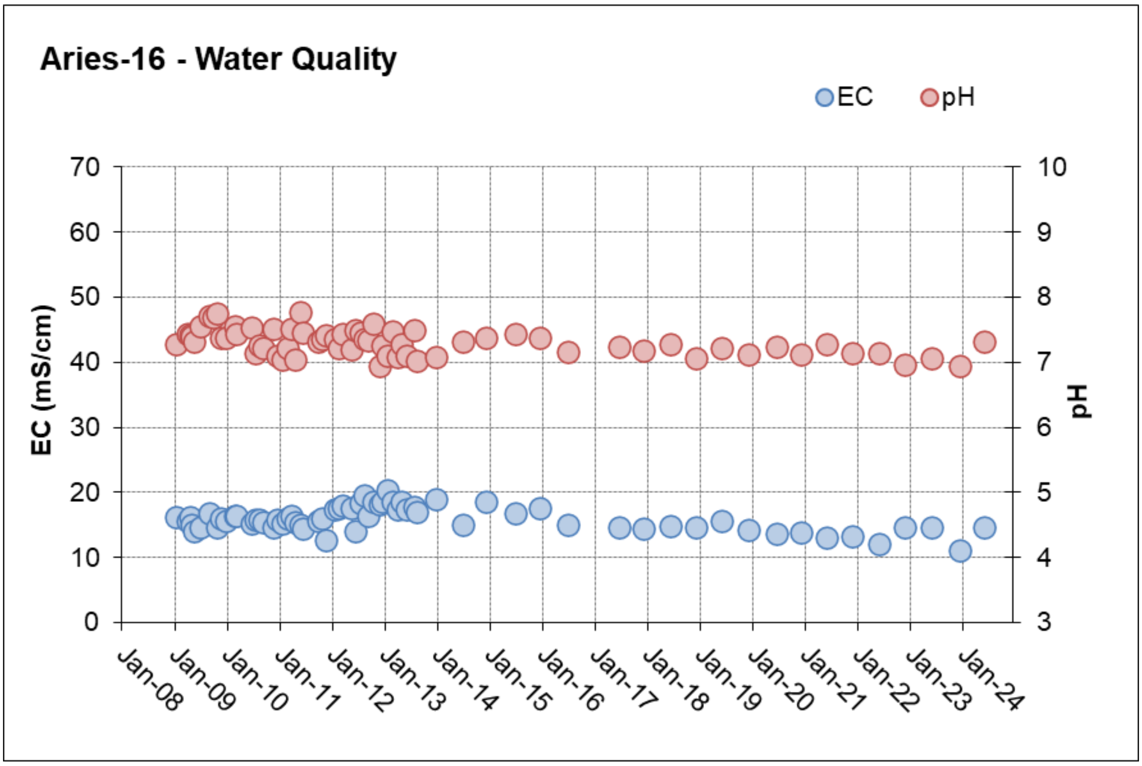

Aries-11 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Aries-12 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

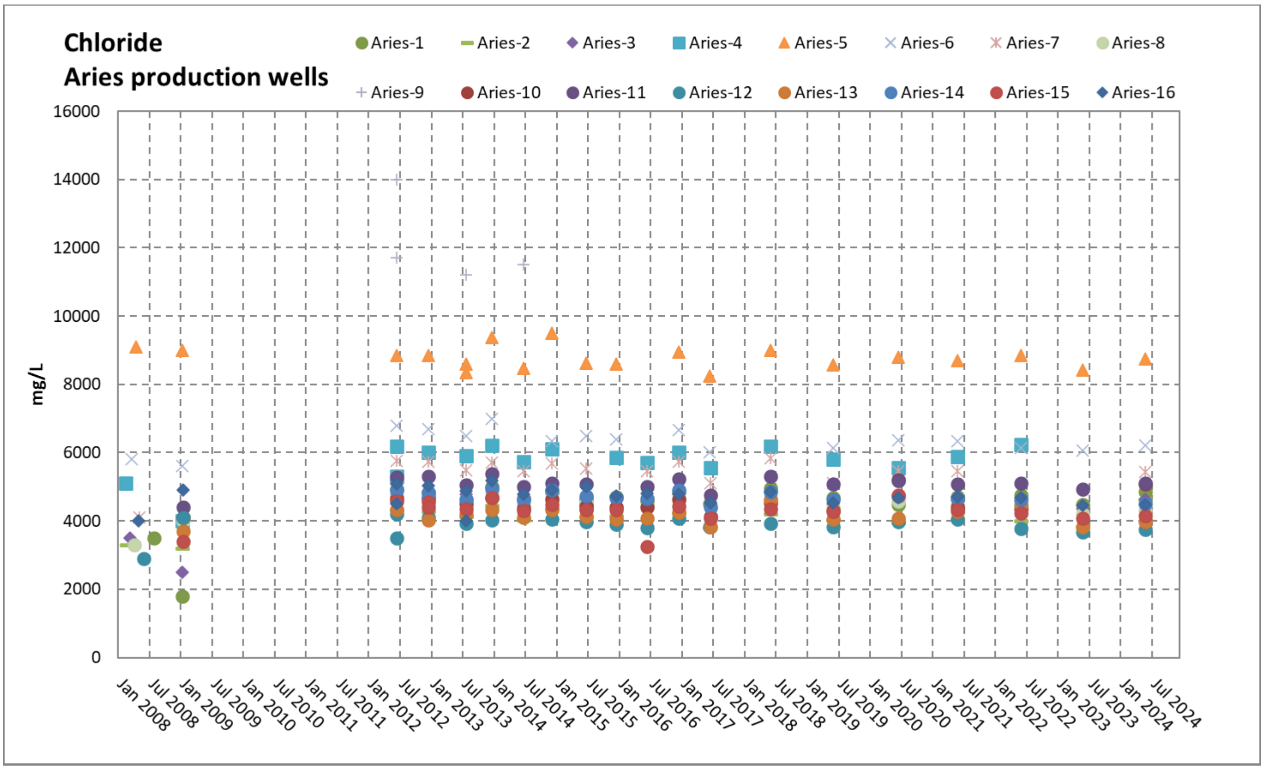

Aries-13 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

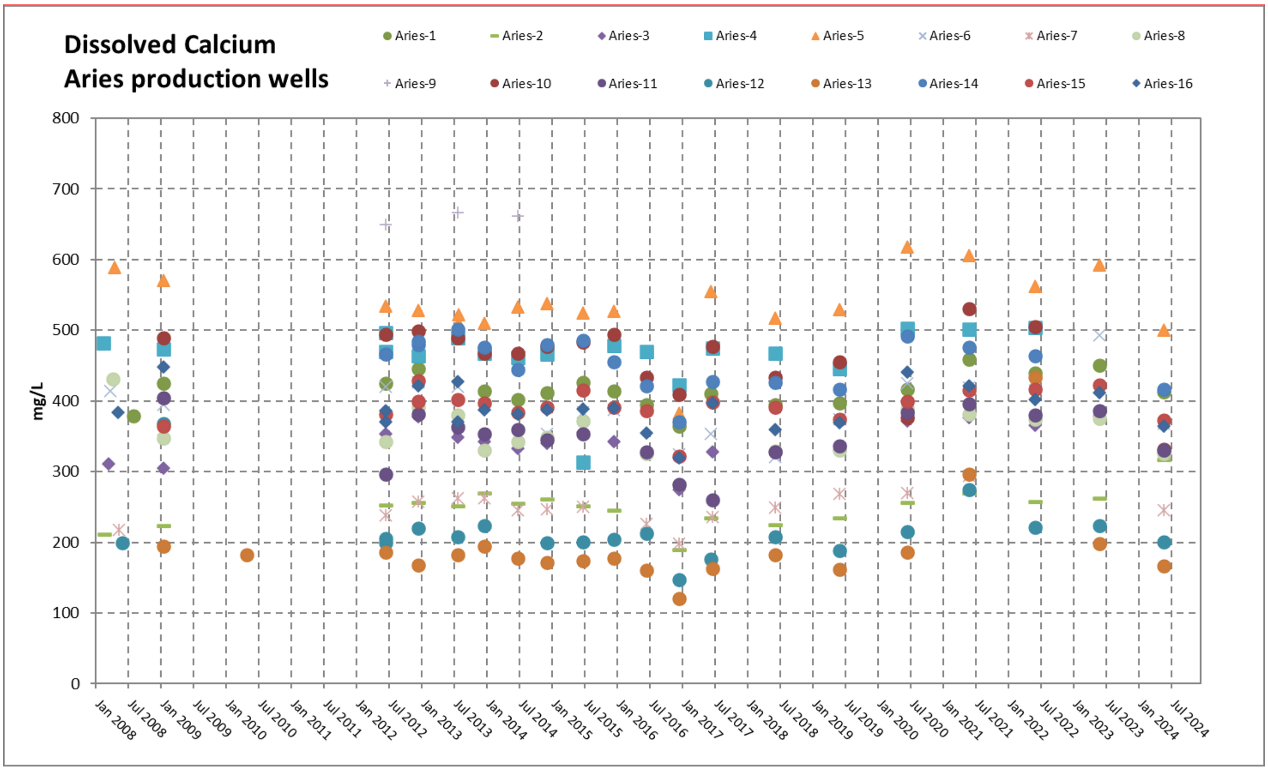

Aries-14 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

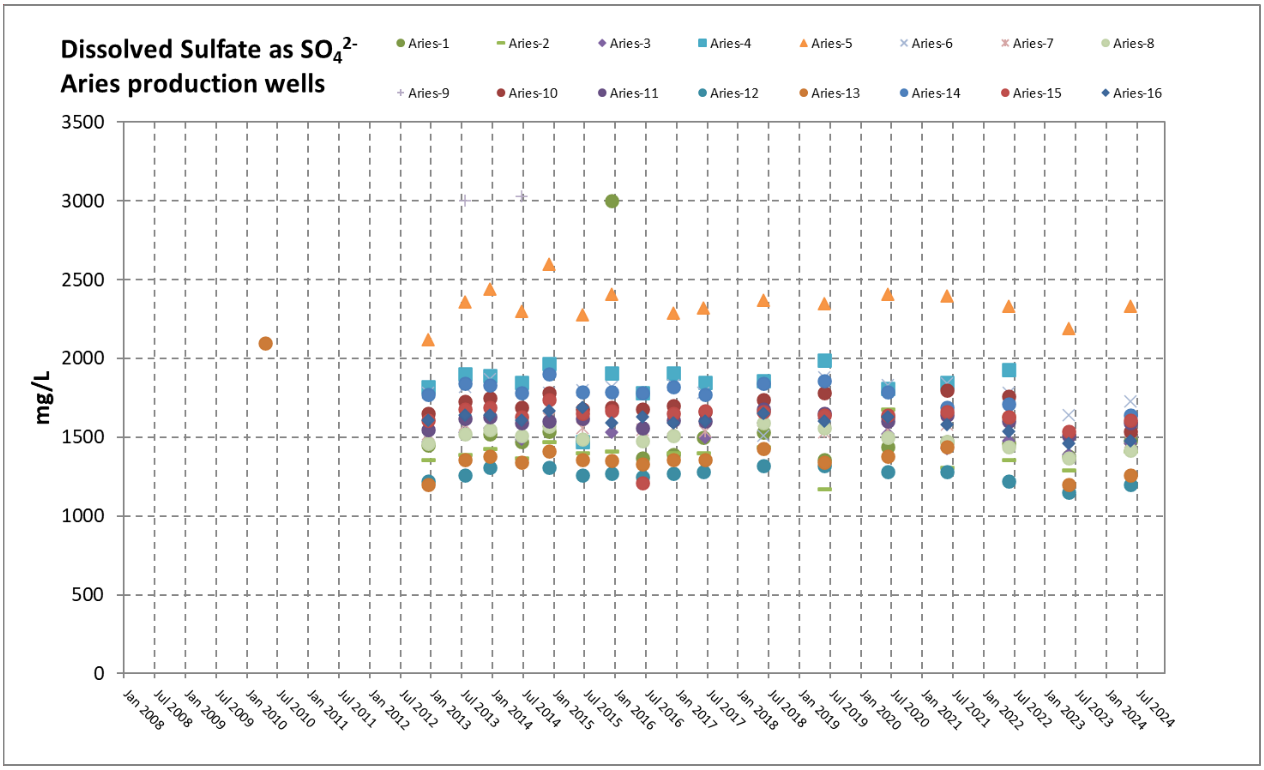

Aries-15 - Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
3
4
5
6
7
8
9
10
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

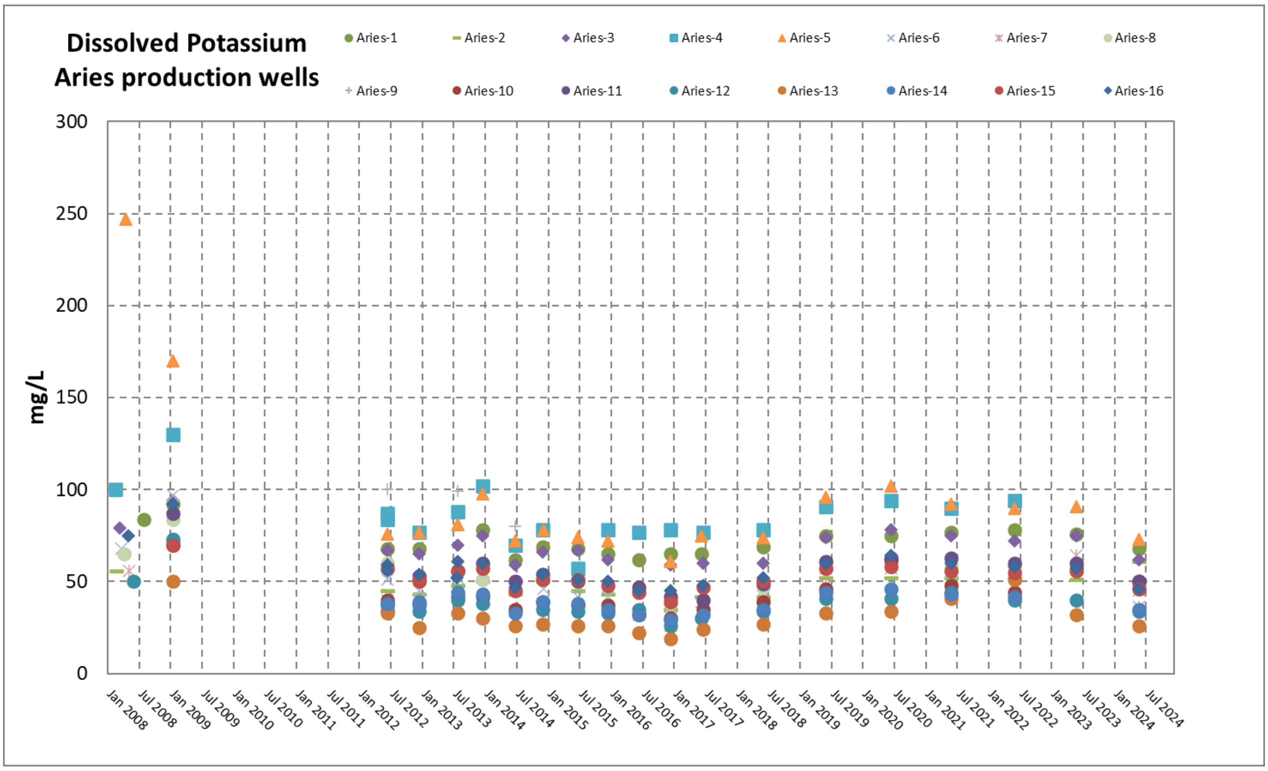

Aries-16 - Water Quality
EC
pH
EC (mS/cm)
pH
70
60
50
40
30
20
10
0
10
9
8
7
6
5
4
3
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

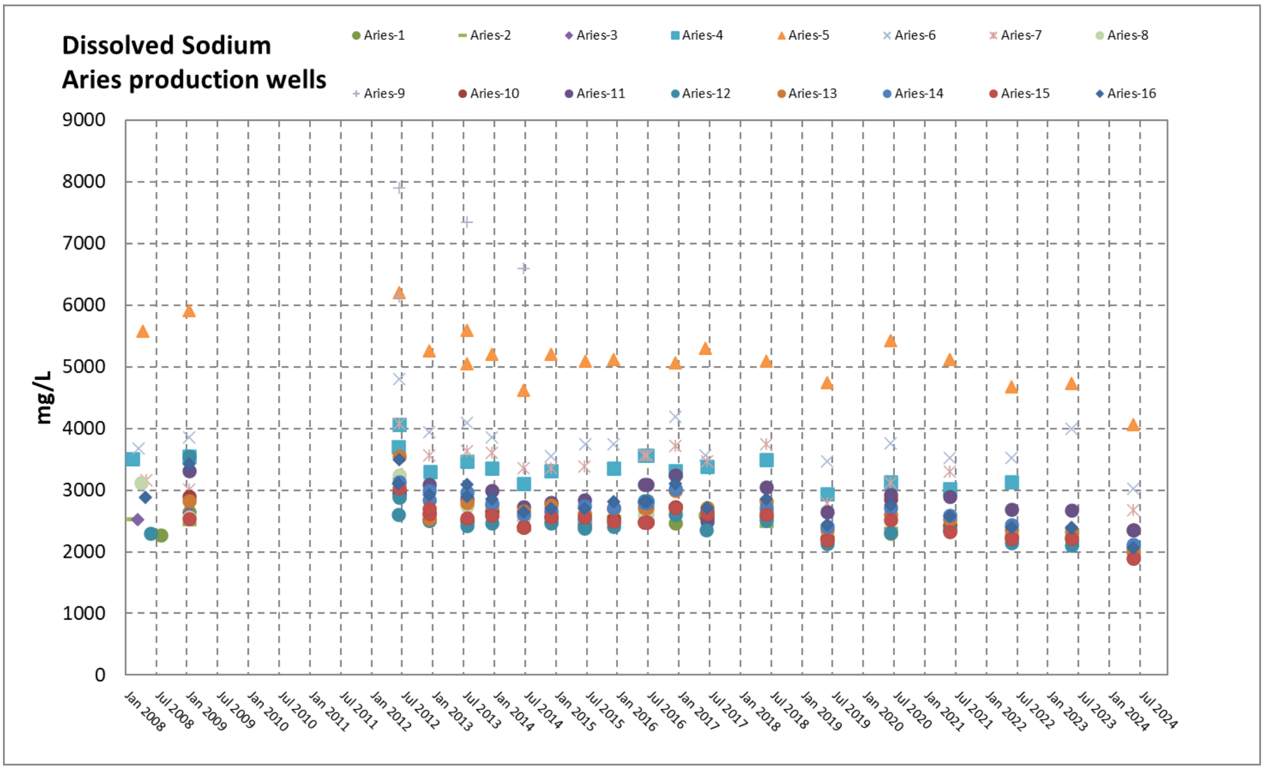
Appendix C2 Aries Laboratory Analysis






Dissolved Sulfate as SO_4^{2-}
Aries production wells
Aries-1
Aries-2
Aries-3
Aries-4
Aries-5
Aries-6
Aries-7
Aries-8
Aries-9
Aries-10
Aries-11
Aries-12
Aries-13
Aries-14
Aries-15
Aries-16
mg/L
3500
3000
2500
2000
1500
1000
500
0
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Jan 2023
Jul 2023
Jan 2024
Jul 2024


Dissolved Potassium
Aries production wells
Aries-1
Aries-2
Aries-3
Aries-4
Aries-5
Aries-6
Aries-7
Aries-8
Aries-9
Aries-10
Aries-11
Aries-12
Aries-13
Aries-14
Aries-15
Aries-16
mg/L
300
250
200
150
100
50
0
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Jan 2023
Jul 2023
Jan 2024
Jul 2024


Dissolved Sodium
Aries production wells
Aries-1
Aries-2
Aries-3
Aries-4
Aries-5
Aries-6
Aries-7
Aries-8
Aries-9
Aries-10
Aries-11
Aries-12
Aries-13
Aries-14
Aries-15
Aries-16
mg/L
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
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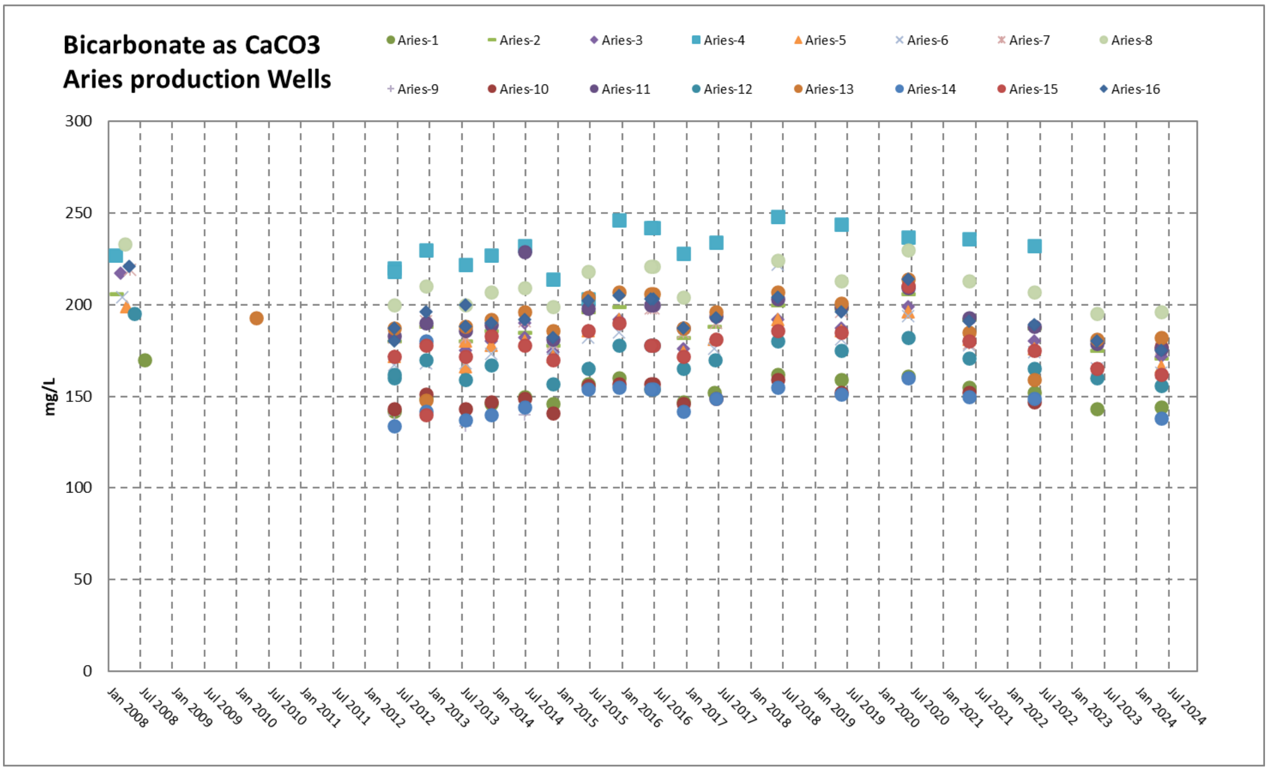
Jul 2022
Jan 2023
Jul 2023
Jan 2024
Jul 2024


Bicarbonate as CaCO3
Aries production Wells
Aries-1
Aries-2
Aries-3
Aries-4
Aries-5
Aries-6
Aries-7
Aries-8
Aries-9
Aries-10
Aries-11
Aries-12
Aries-13
Aries-14
Aries-15
Aries-16
mg/L
300
250
200
150
100
50
0
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
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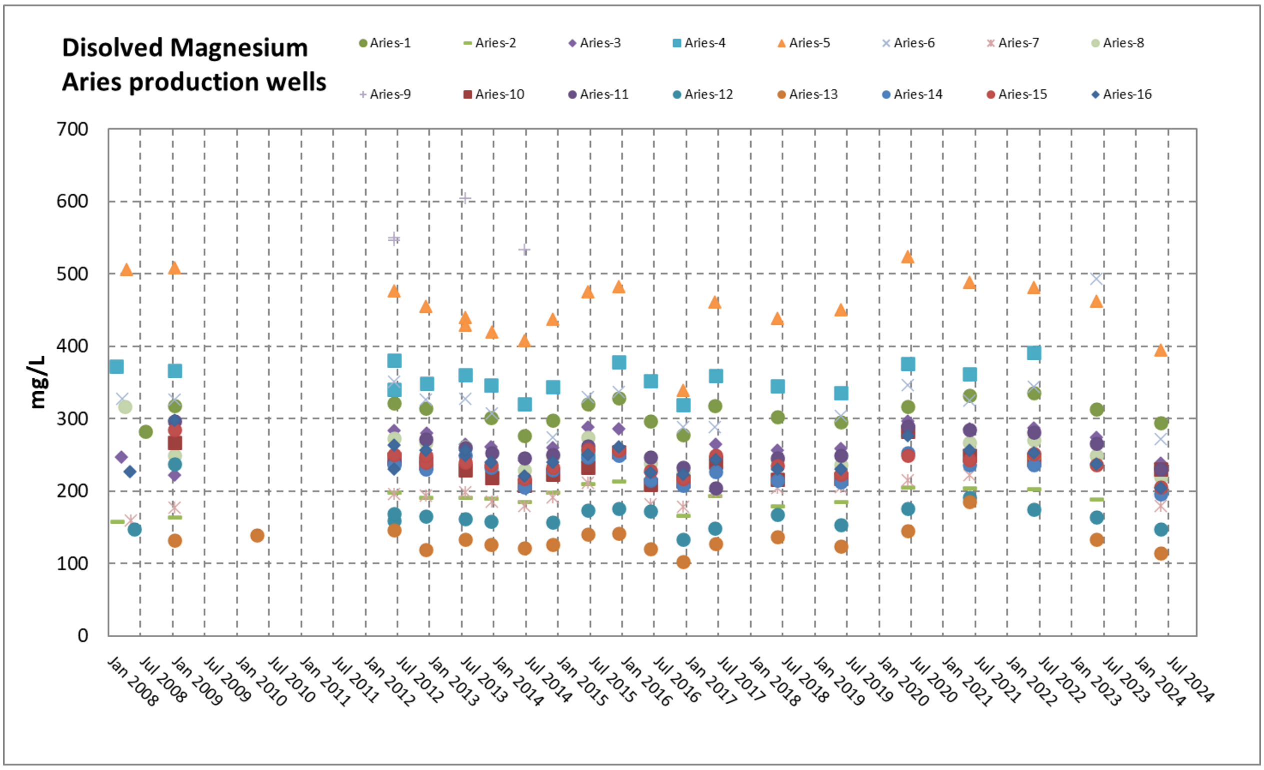
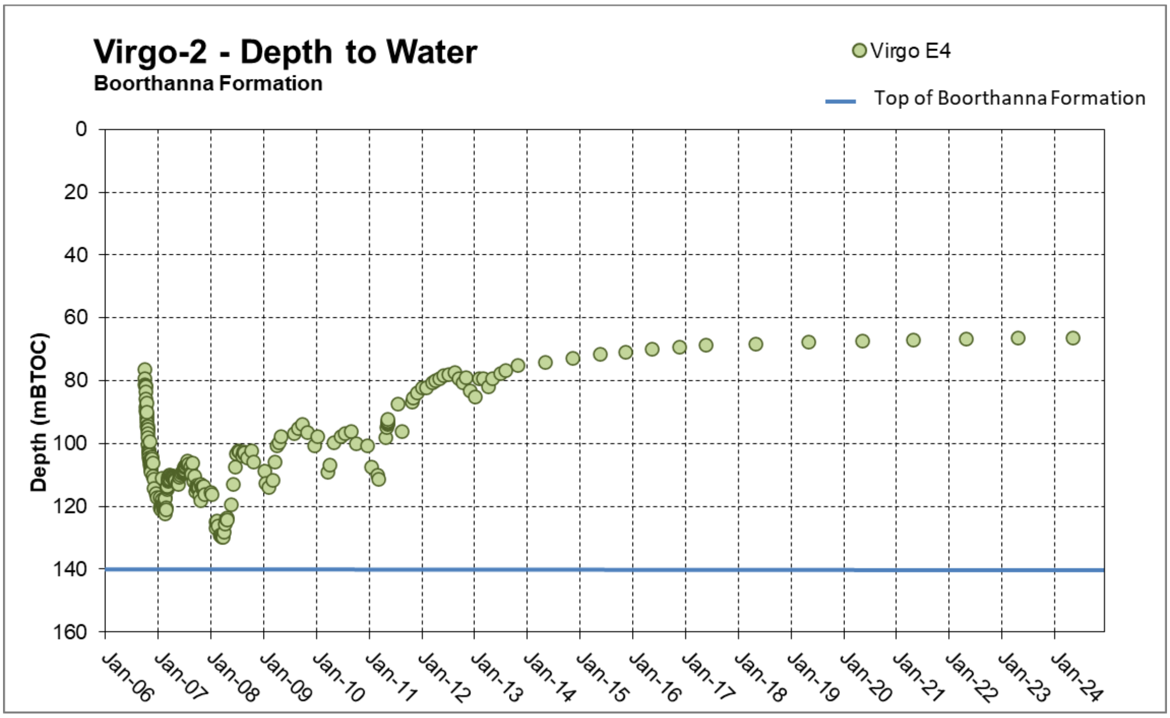
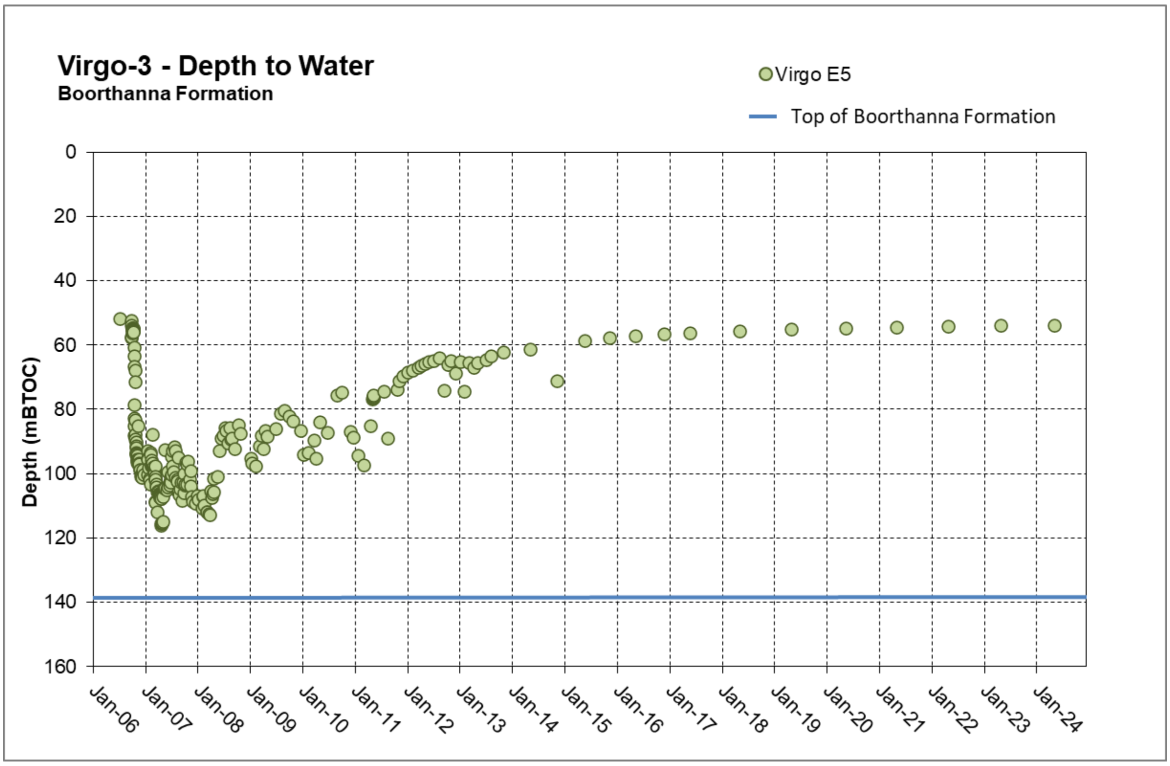
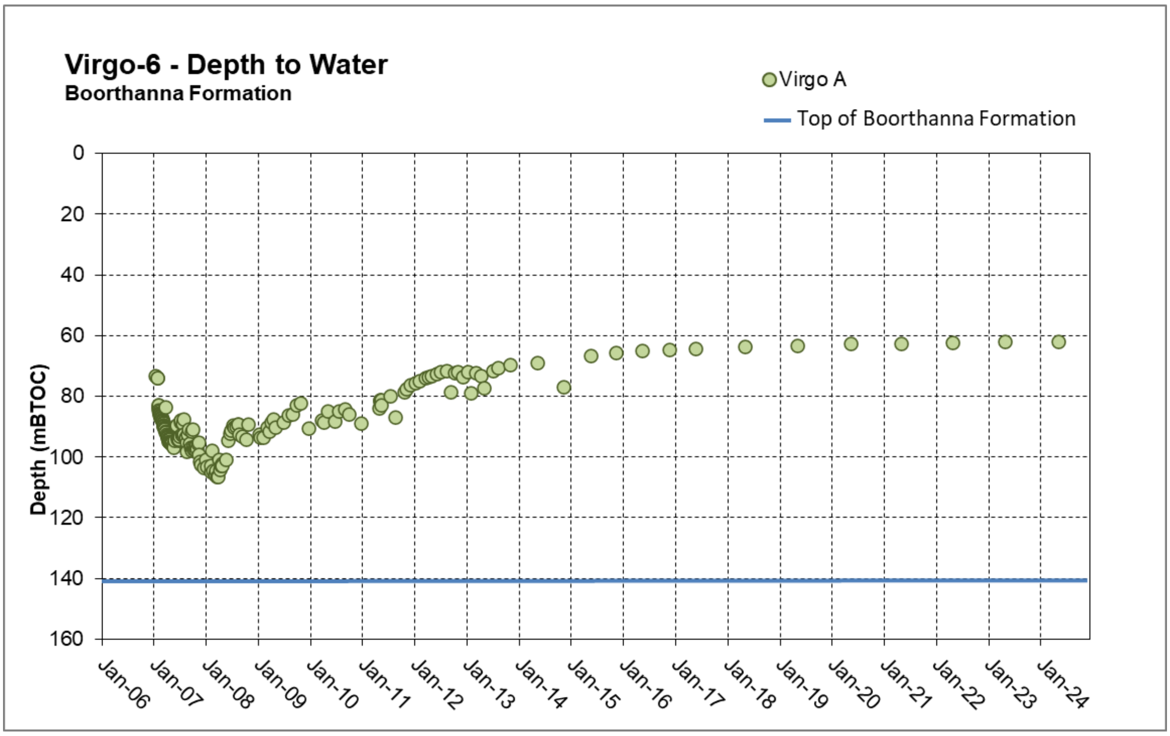
Jul 2023
Jan 2024
Jul 2024

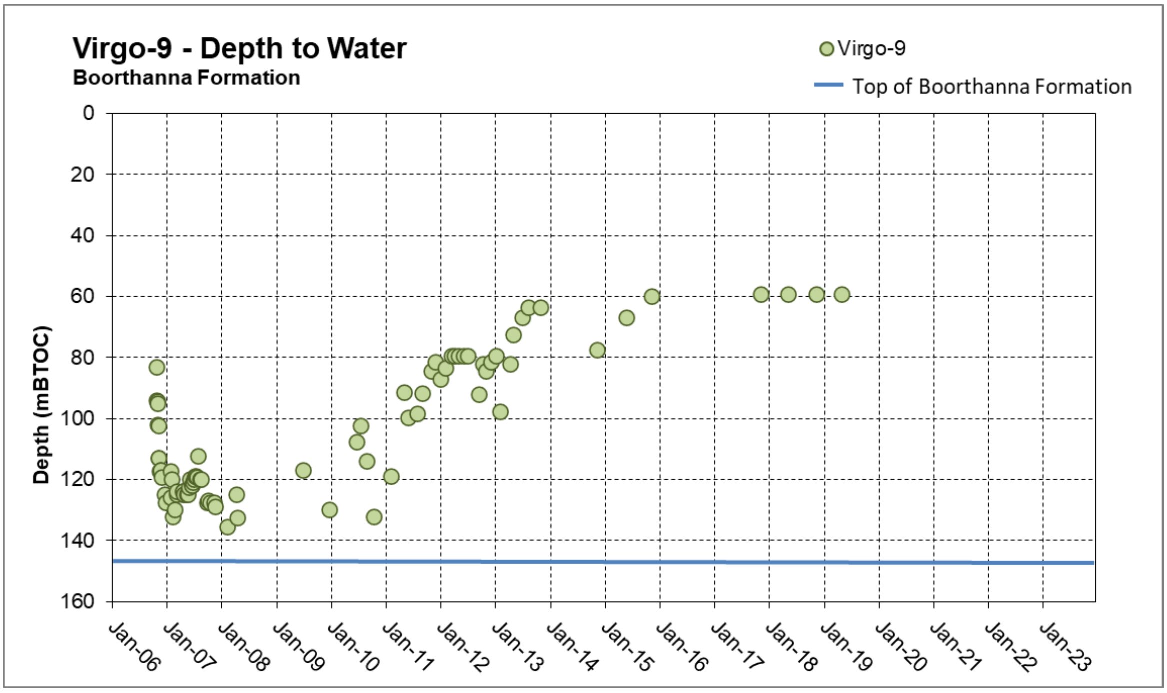

Disolved Magnesium
Aries production wells
Aries-1
Aries-2
Aries-3
Aries-4
Aries-5
Aries-6
Aries-7
Aries-8
Aries-9
Aries-10
Aries-11
Aries-12
Aries-13
Aries-14
Aries-15
Aries-16
mg/L
0
100
200
300
400
500
600
700
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Jan 2023
Jul 2023
Jan 2024
Jul 2024

Appendix C3 Virgo Monitoring

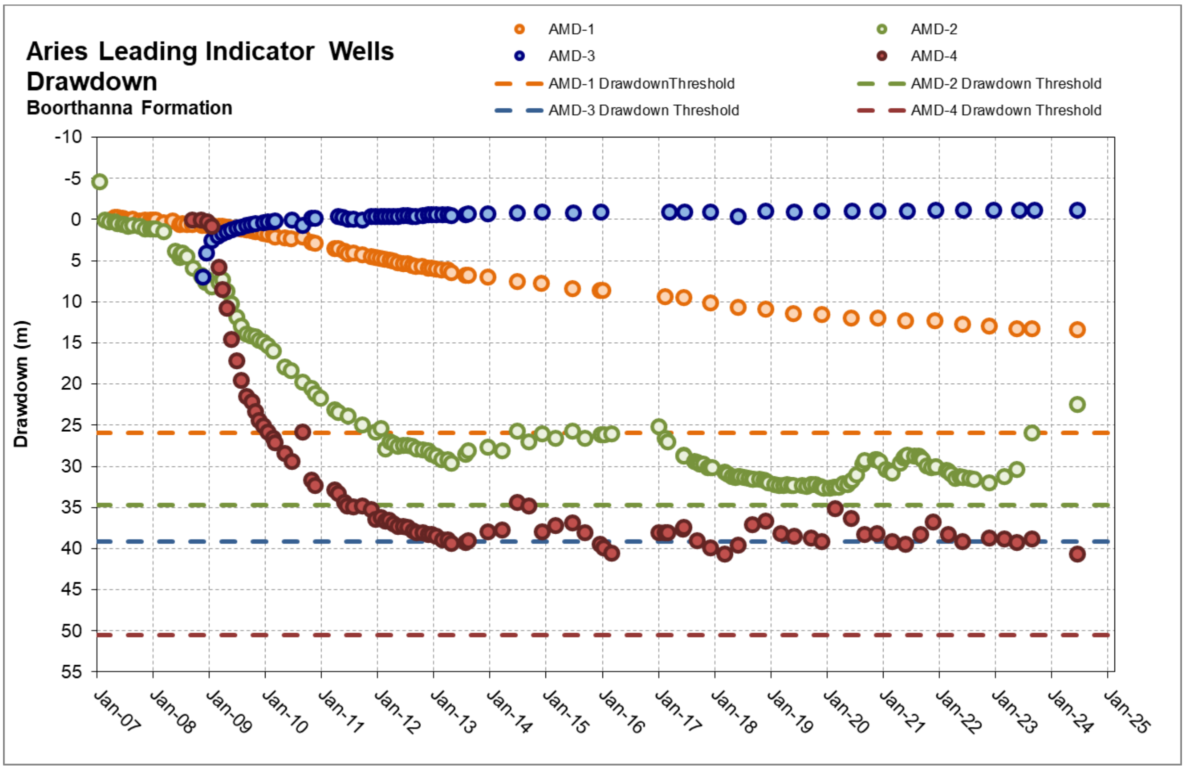


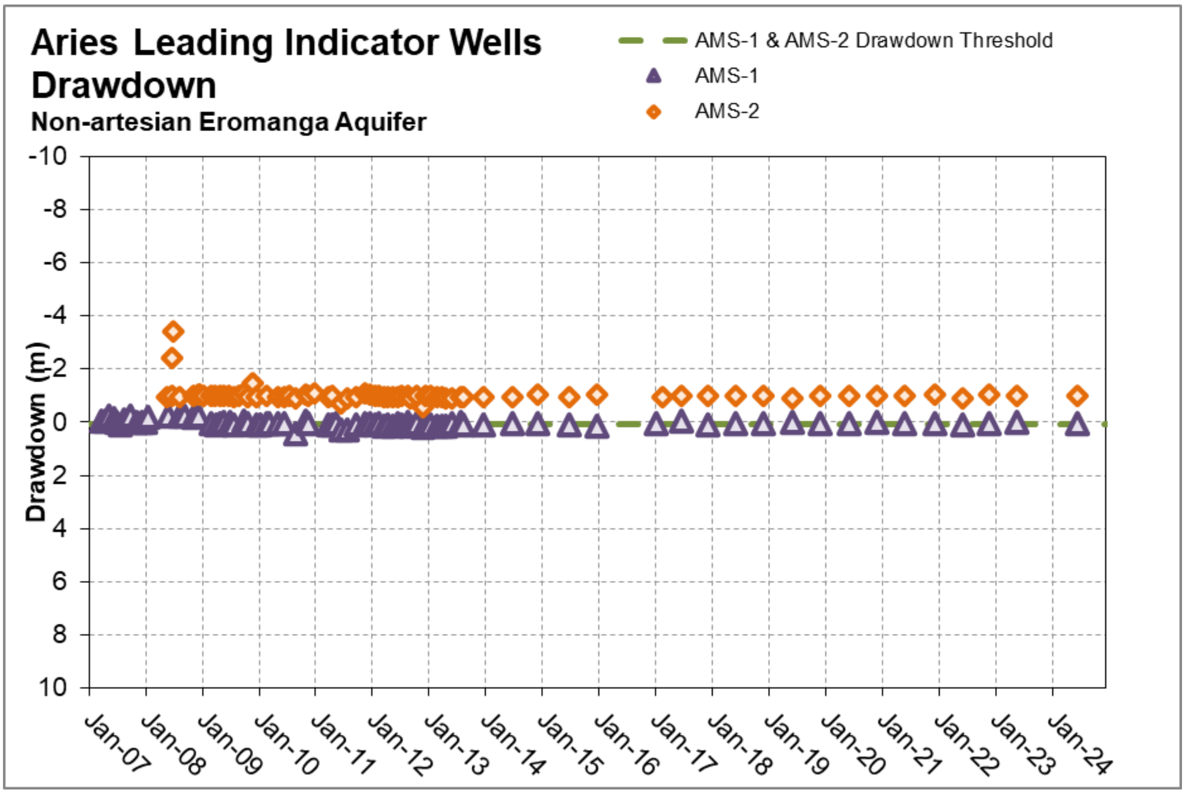


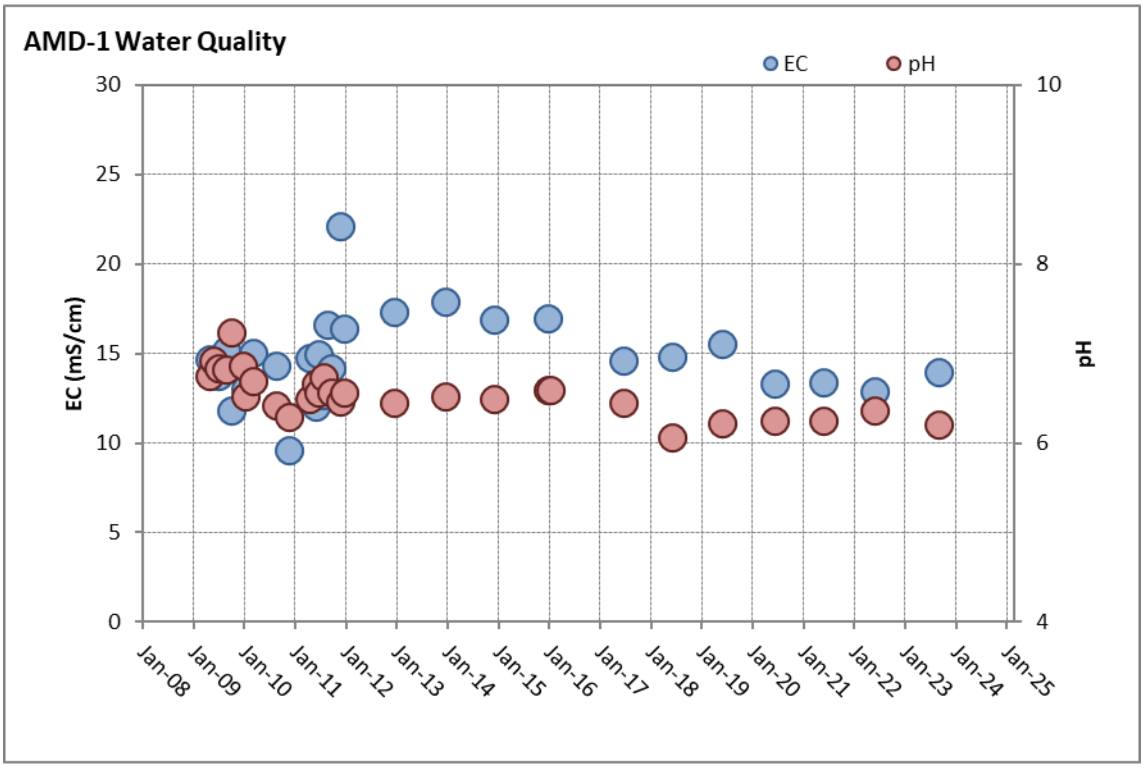

Virgo-6 - Depth to Water
Boorthanna Formation
Virgo A
Top of Boorthanna Formation
Depth (mBTOC)
0
20
40
60
80
100
120
140
160
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

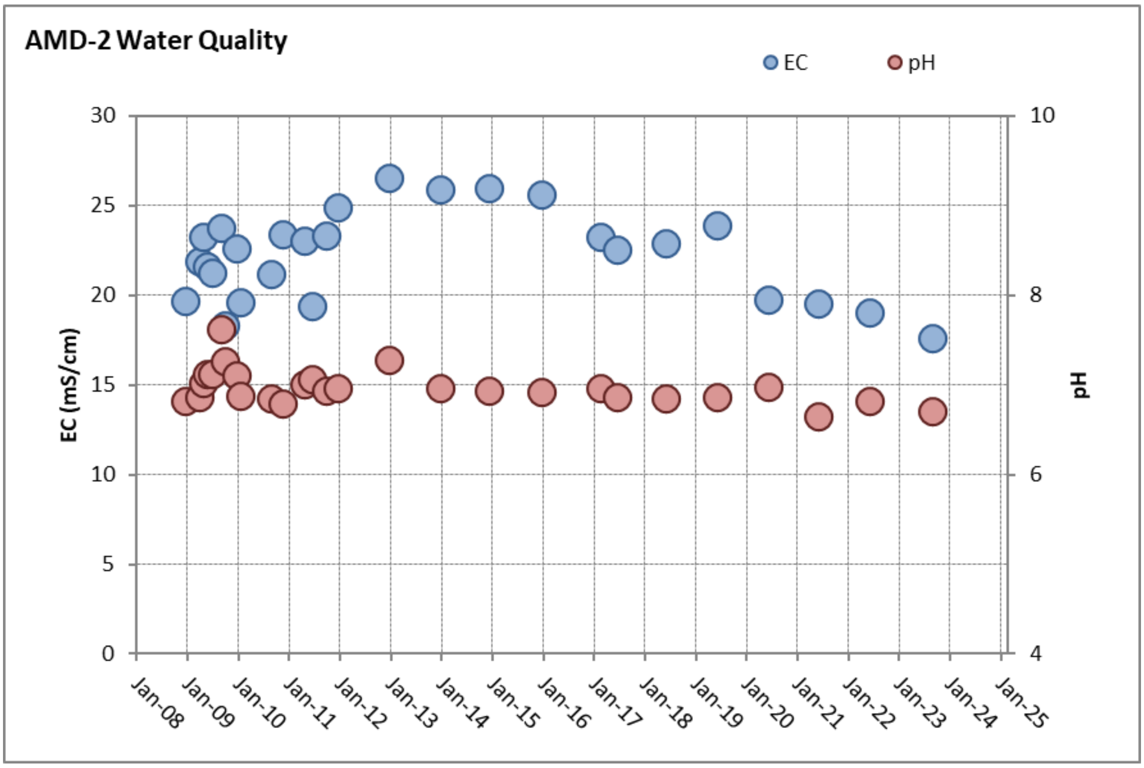

Virgo-9 - Depth to Water
Boorthanna Formation
Virgo-9
Top of Boorthanna Formation
Depth (mBTOC)
0
20
40
60
80
100
120
140
160
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23

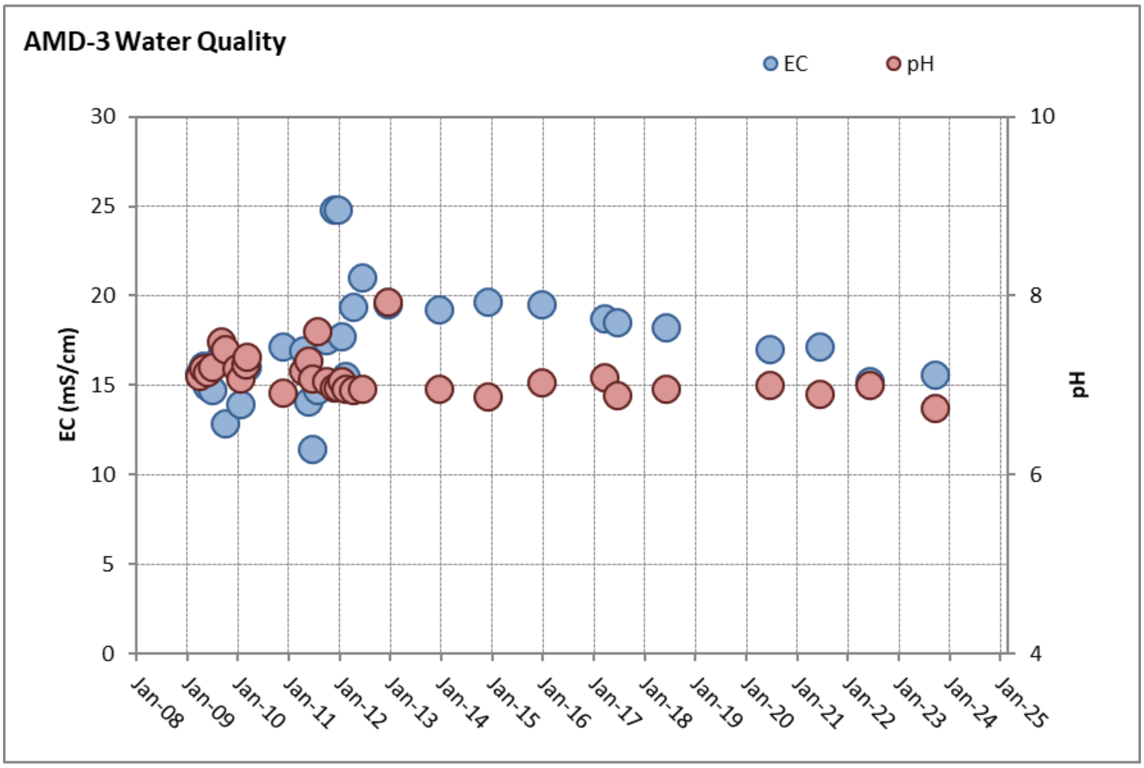
Appendix C4 Aries Borefield Leading Indicator Wells

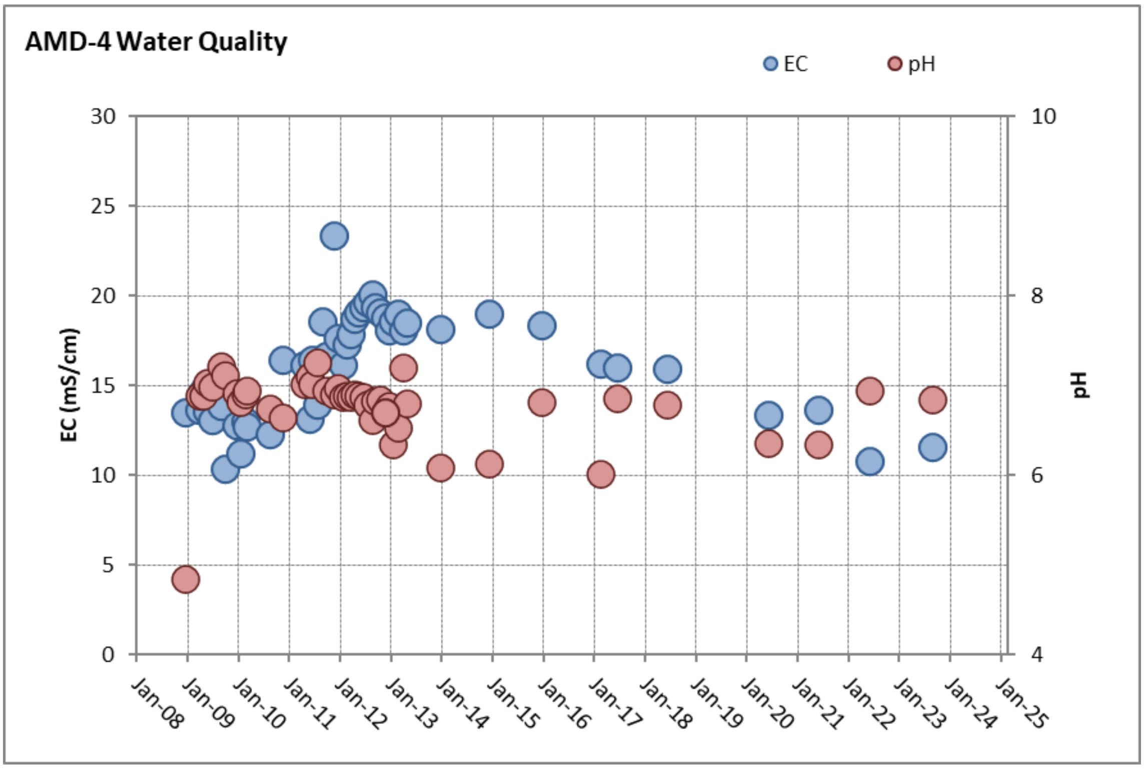


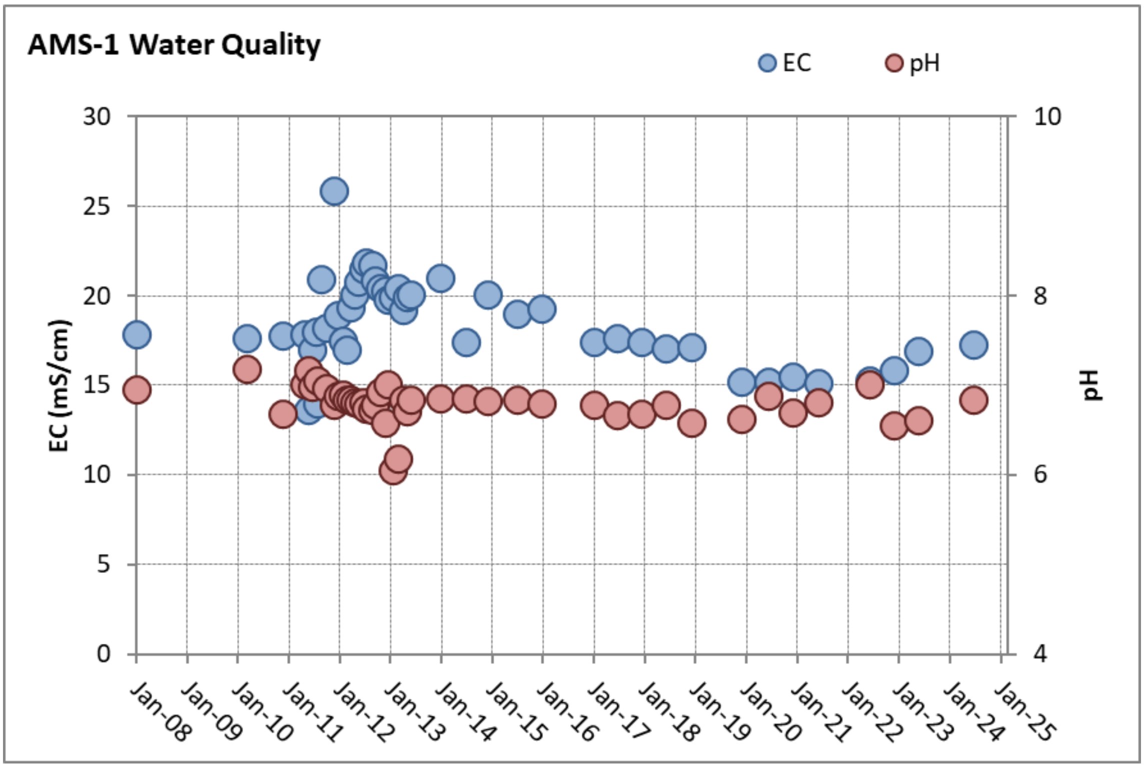


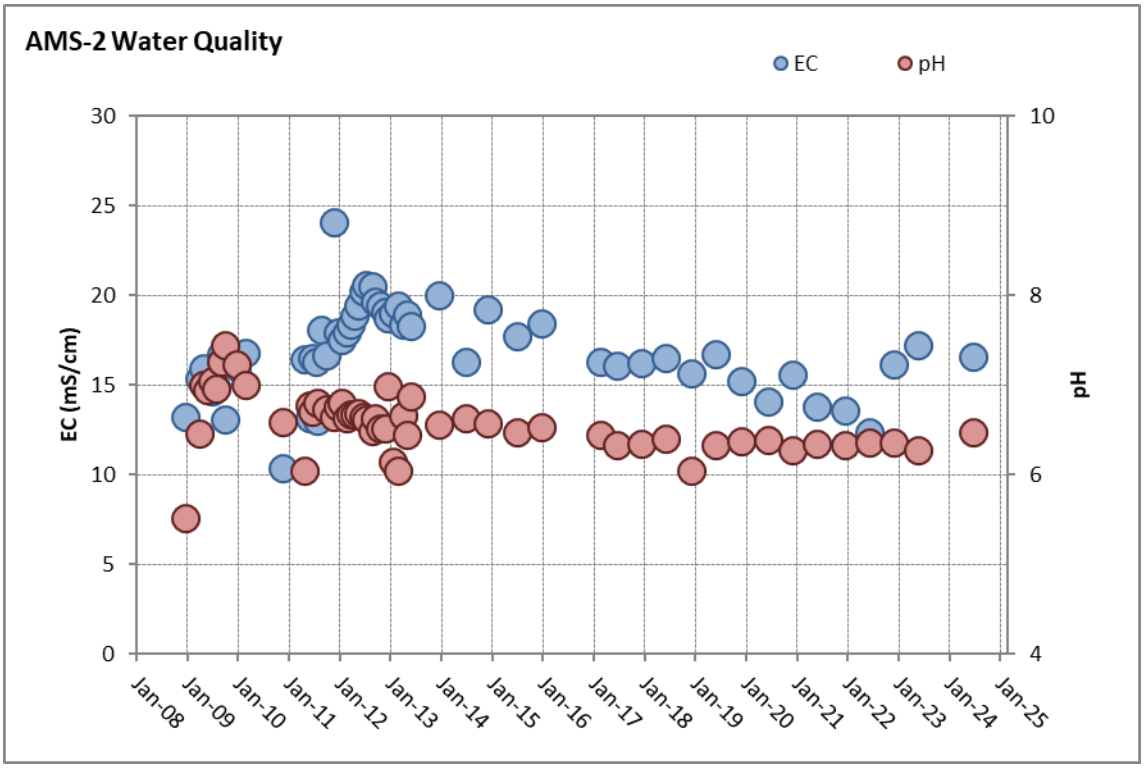

AMD-1 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25


AMD-2 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

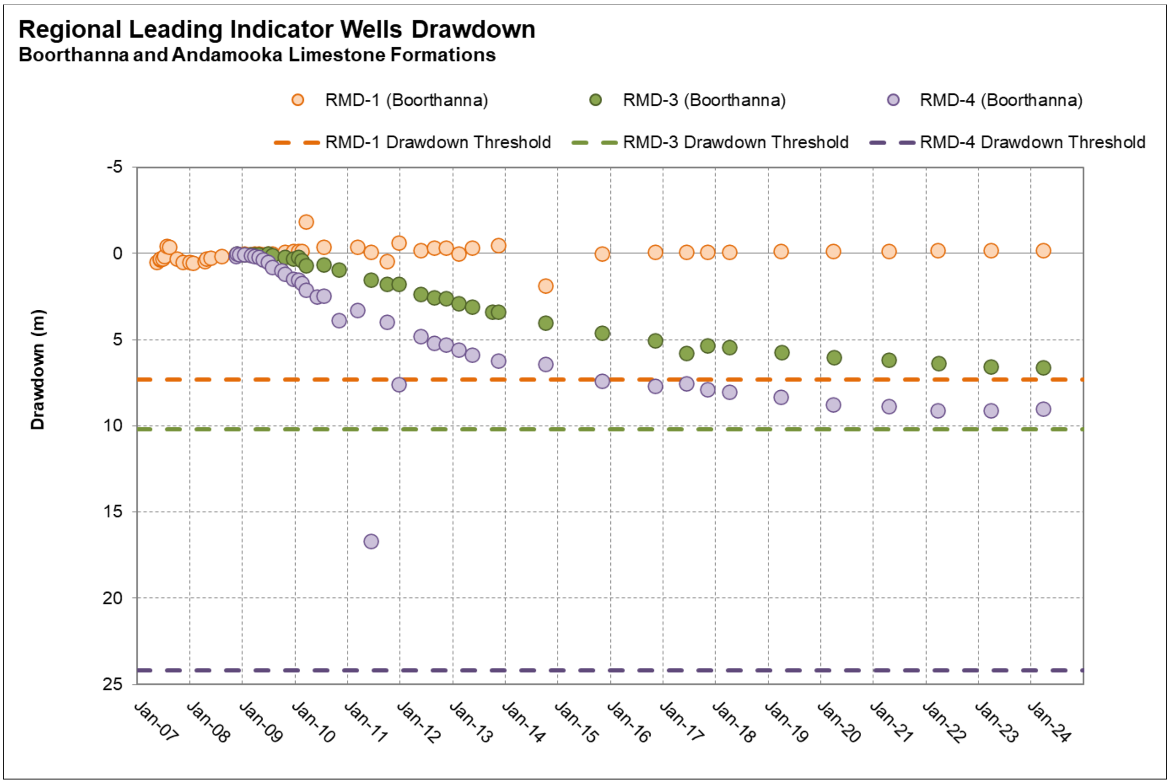

AMD-3 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

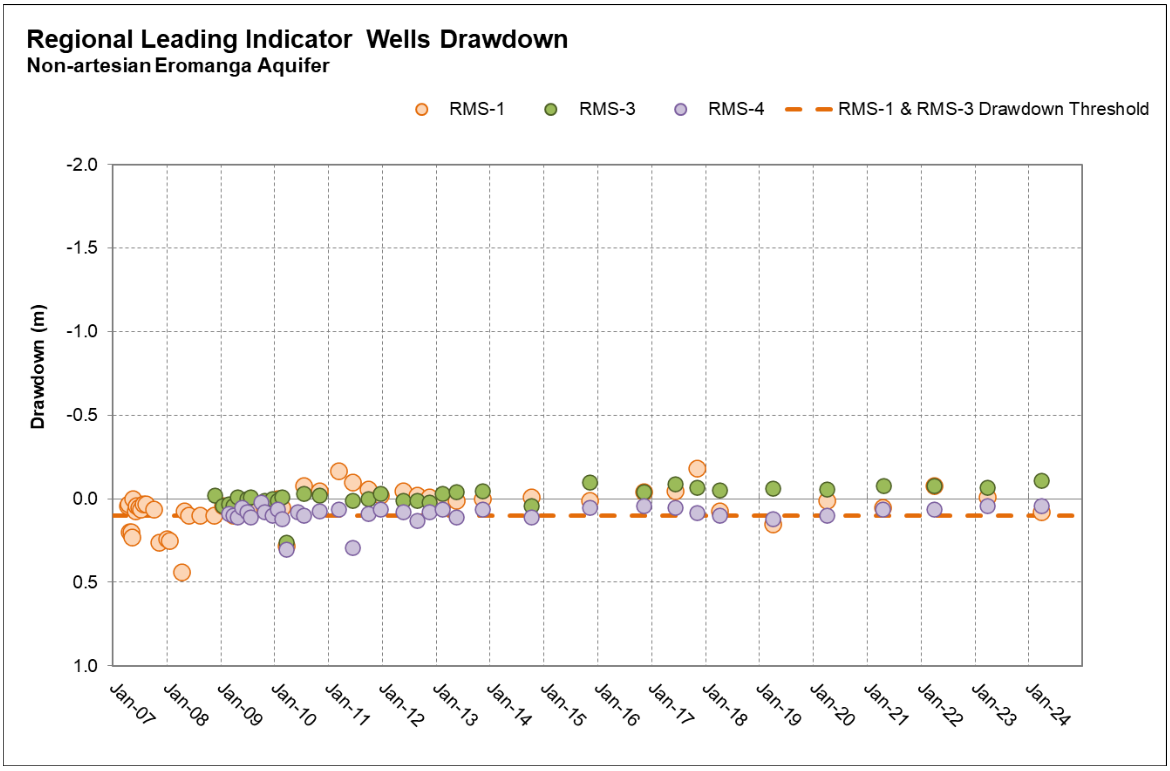

AMD-4 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

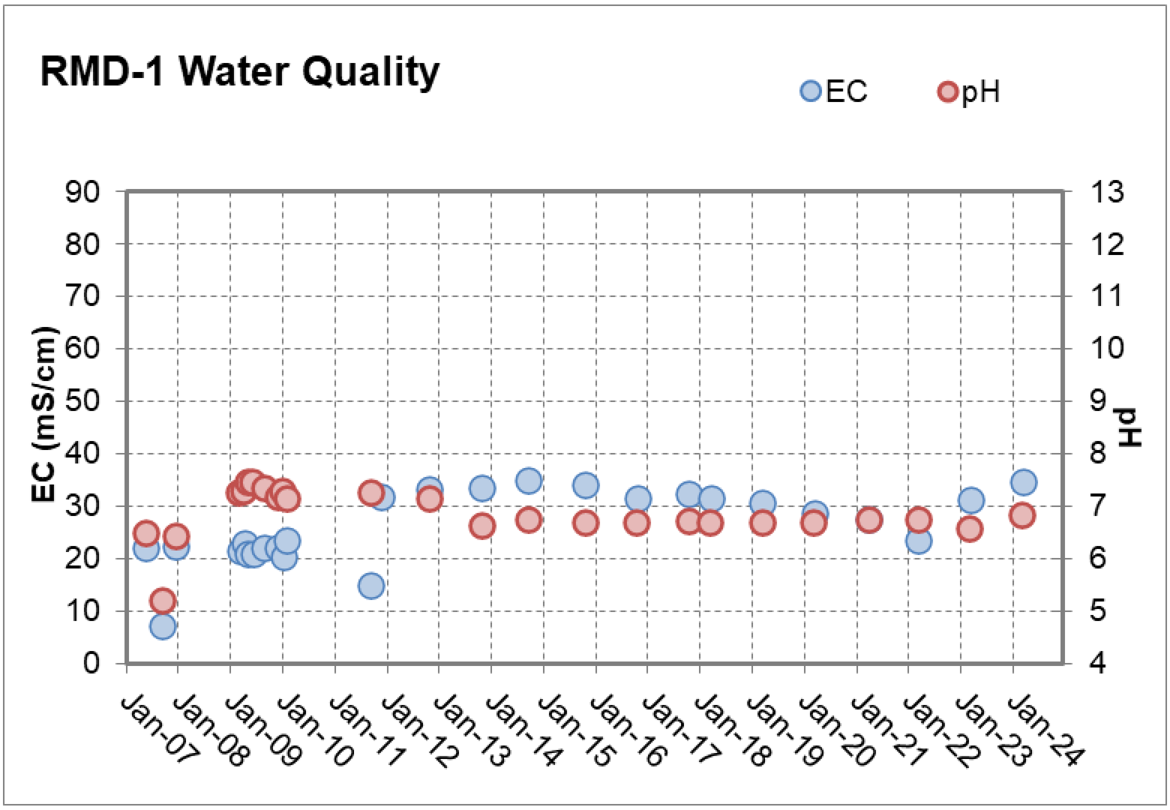

AMS-1 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

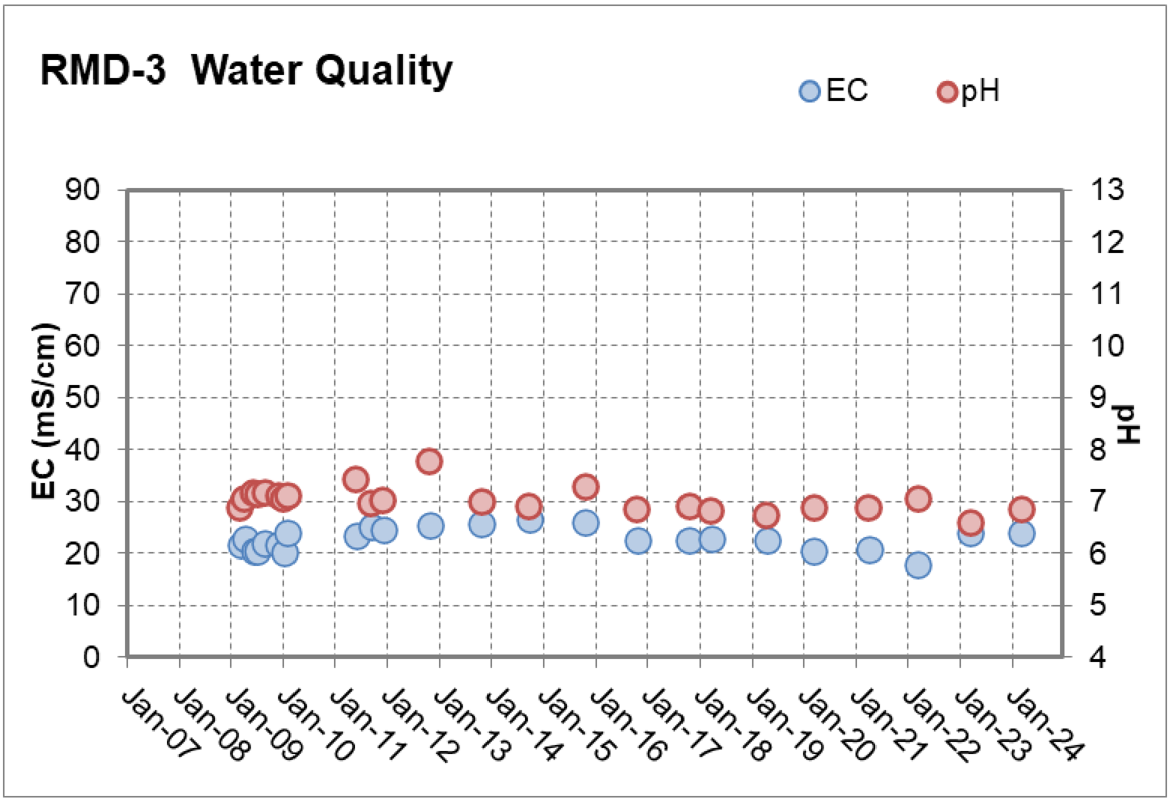

AMS-2 Water Quality
EC
pH
EC (mS/cm)
pH
30
25
20
15
10
5
0
10
8
6
4
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

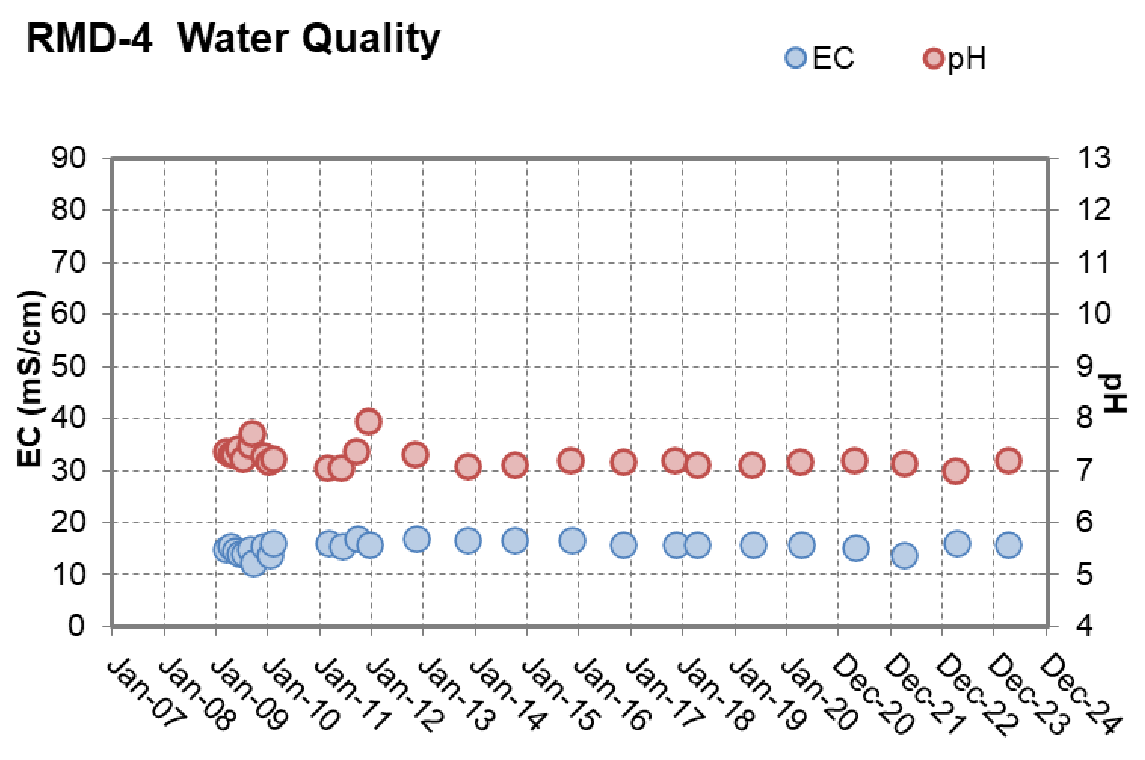
Appendix C5 Regional Monitoring

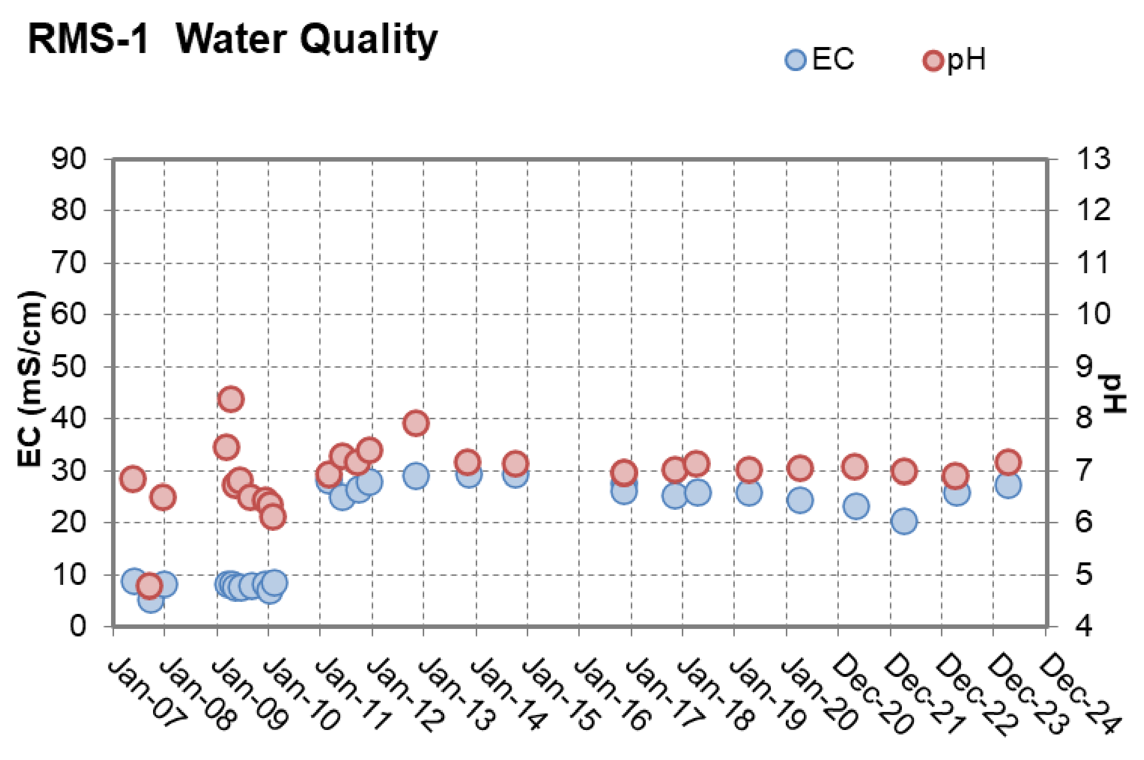


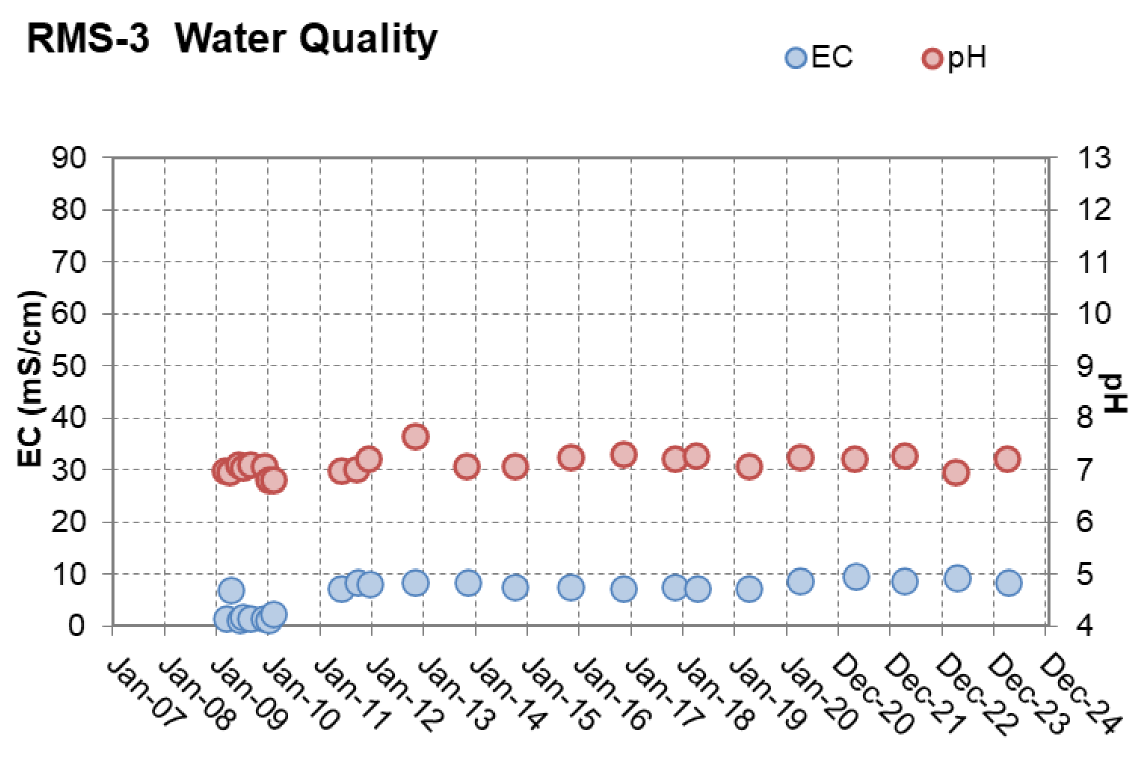


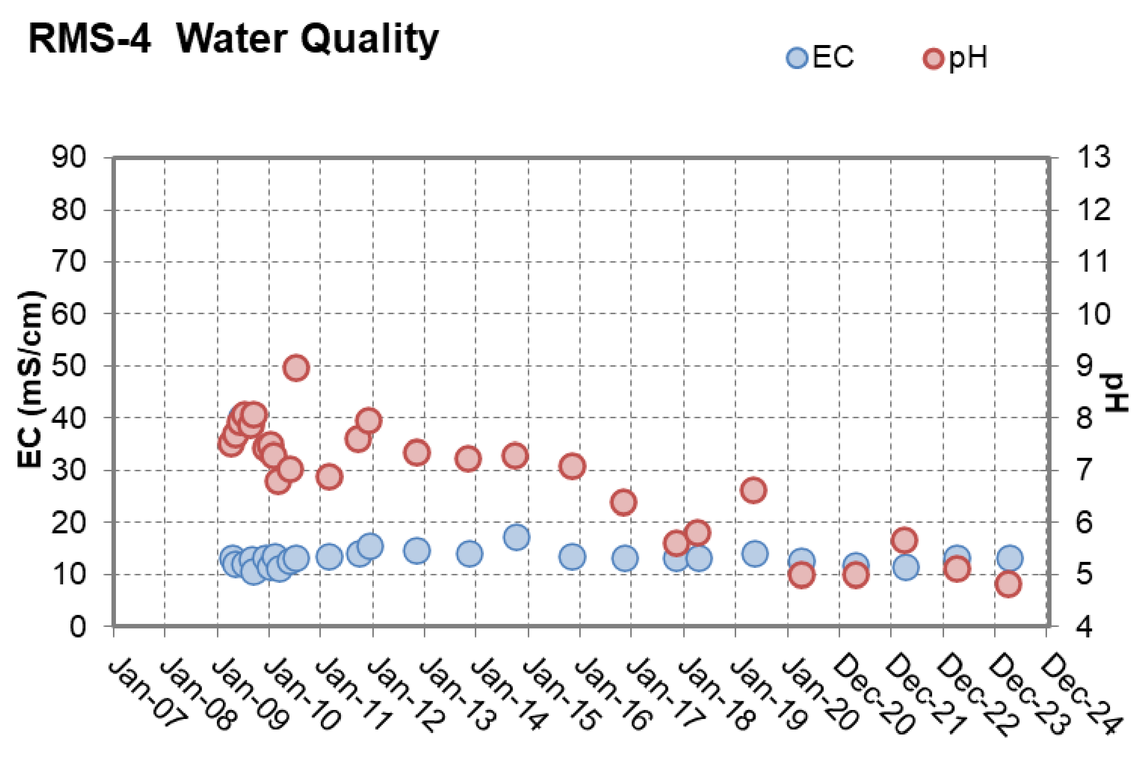

RMD-1 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

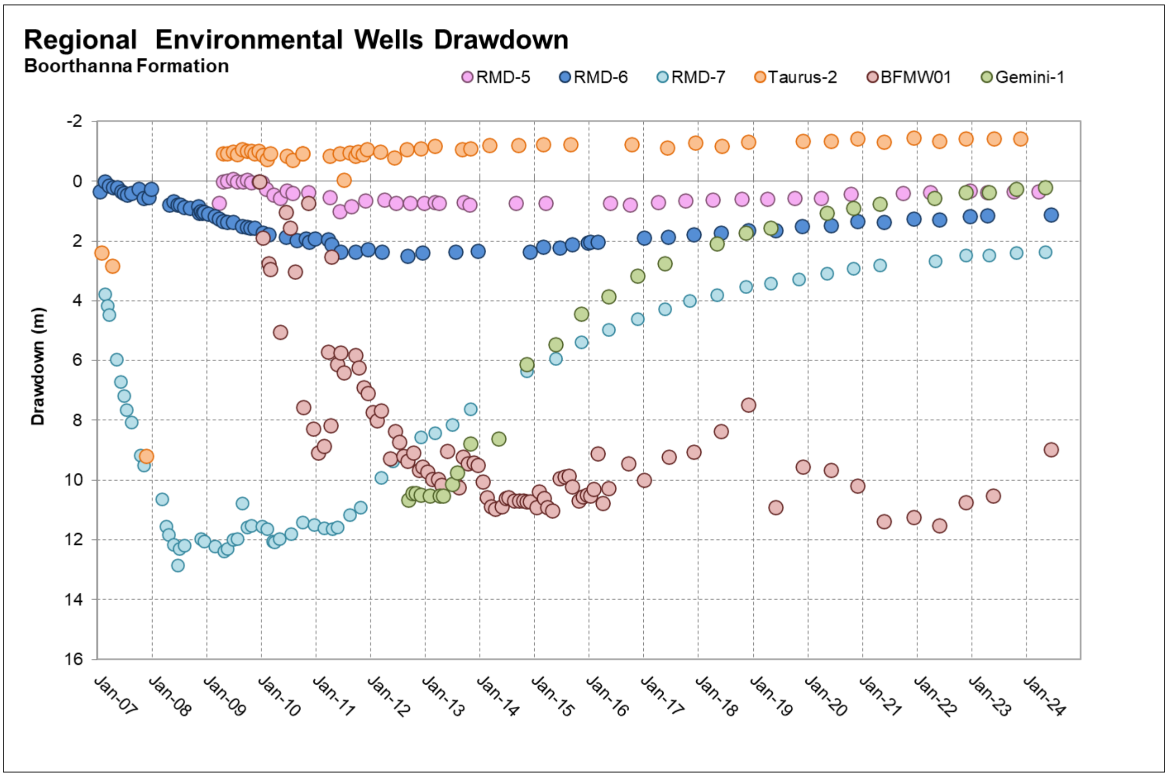

RMD-3 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

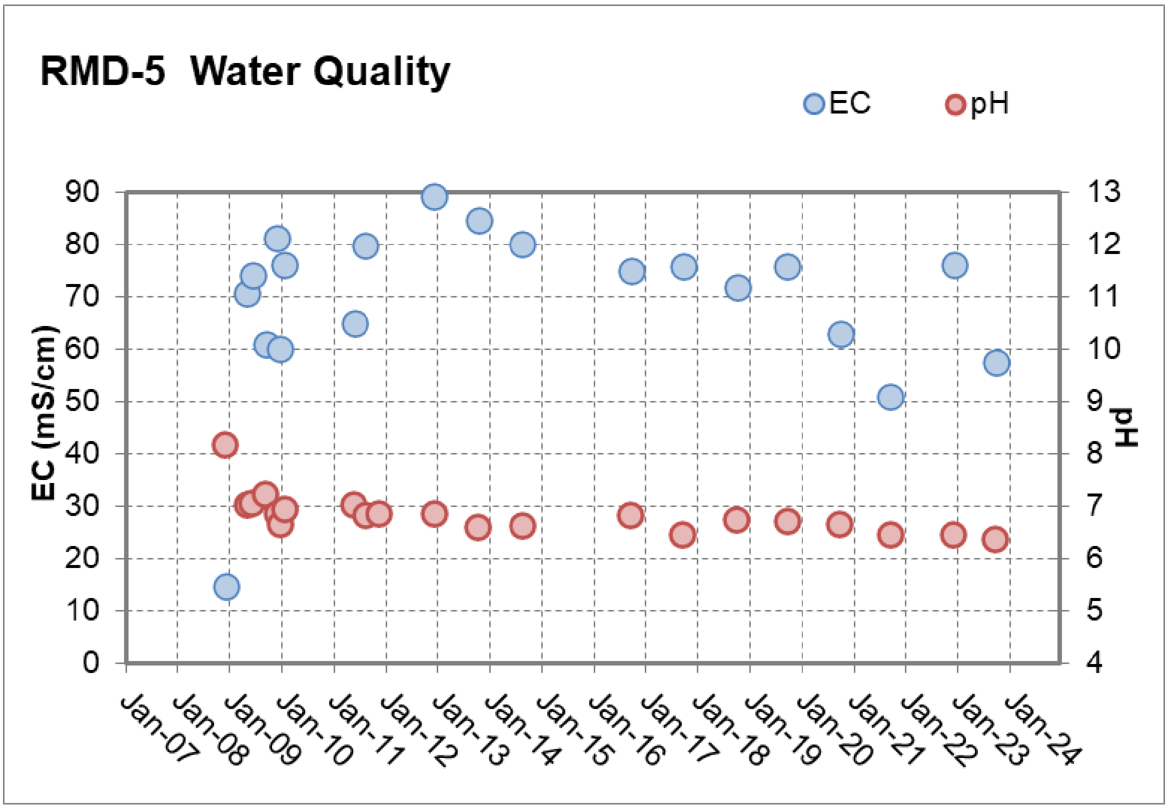

RMD-4 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

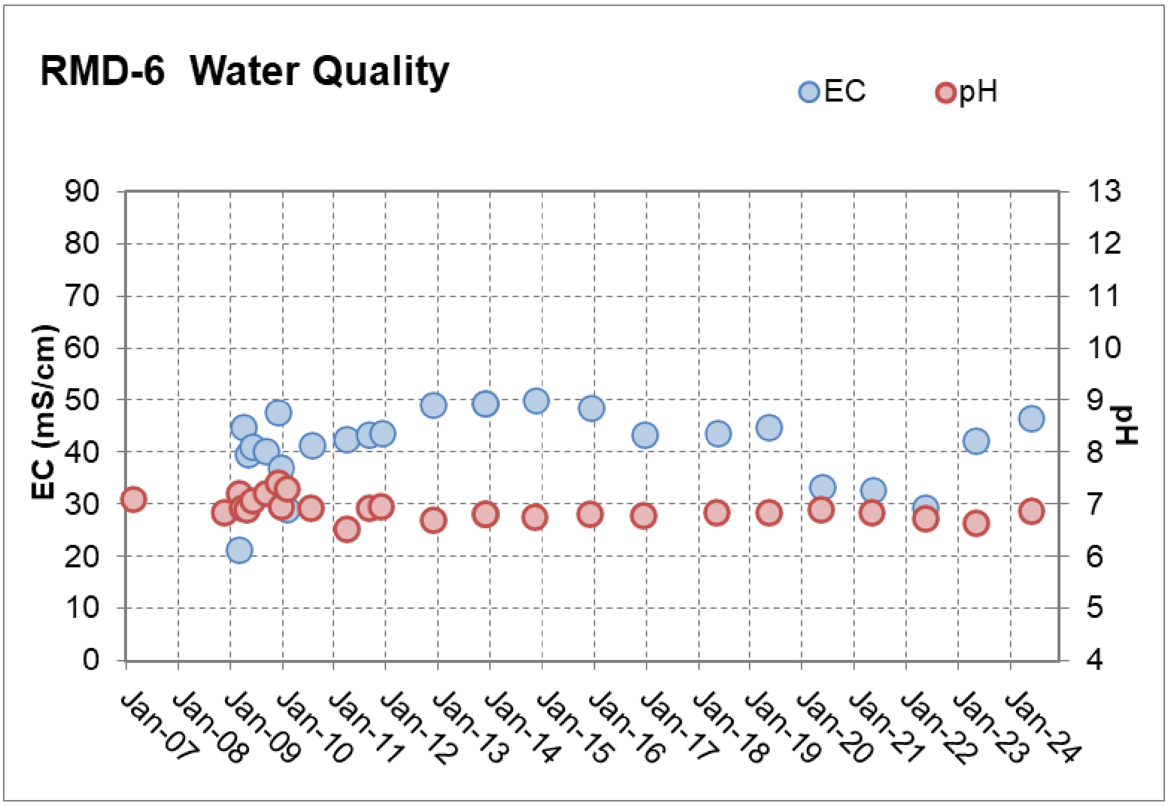

RMS-1 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

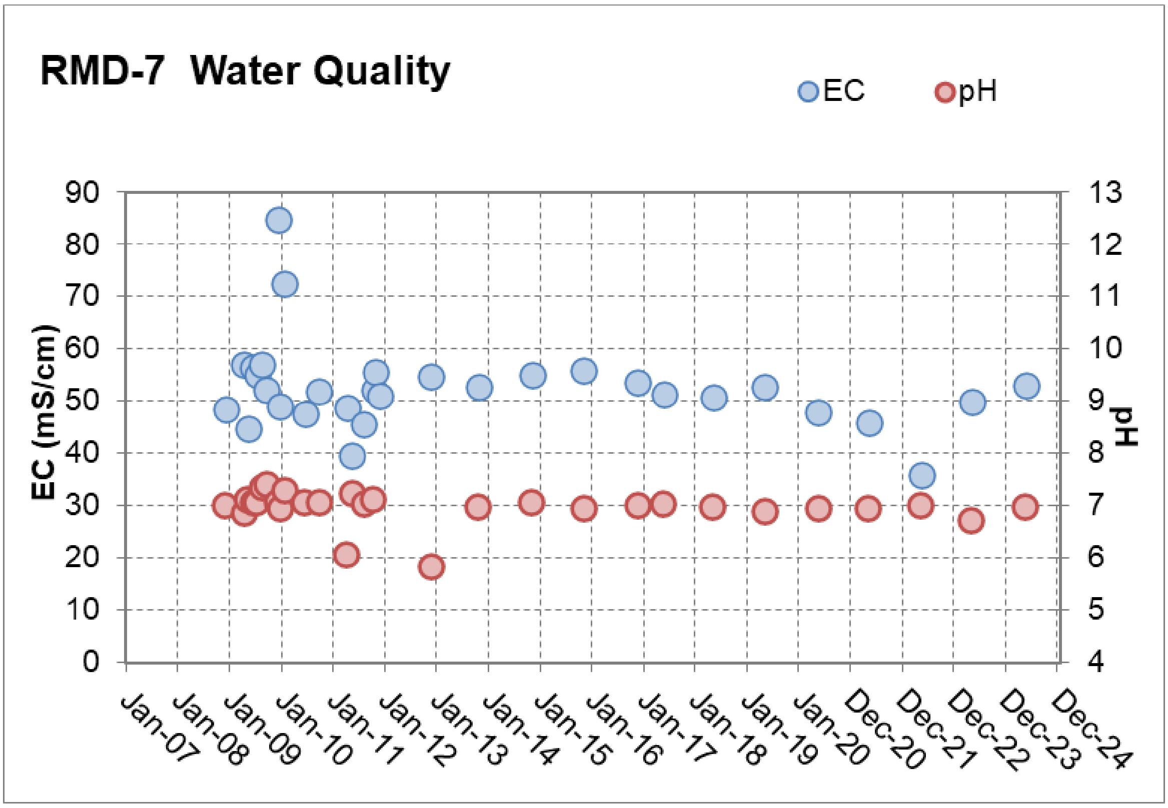

RMS-3 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

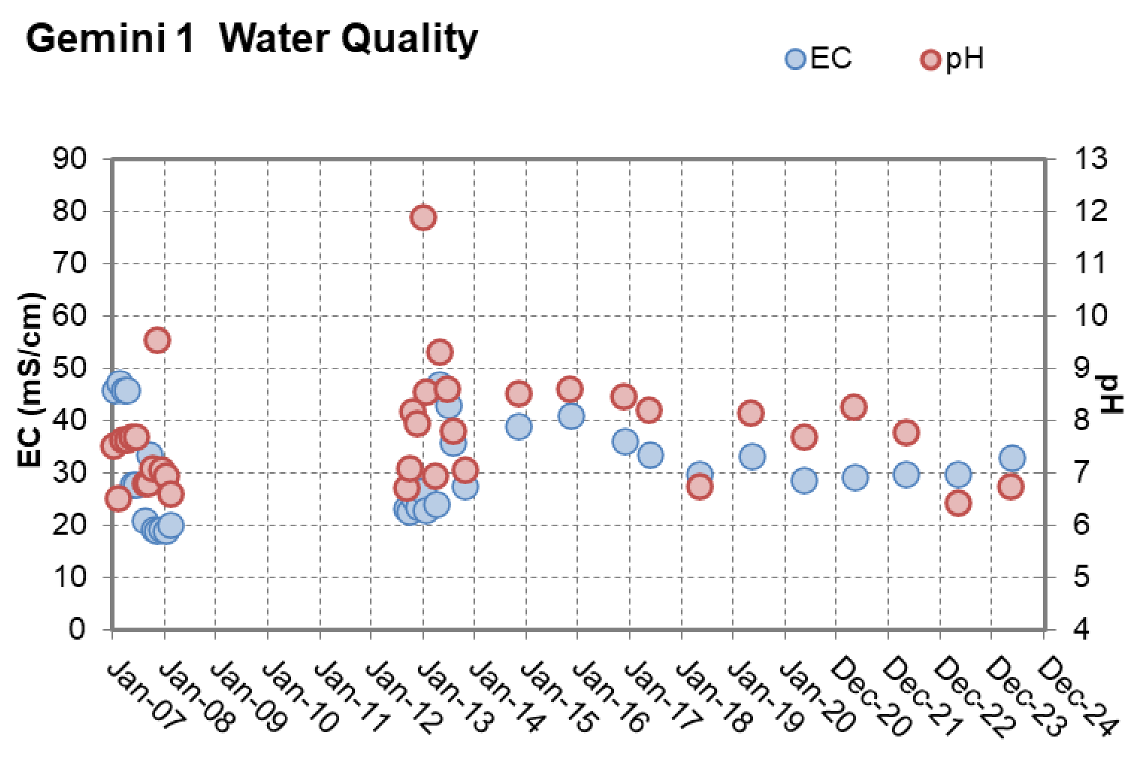

RMS-4 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

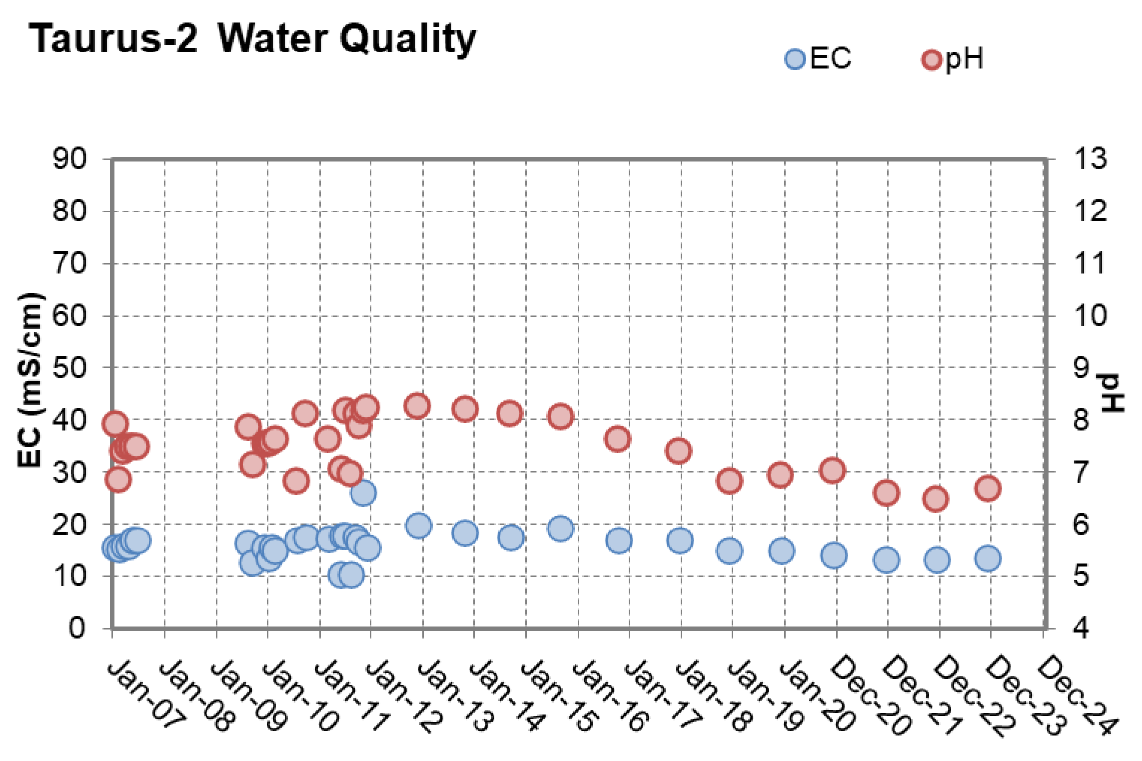

Regional Environmental Wells Drawdown
Boorthanna Formation
RMD-5
RMD-6
RMD-7
Taurus-2
BFMW01
Gemini-1
Drawdown (m)
-2
0
2
4
6
8
10
12
14
16
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

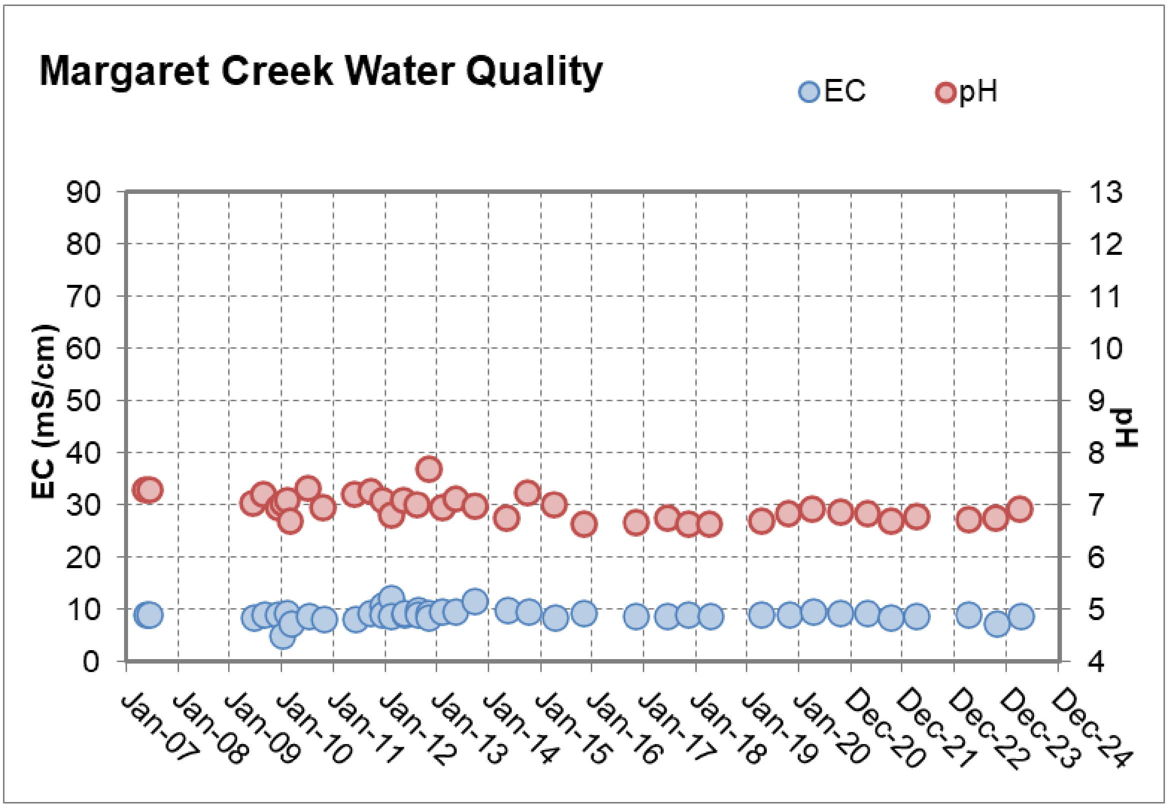

RMD-5 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

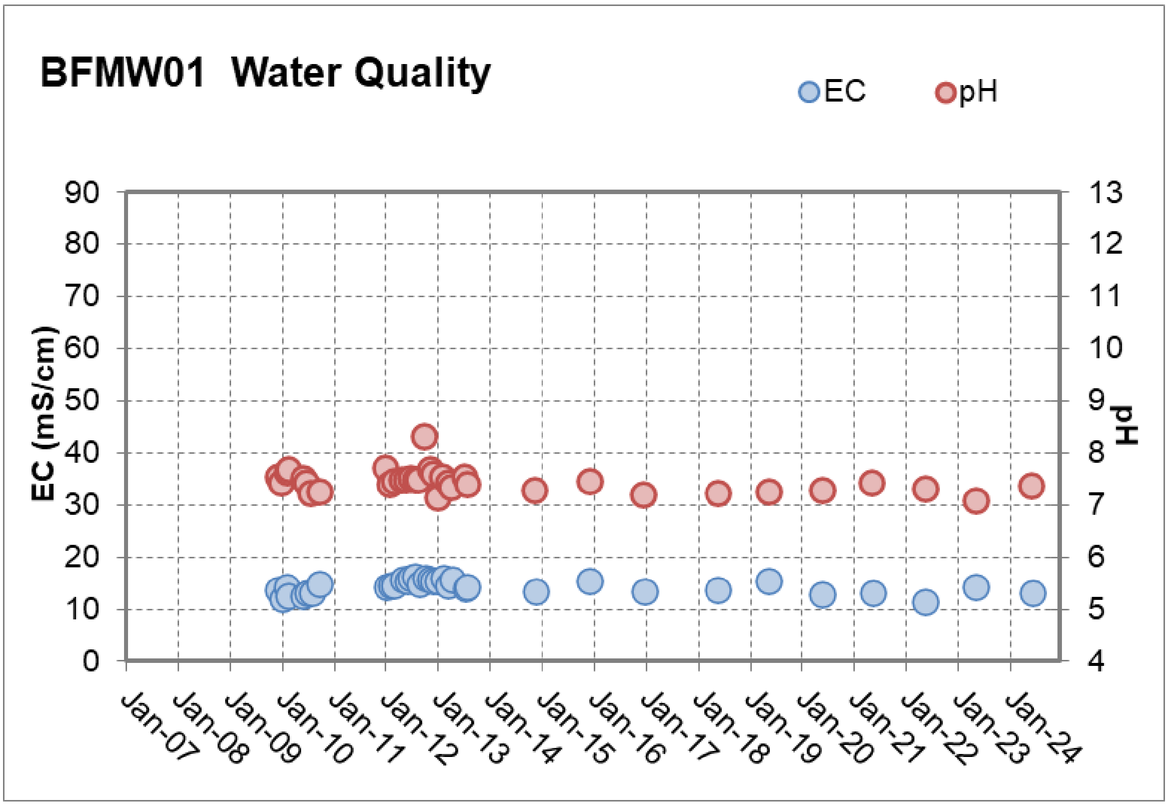

RMD-6 Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
90
4
5
6
7
8
9
10
11
12
13
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

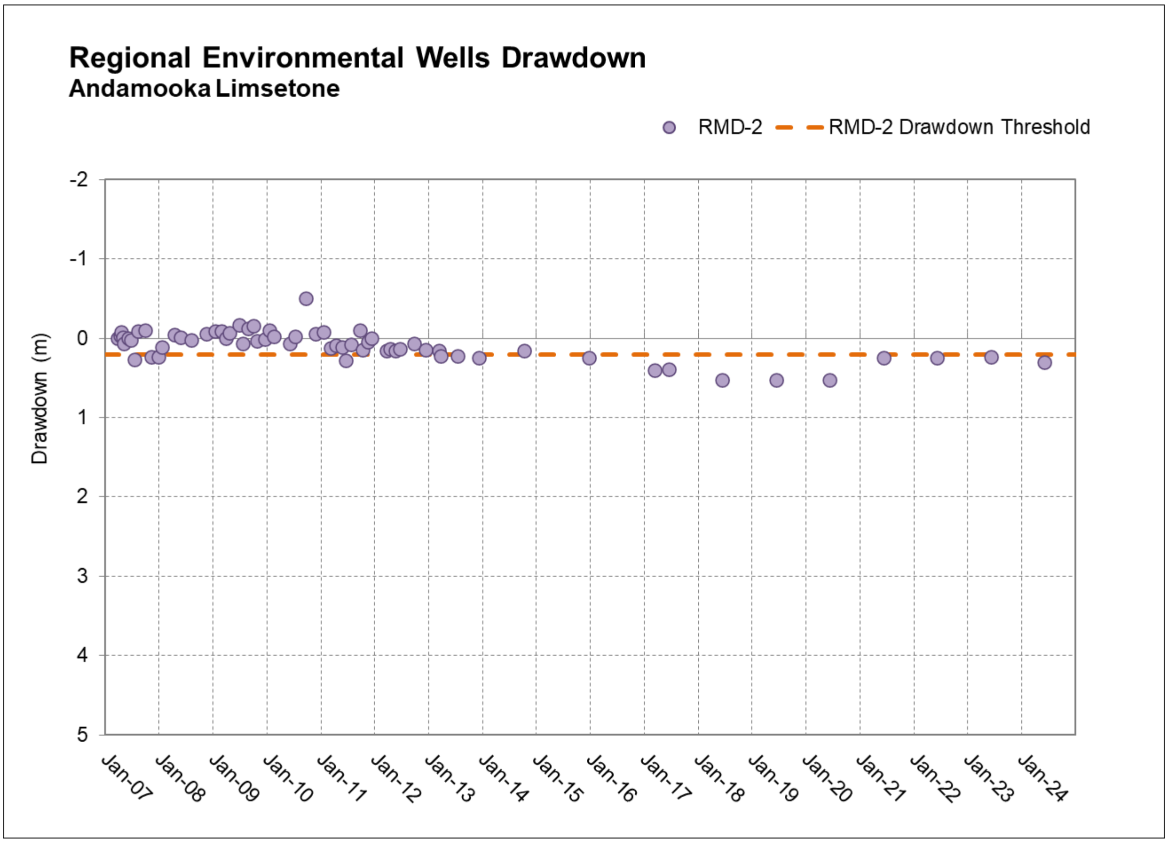

RMD-7 Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
90
4
5
6
7
8
9
10
11
12
13
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

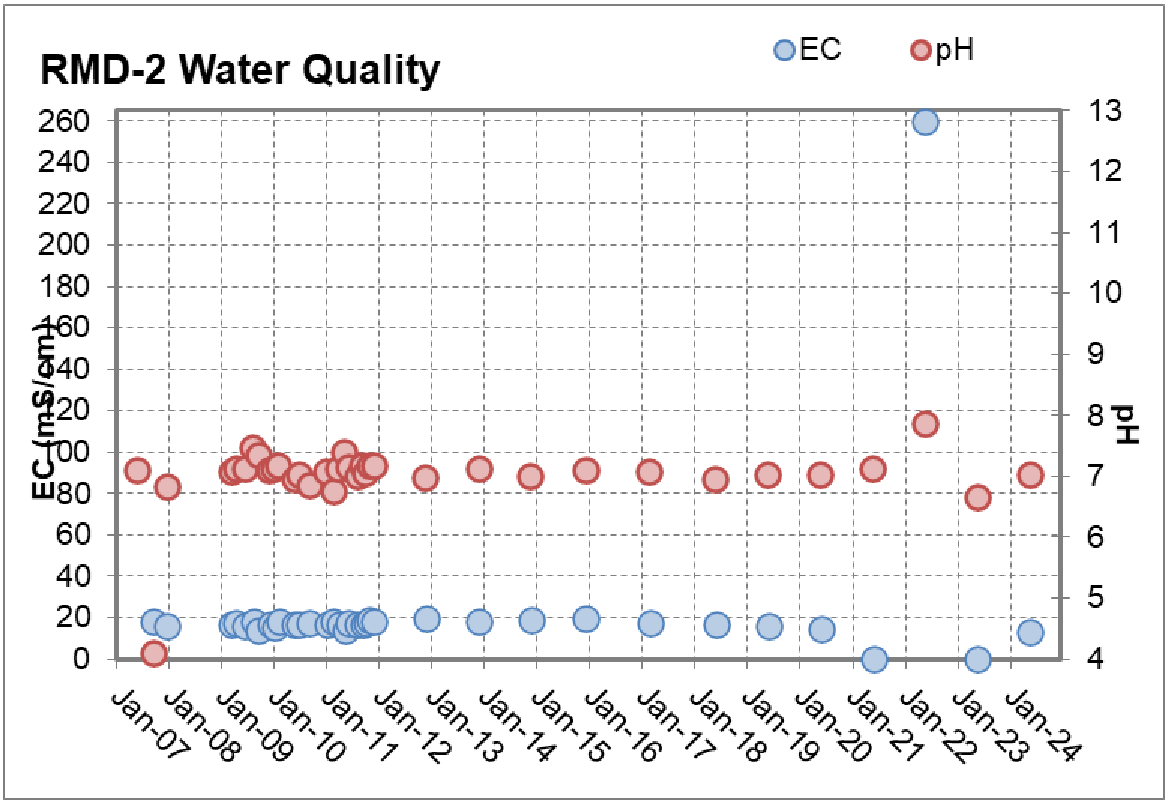

Gemini 1 Water Quality
EC
pH
EC (mS/cm)
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
pH
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

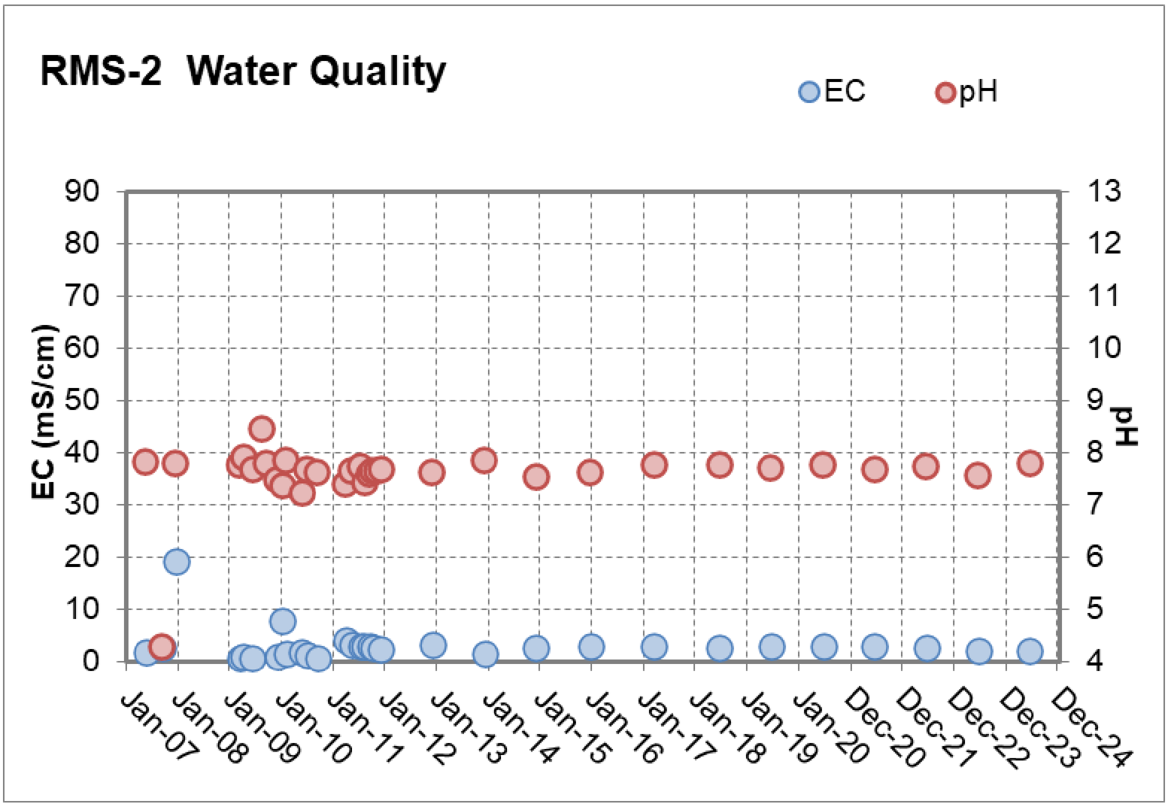

Taurus-2 Water Quality
EC
pH
EC (mS/cm)
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
pH
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24


Margaret Creek Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

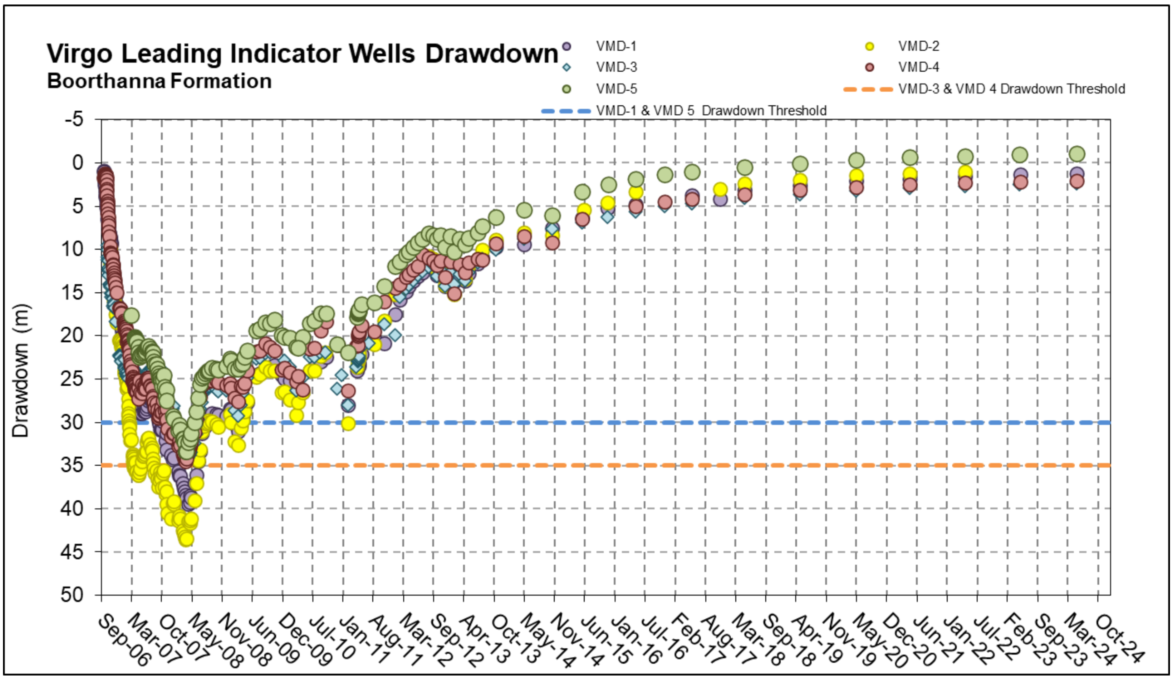

BFMW01 Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

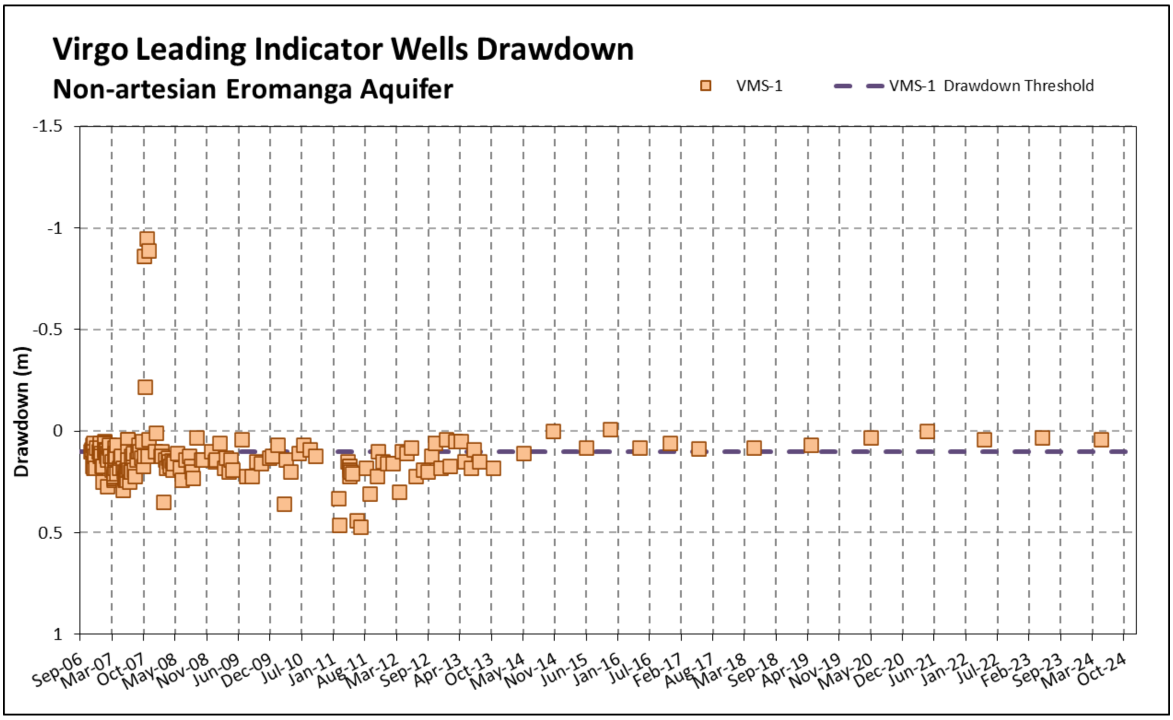

Regional Environmental Wells Drawdown
Andamooka Limsetone
RMD-2
RMD-2 Drawdown Threshold
Drawdown (m)
-2
-1
0
1
2
3
4
5
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

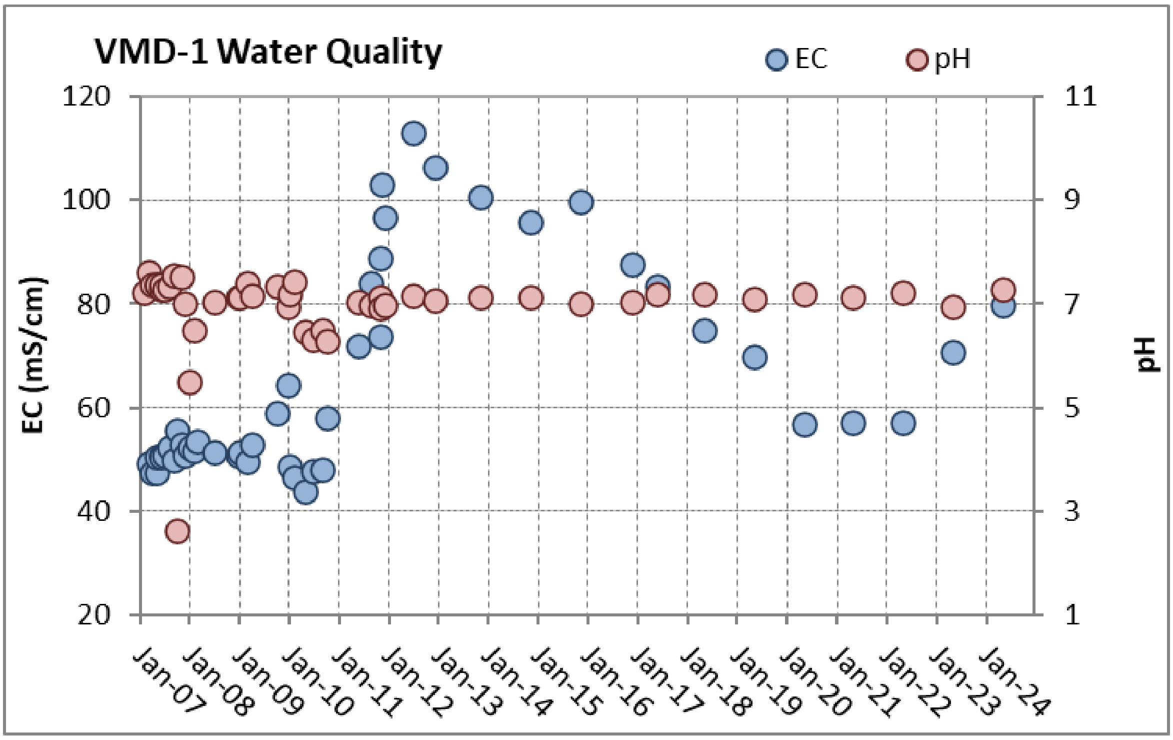

RMD-2 Water Quality
EC
pH
EC (mS/cm)
pH
260
240
220
200
180
160
140
120
100
80
60
40
20
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

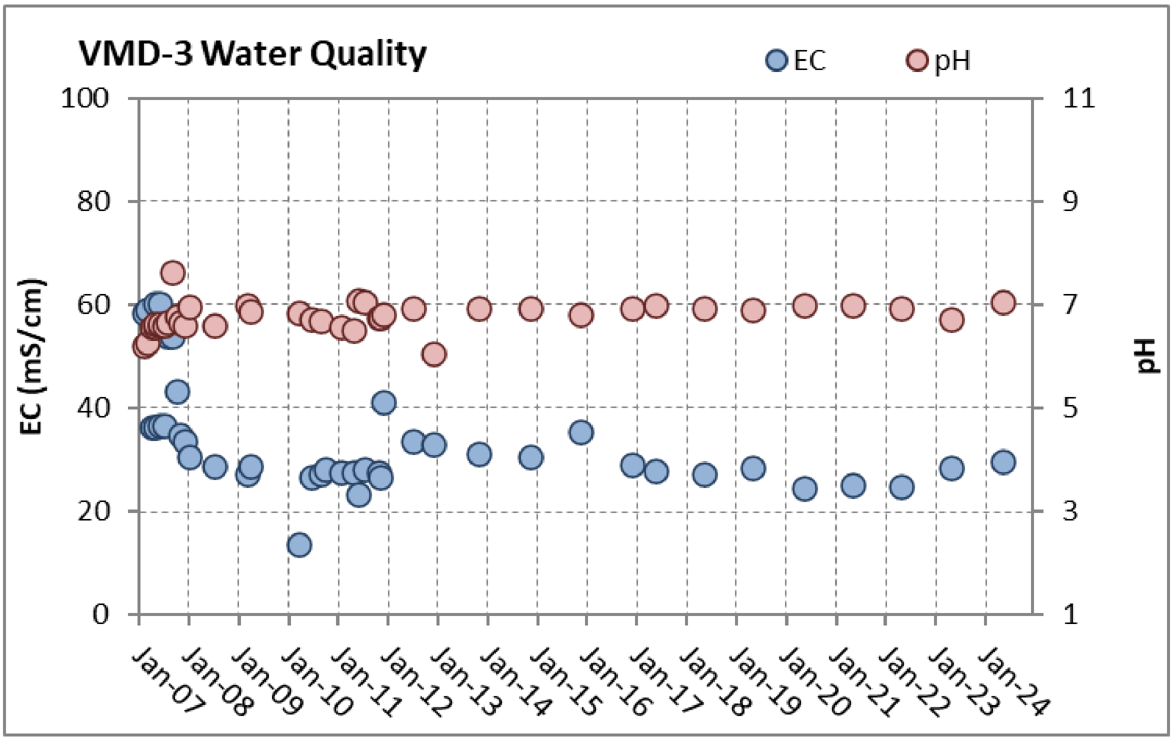


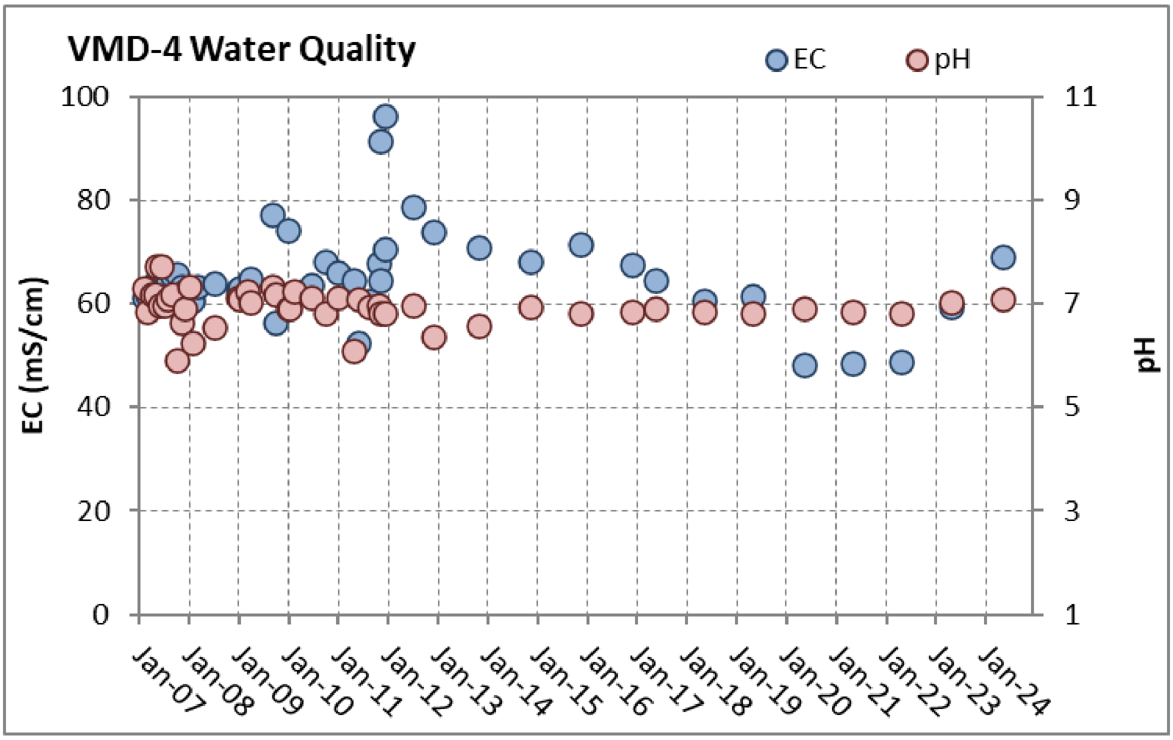
Appendix C6 Virgo Leading Indicator Wells

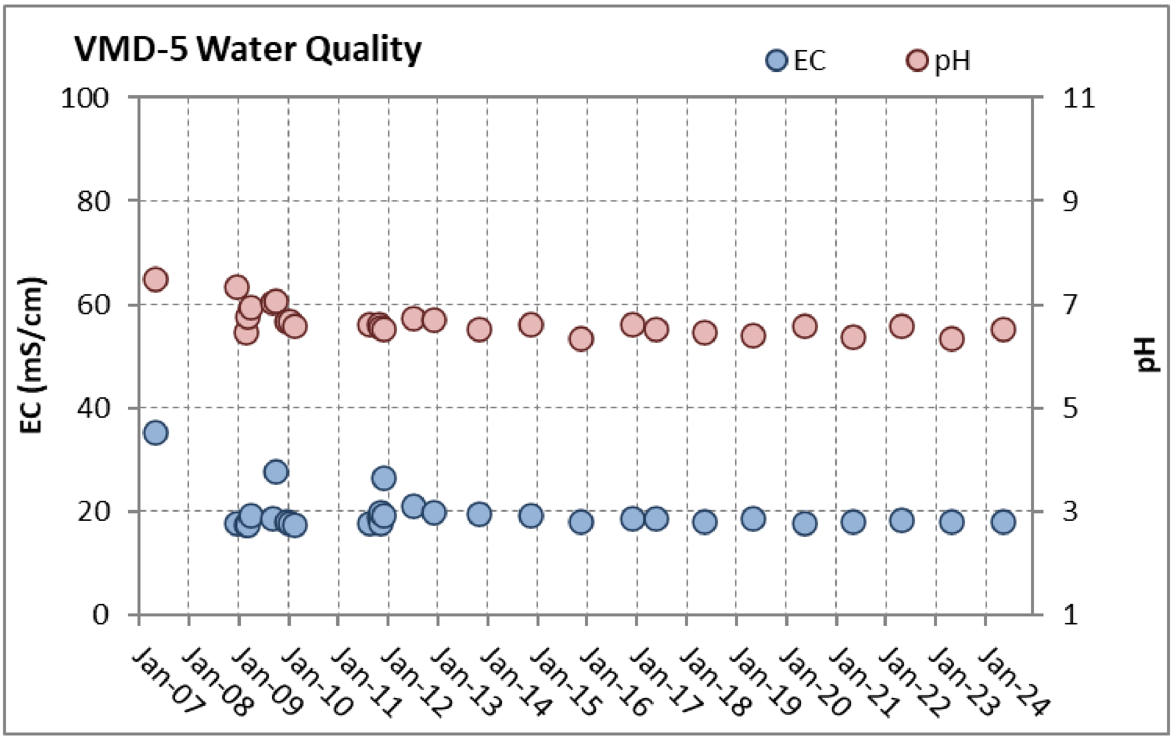


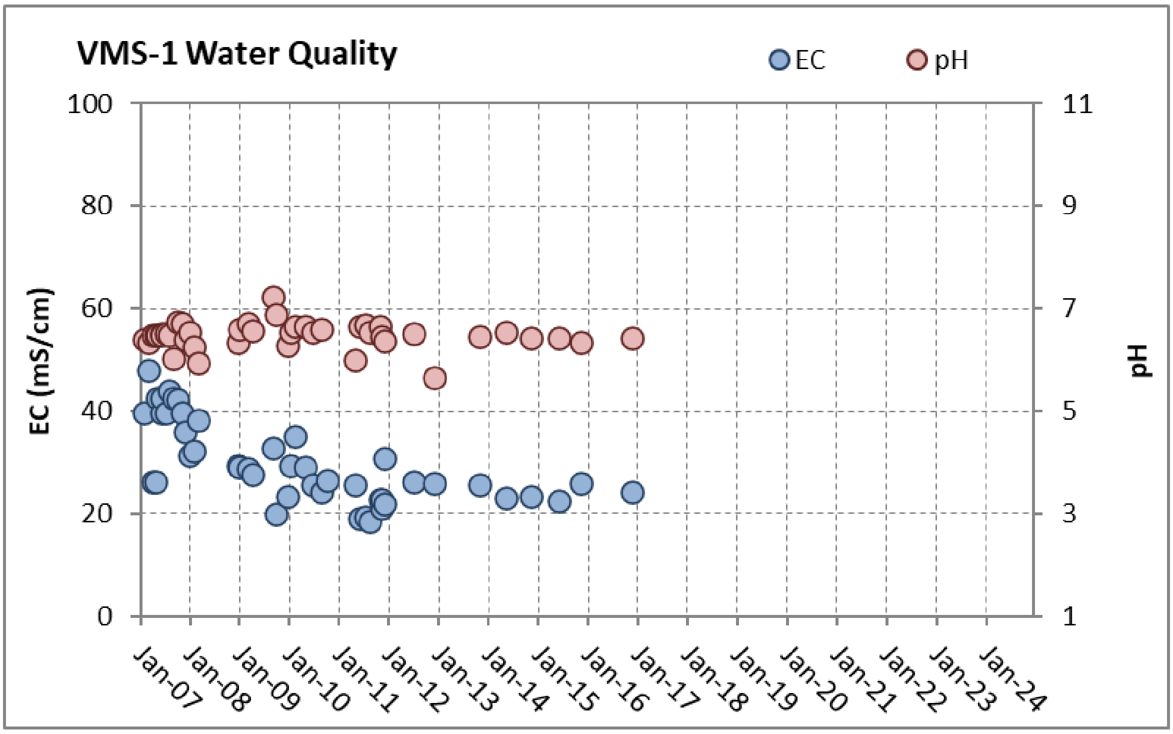

Virgo Leading Indicator Wells Drawdown
Non-artesian Eromanga Aquifer
VMS-1
VMS-1 Drawdown Threshold
Drawdown (m)
-1.5
-1
-0.5
0
0.5
1
Sep-06
Mar-07
Oct-07
May-08
Nov-08
Jun-09
Dec-09
Jul-10
Jan-11
Aug-11
Mar-12
Sep-12
Apr-13
Oct-13
May-14
Nov-14
Jun-15
Jan-16
Jul-16
Feb-17
Aug-17
Mar-18
Sep-18
Apr-19
Nov-19
May-20
Dec-20
Jun-21
Jan-22
Jul-22
Feb-23
Sep-23
Mar-24
Oct-24


VMD-1 Water Quality
EC
pH
EC (mS/cm)
pH
120
100
80
60
40
20
11
9
7
5
3
1
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

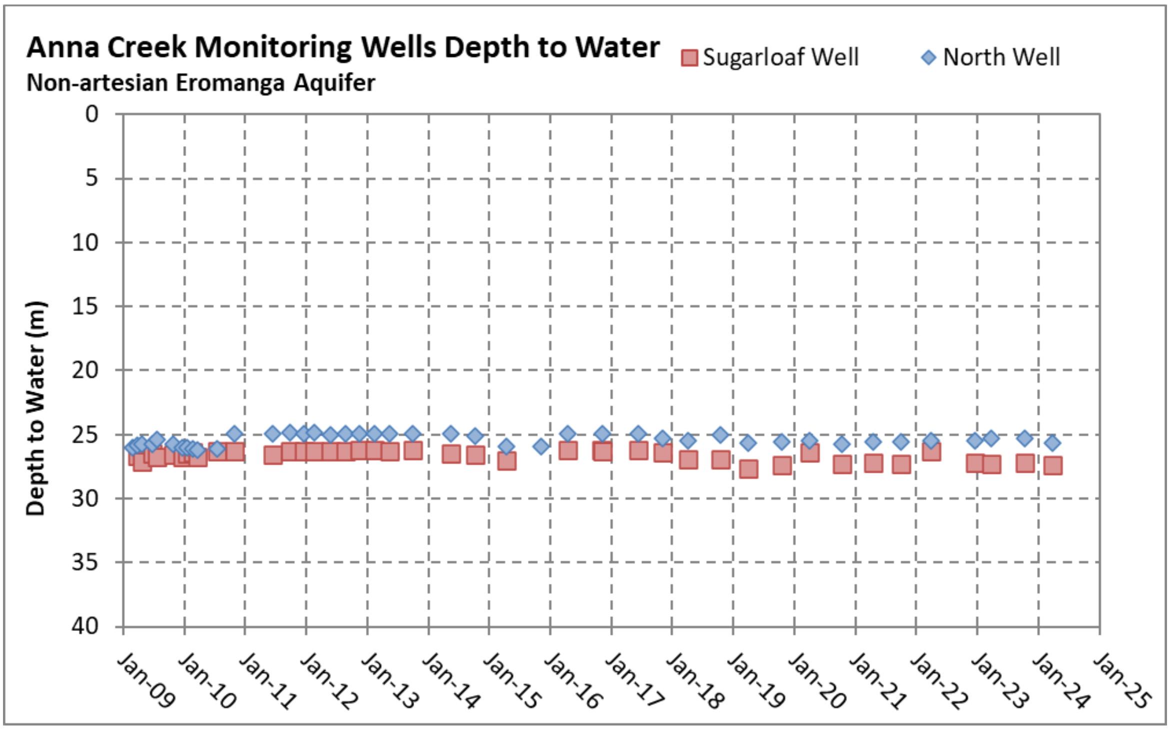

VMD-3 Water Quality
EC
pH
EC (mS/cm)
pH
100
80
60
40
20
0
11
9
7
5
3
1
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

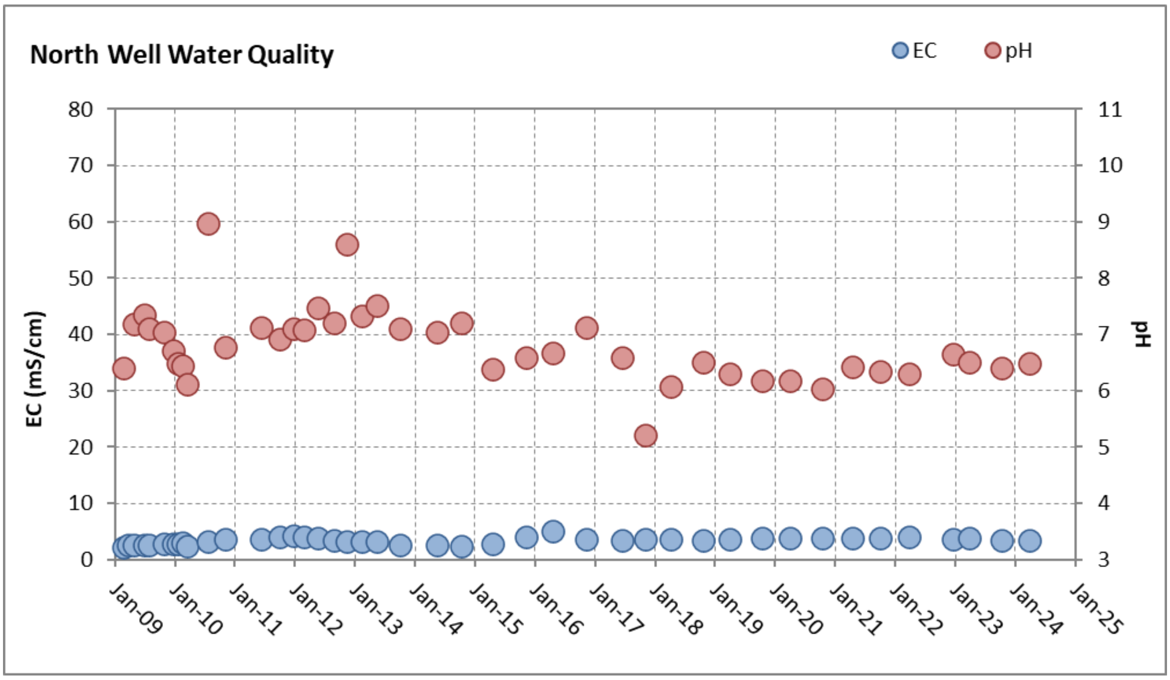

VMD-4 Water Quality
EC
pH
EC (mS/cm)
pH
100
80
60
40
20
0
11
9
7
5
3
1
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

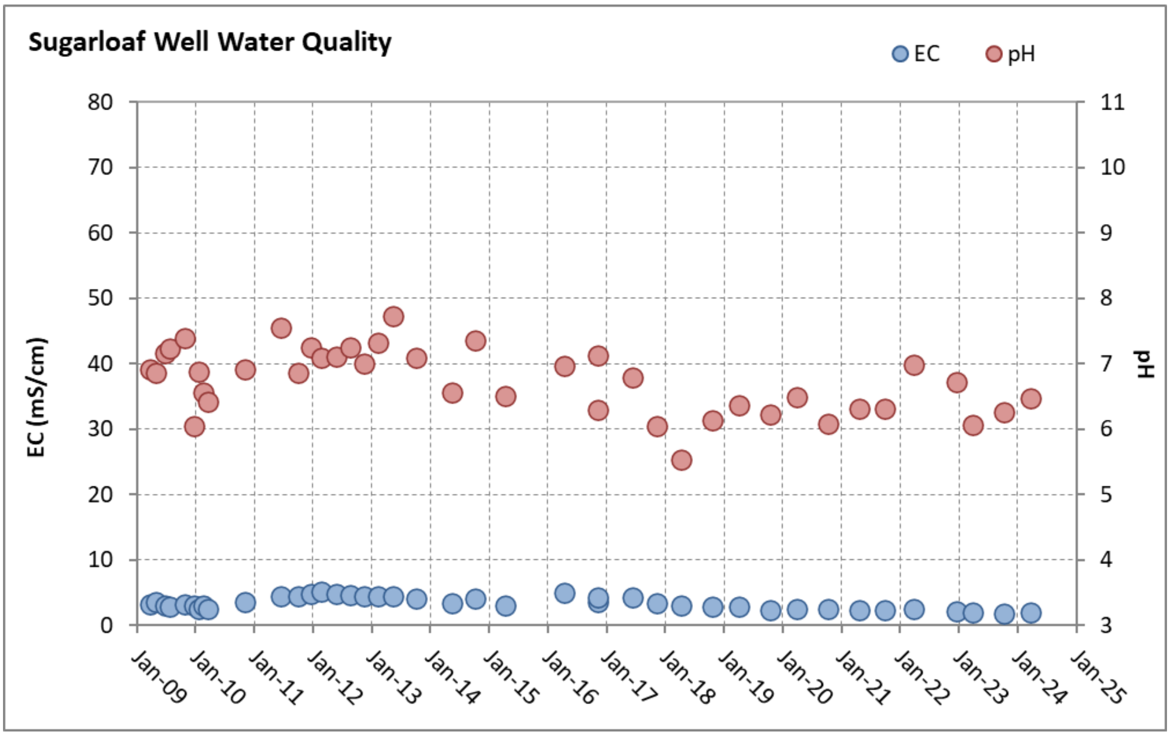

VMD-5 Water Quality
EC
pH
EC (mS/cm)
pH
100
80
60
40
20
0
11
9
7
5
3
1
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

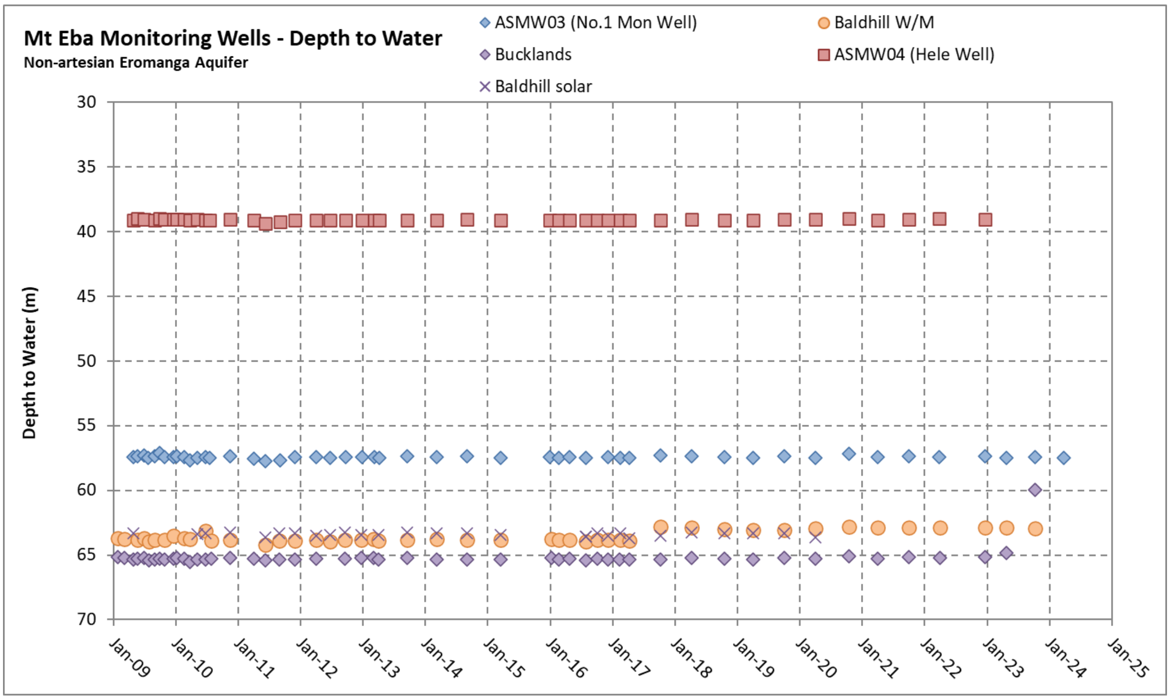

VMS-1 Water Quality
EC
pH
EC (mS/cm)
pH
100
80
60
40
20
0
11
9
7
5
3
1
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

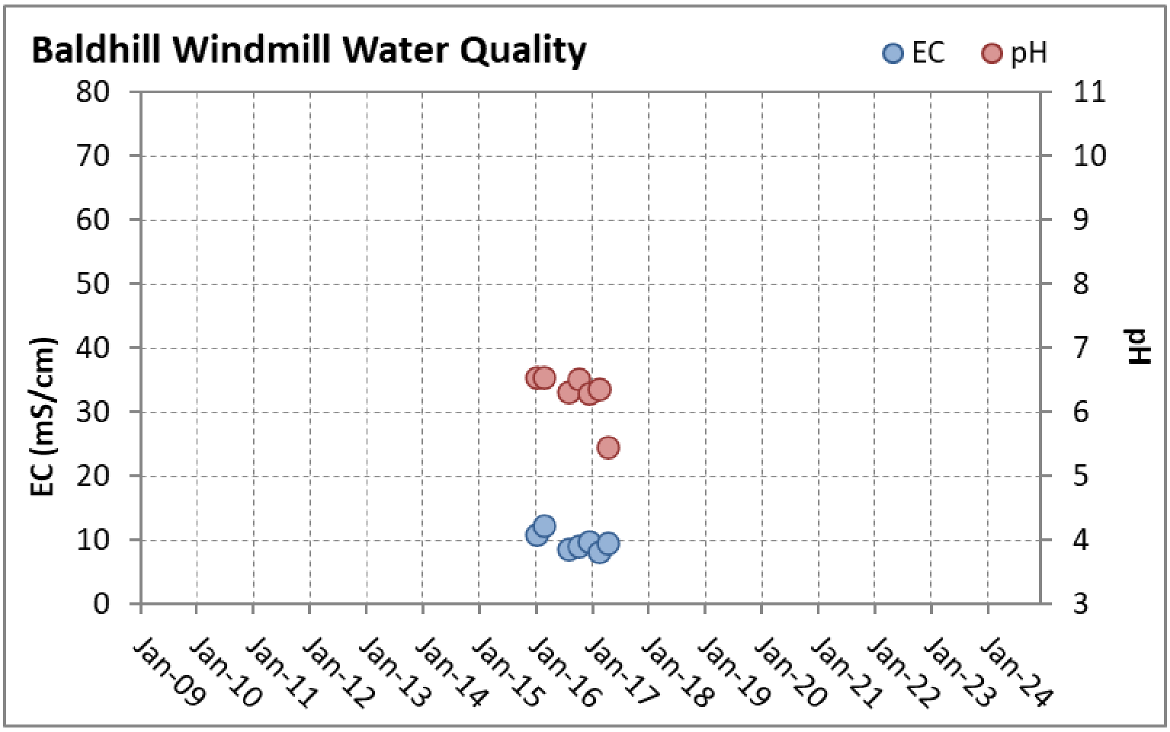
Appendix C7 Third Party Users

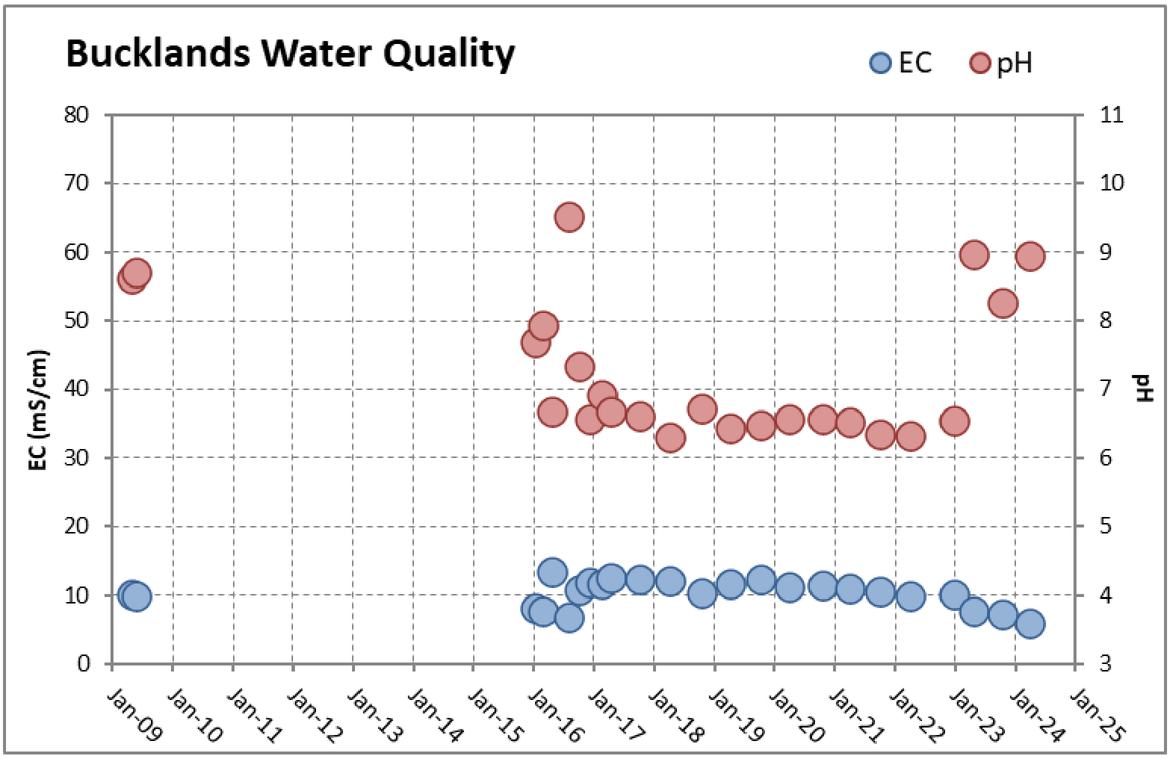


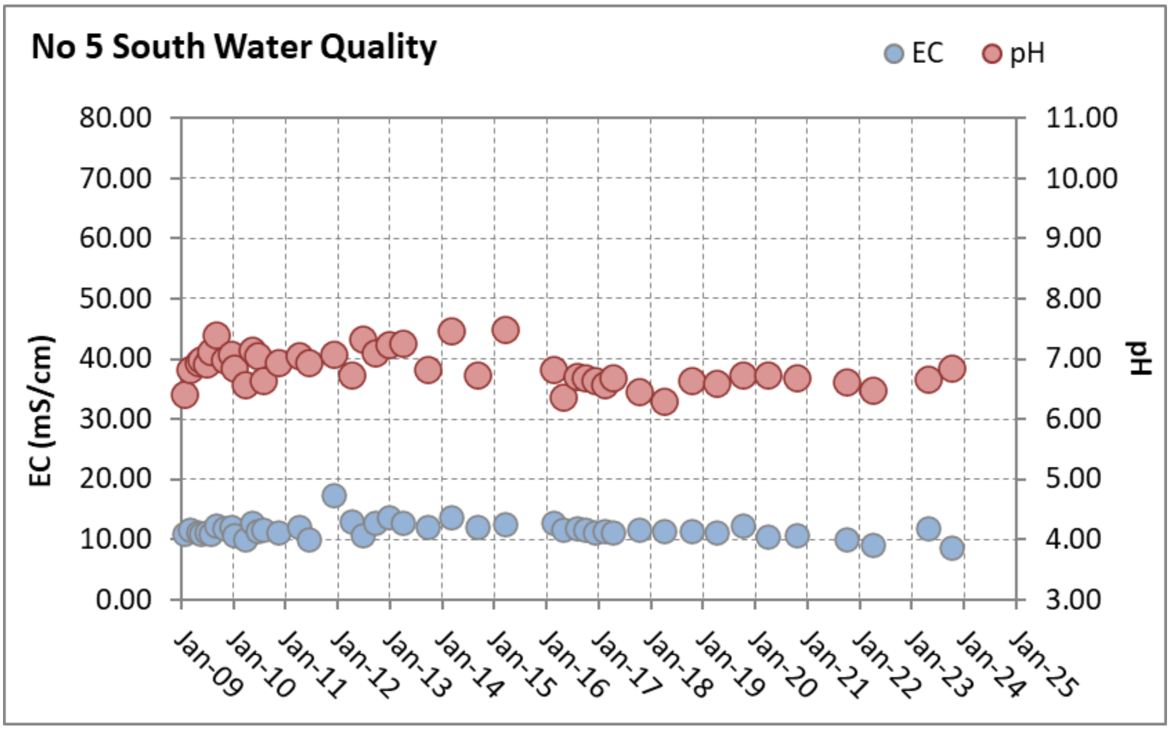


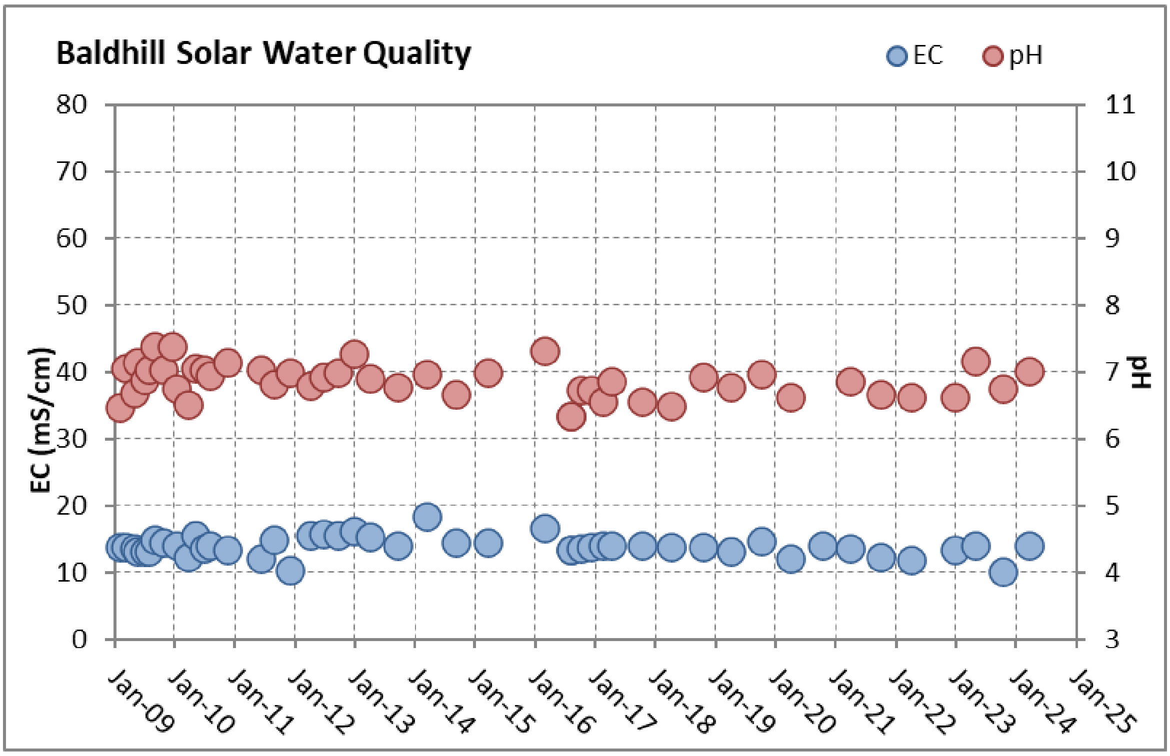

Sugarloaf Well Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

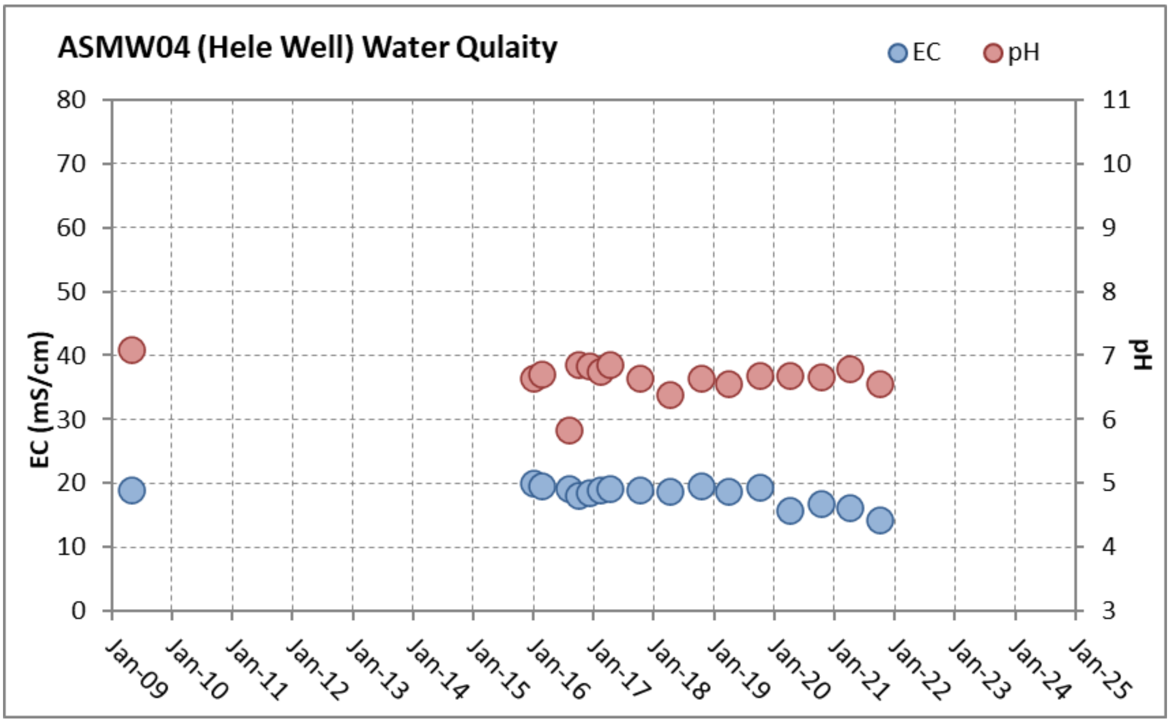

Mt Eba Monitoring Wells - Depth to Water
Non-artesian Eromanga Aquifer
ASMW03 (No.1 Mon Well)
Bucklands
Baldhill solar
Baldhill W/M
ASMW04 (Hele Well)
Depth to Water (m)
30
35
40
45
50
55
60
65
70
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

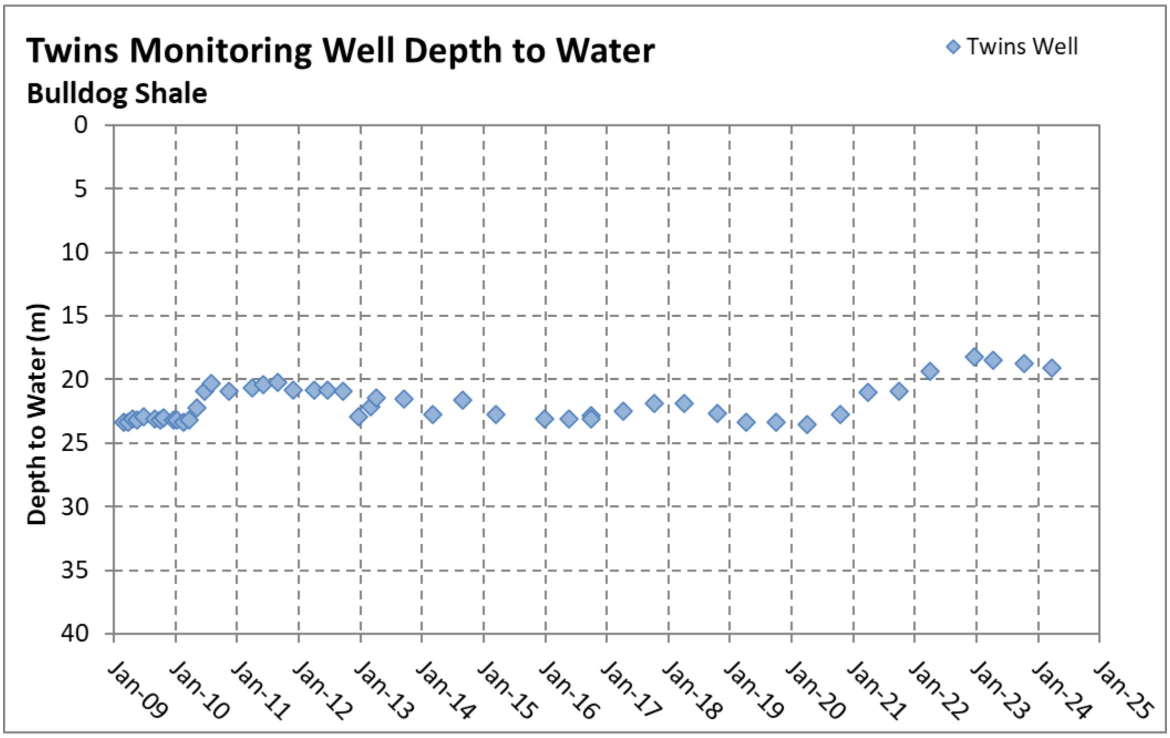

Baldhill Windmill Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

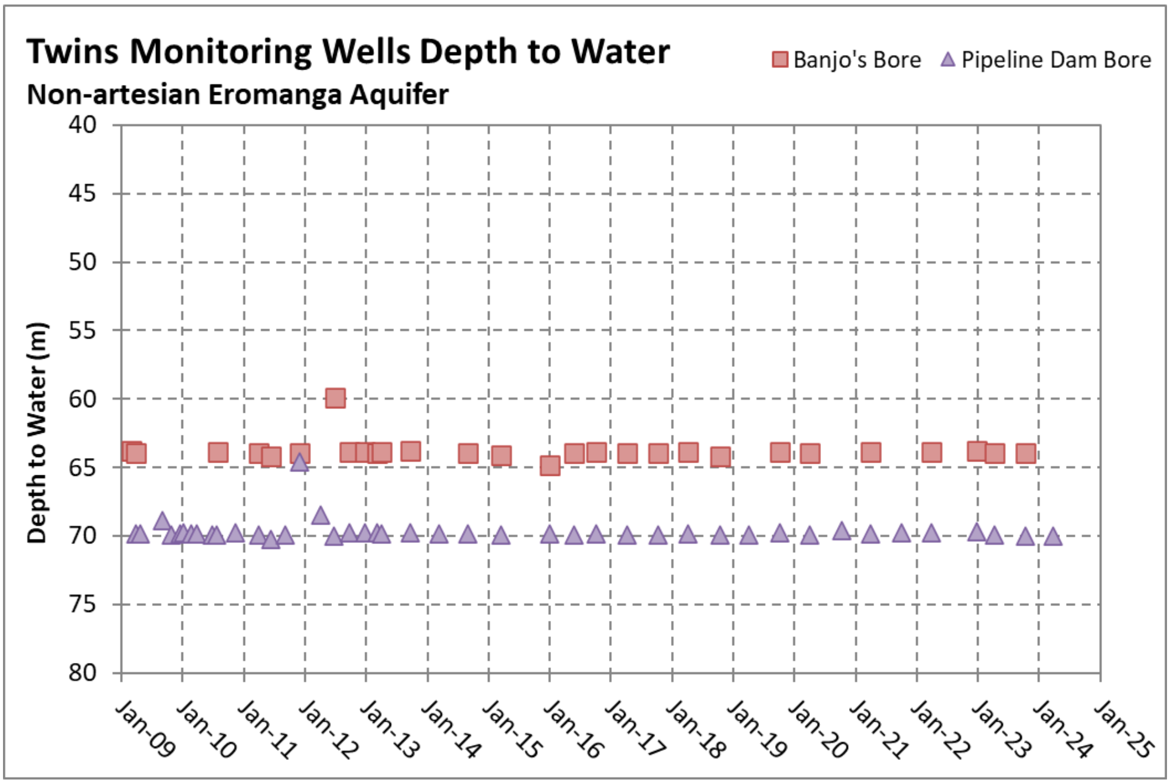

Bucklands Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

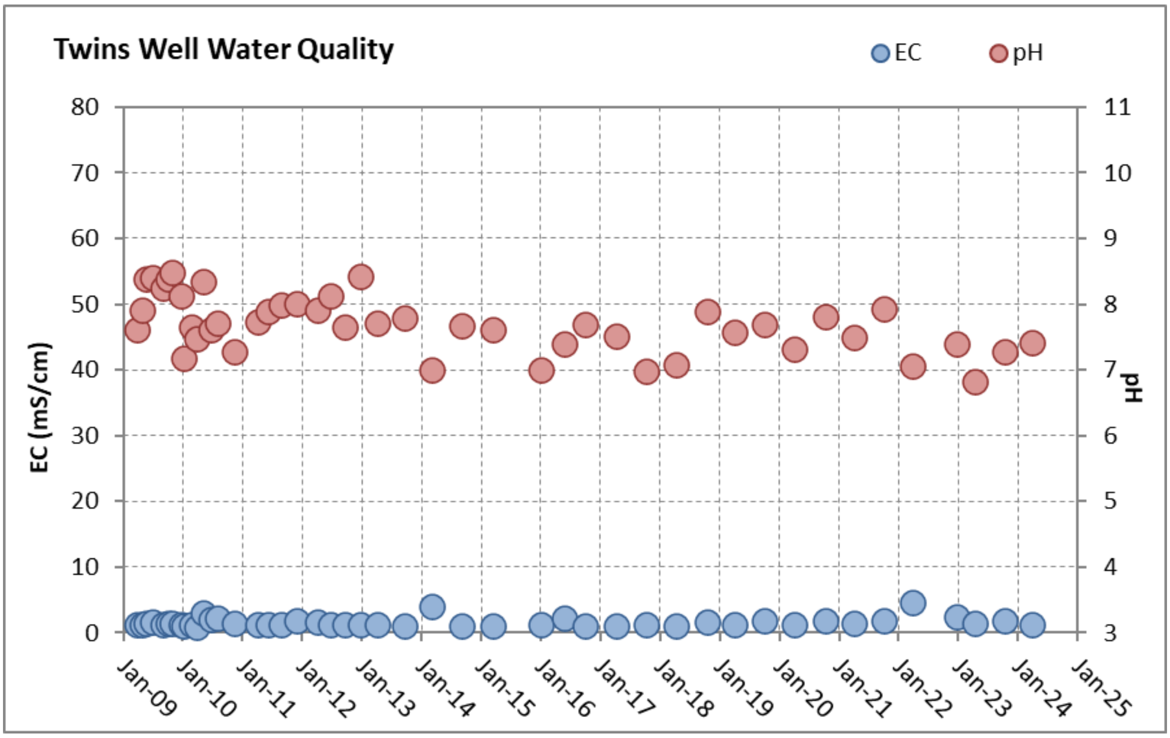

No 5 South Water Quality
EC
pH
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
EC (mS/cm)
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
pH
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

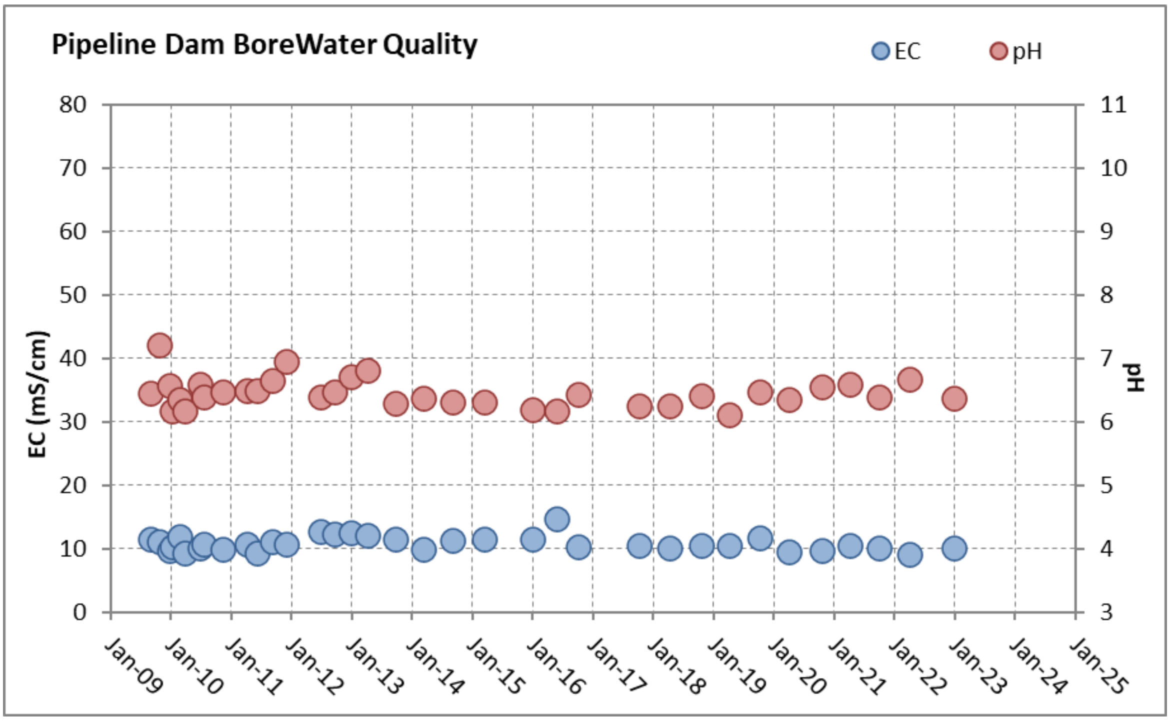

Baldhill Solar Water Quality
EC
pH
80
70
60
50
40
30
20
10
0
EC (mS/cm)
11
10
9
8
7
6
5
4
3
pH
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

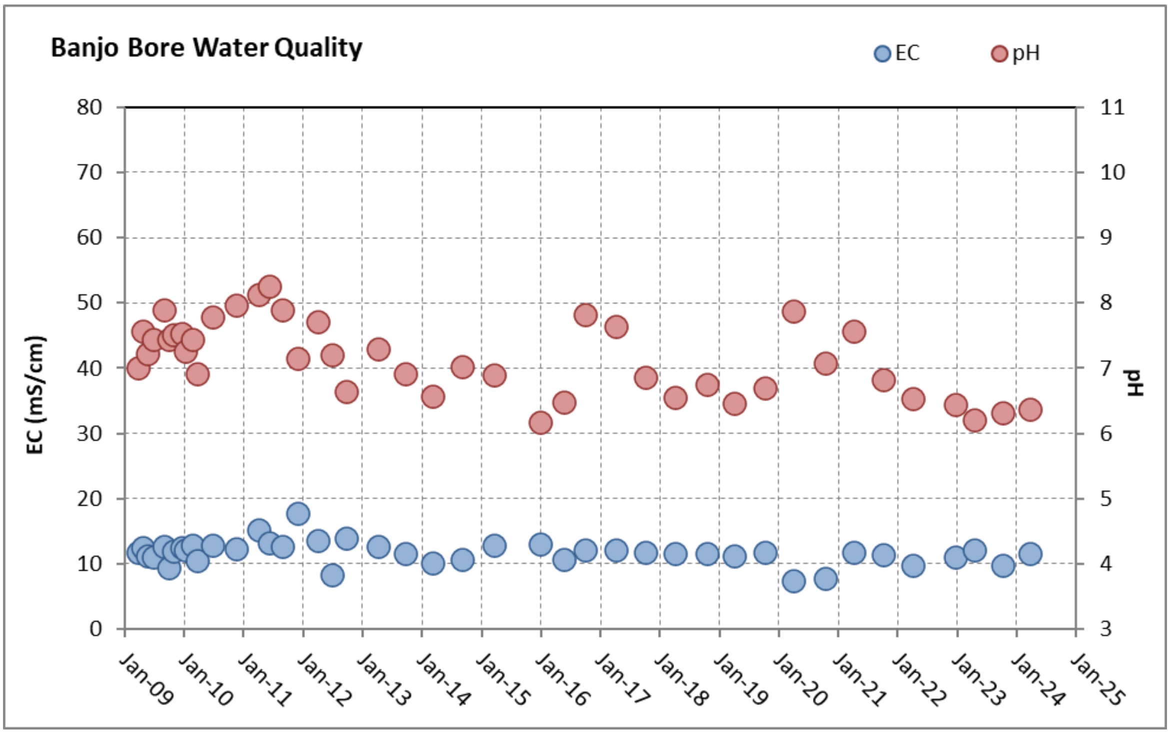

ASMW04 (Hele Well) Water Qulaity
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

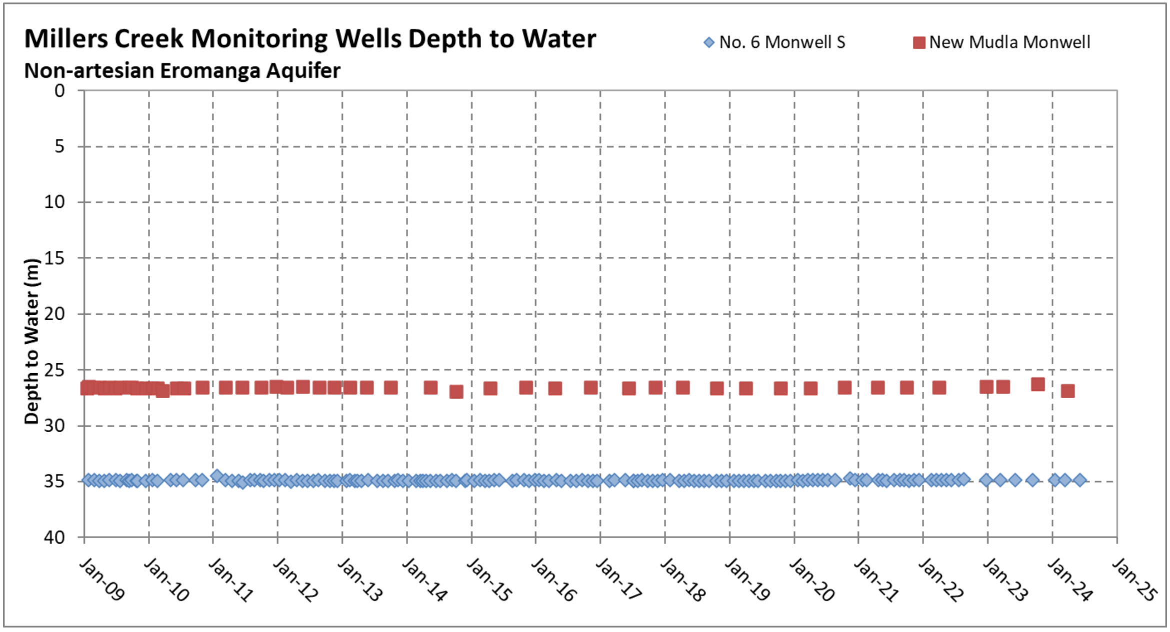

Twins Monitoring Well Depth to Water
Bulldog Shale
Twins Well
Depth to Water (m)
0
5
10
15
20
25
30
35
40
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

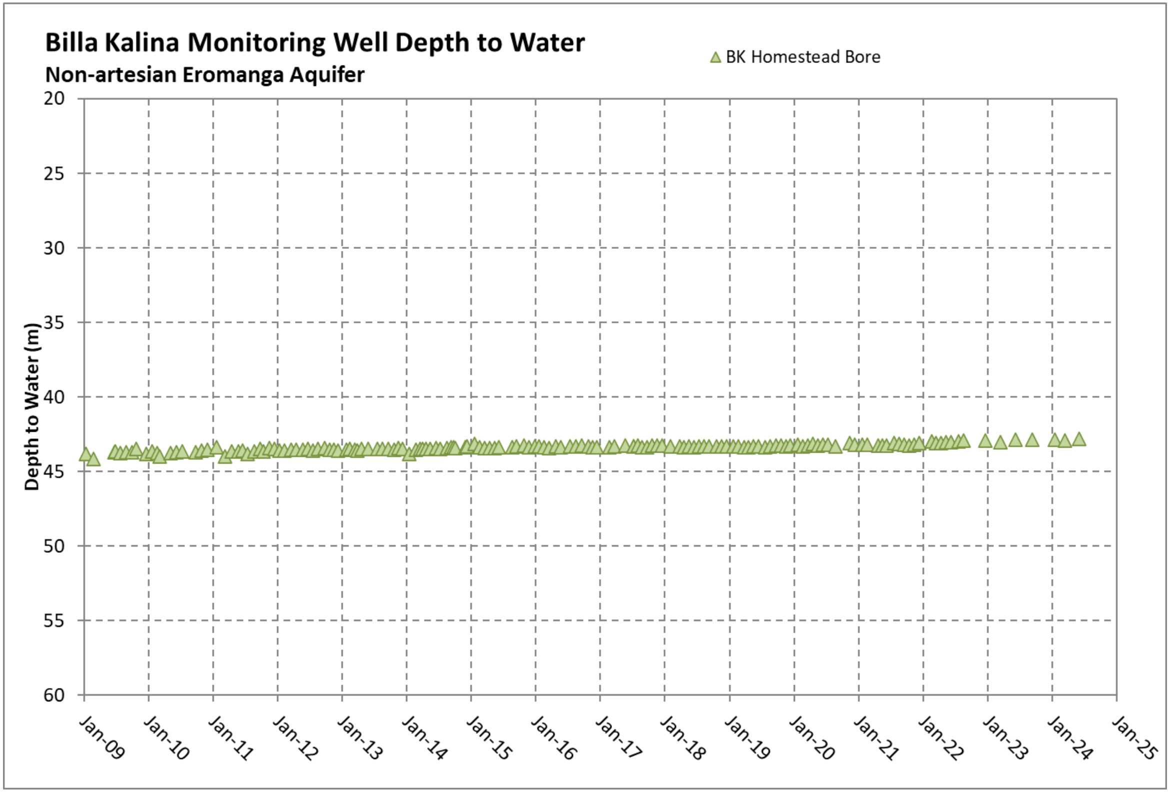

Twins Monitoring Wells Depth to Water
Non-artesian Eromanga Aquifer
Banjo's Bore
Pipeline Dam Bore
Depth to Water (m)
40
45
50
55
60
65
70
75
80
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

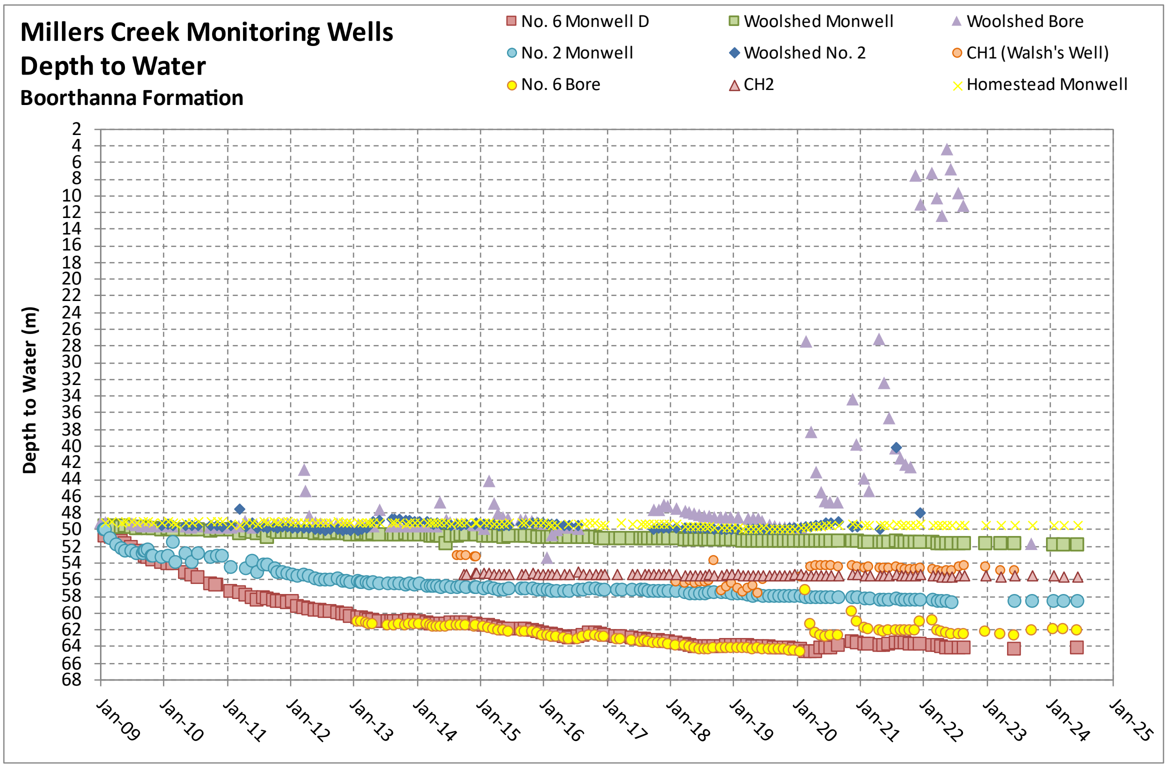

Twins Well Water Quality
EC
pH
EC (mS/cm)
80
70
60
50
40
30
20
10
0
pH
11
10
9
8
7
6
5
4
3
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

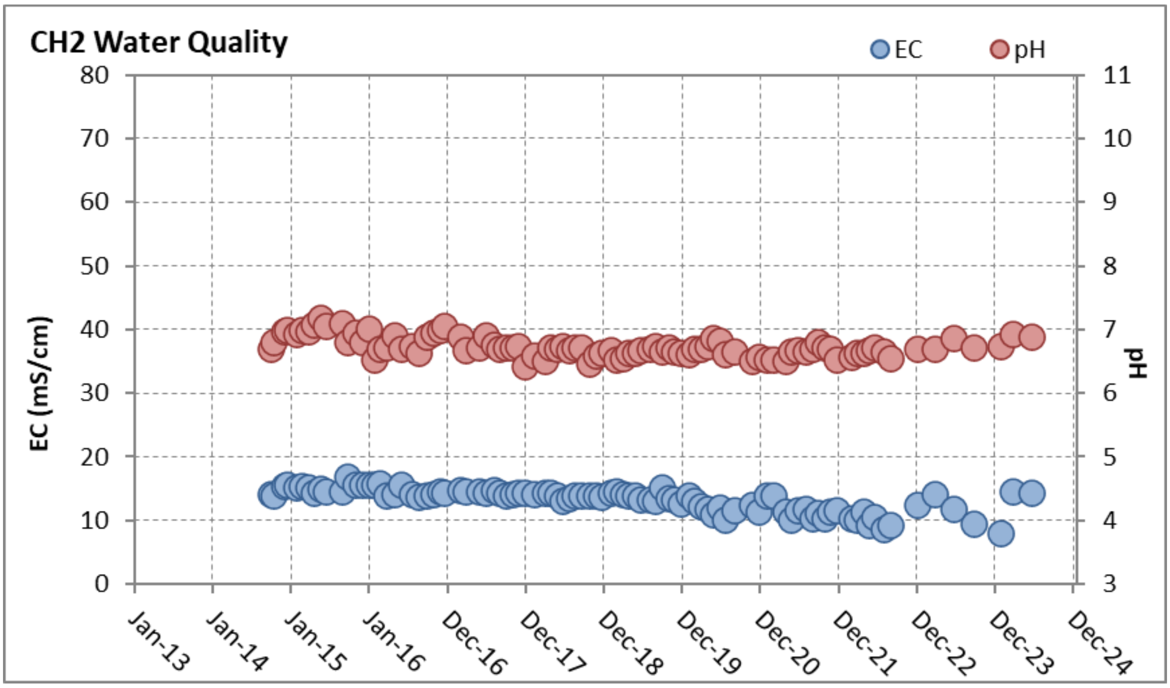

Pipeline Dam BoreWater Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

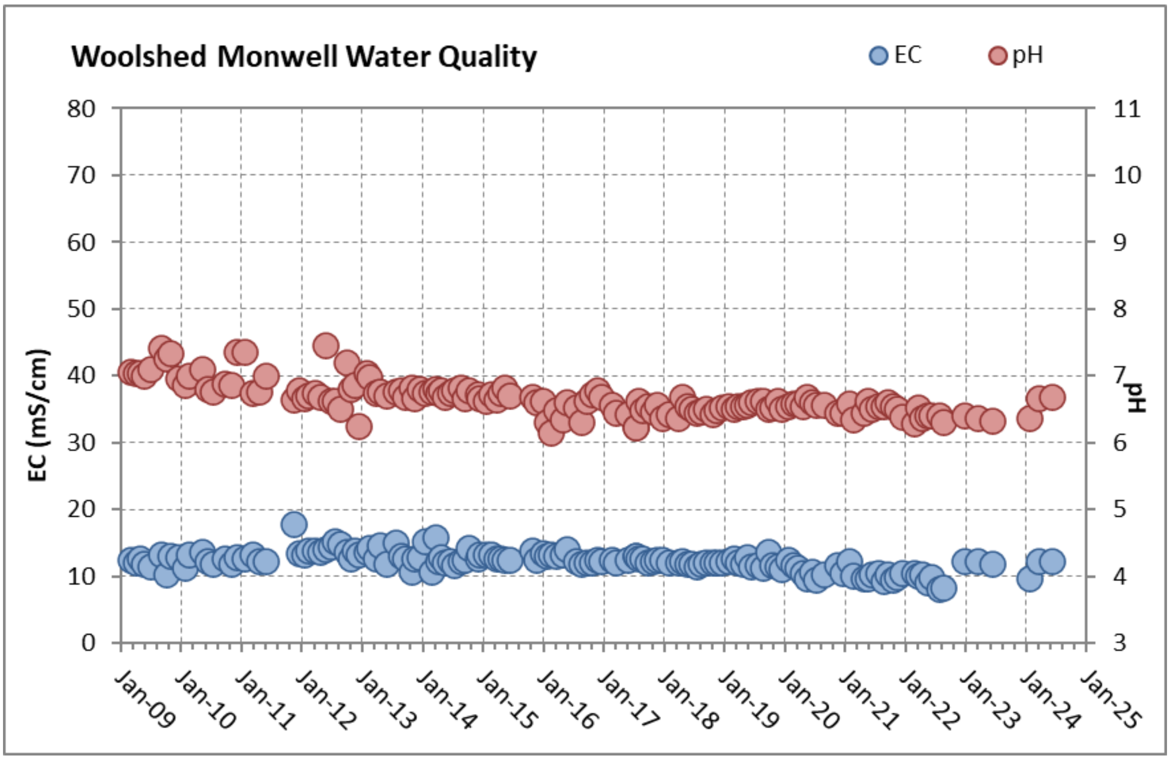

Banjo Bore Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

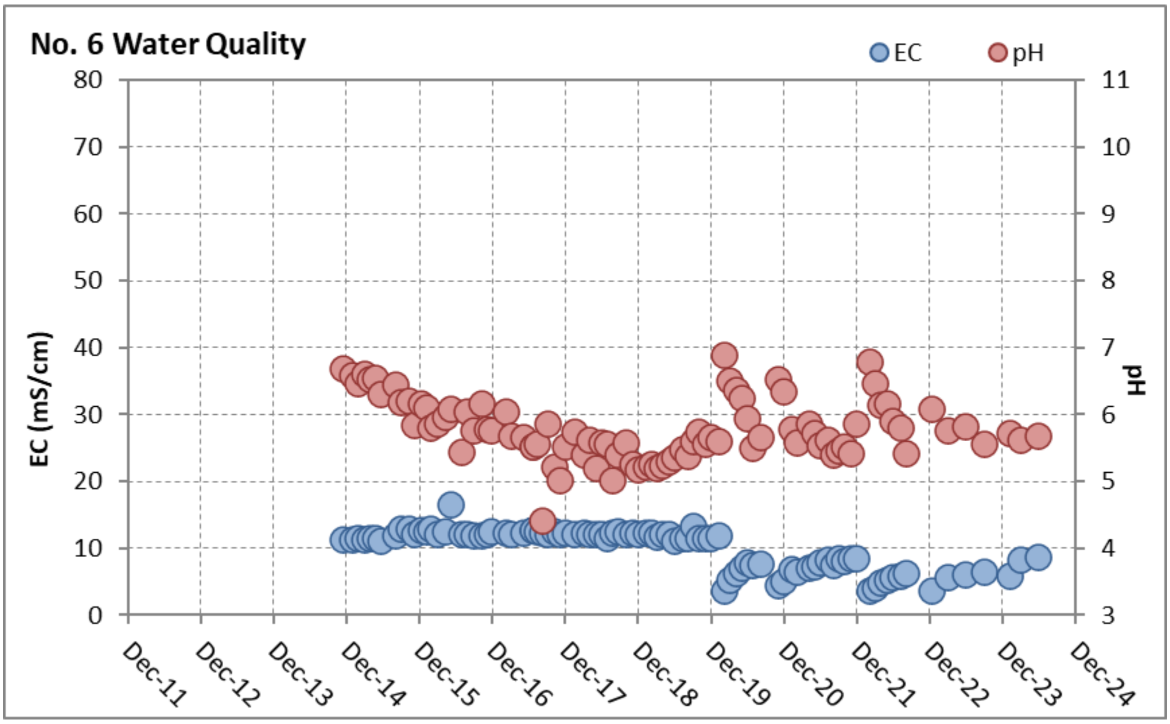

Millers Creek Monitoring Wells Depth to Water
Non-artesian Eromanga Aquifer
No. 6 Monwell S
New Mudla Monwell
Depth to Water (m)
0
5
10
15
20
25
30
35
40
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

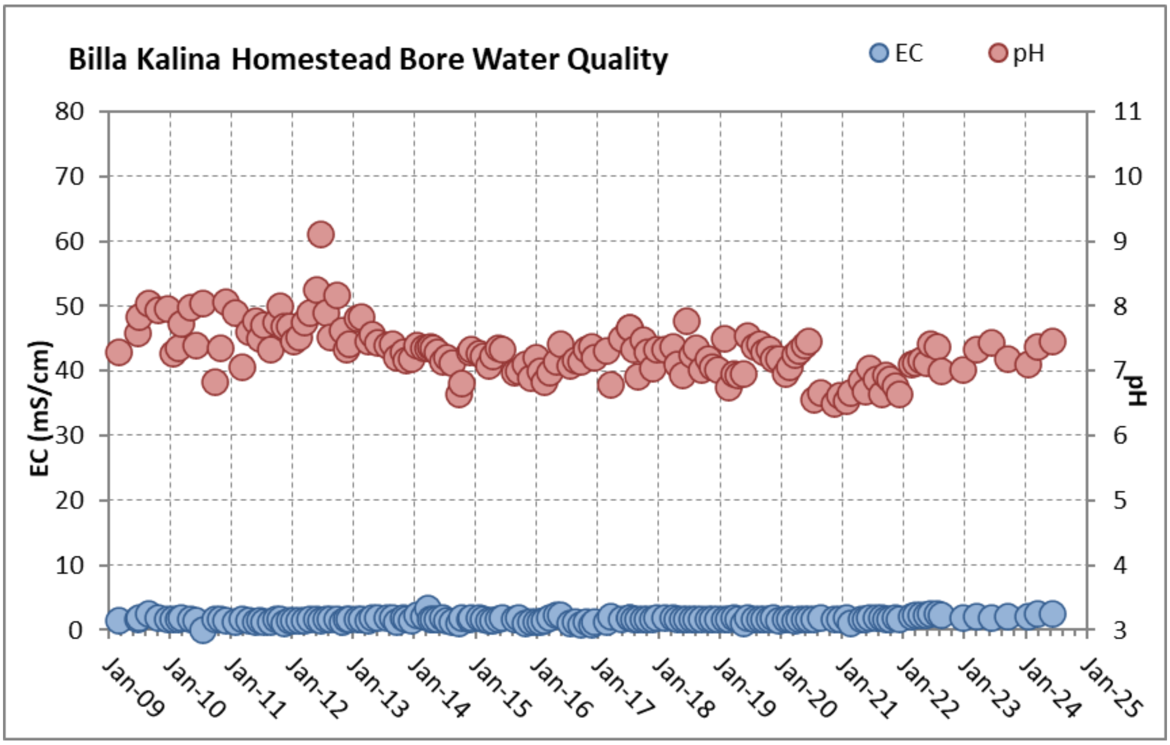

Billa Kalina Monitoring Well Depth to Water
Non-artesian Eromanga Aquifer
BK Homestead Bore
Depth to Water (m)
20
25
30
35
40
45
50
55
60
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

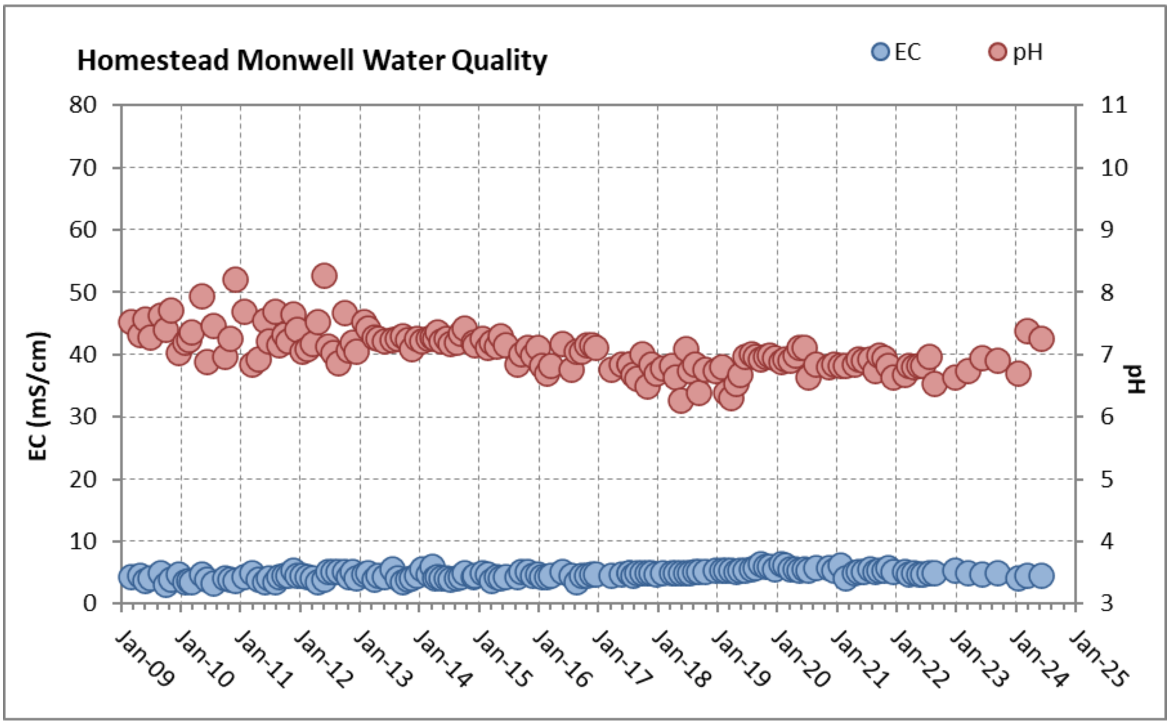

Millers Creek Monitoring Wells
Depth to Water
Boorthanna Formation
No. 6 Monwell D
Woolshed Monwell
Woolshed Bore
No. 2 Monwell
Woolshed No. 2
CH1 (Walsh's Well)
No. 6 Bore
CH2
Homestead Monwell
Depth to Water (m)
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

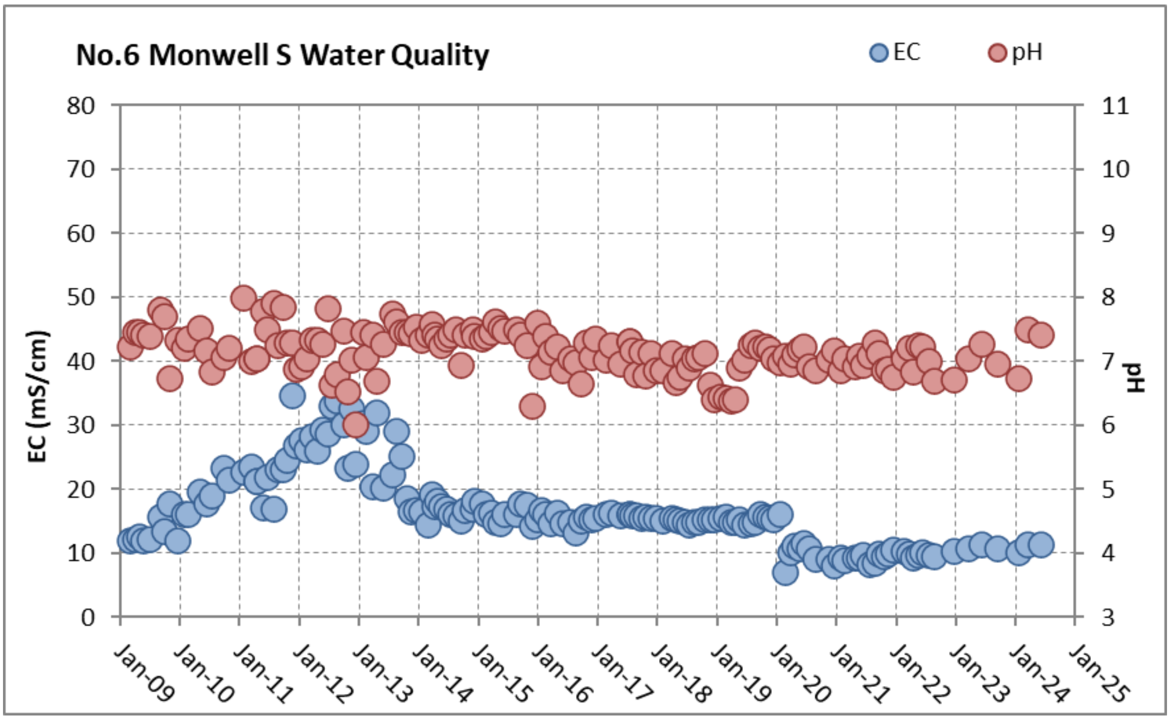

CH2 Water Quality
EC
pH
EC (mS/cm)
80
70
60
50
40
30
20
10
0
pH
11
10
9
8
7
6
5
4
3
Jan-13
Jan-14
Jan-15
Jan-16
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

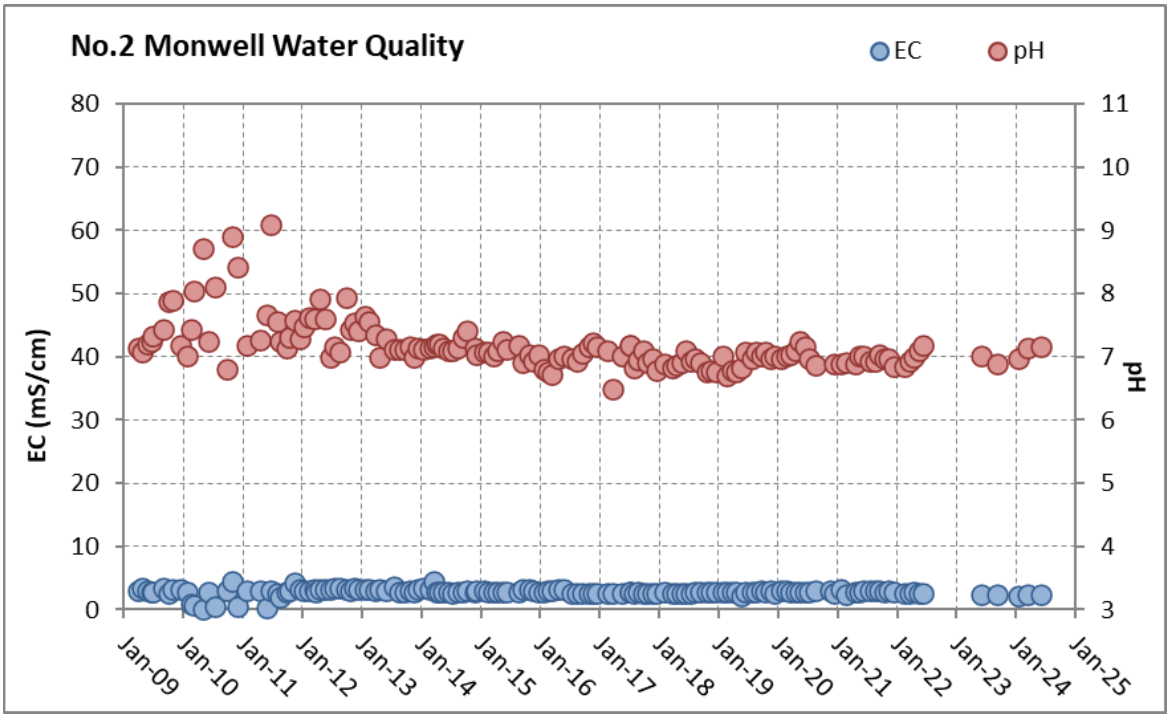

Woolshed Monwell Water Quality
EC
pH
EC (mS/cm)
pH
80
70
60
50
40
30
20
10
0
11
10
9
8
7
6
5
4
3
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

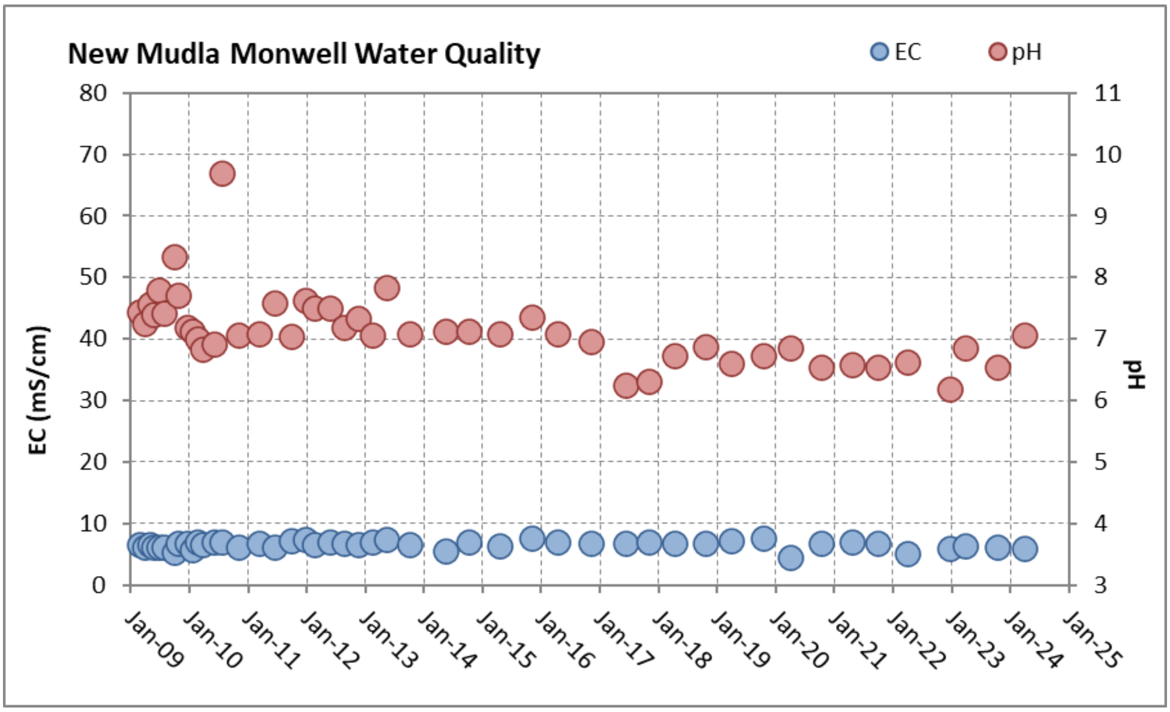

No. 6 Water Quality
EC
pH
EC (mS/cm)
pH
80
70
60
50
40
30
20
10
0
11
10
9
8
7
6
5
4
3
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

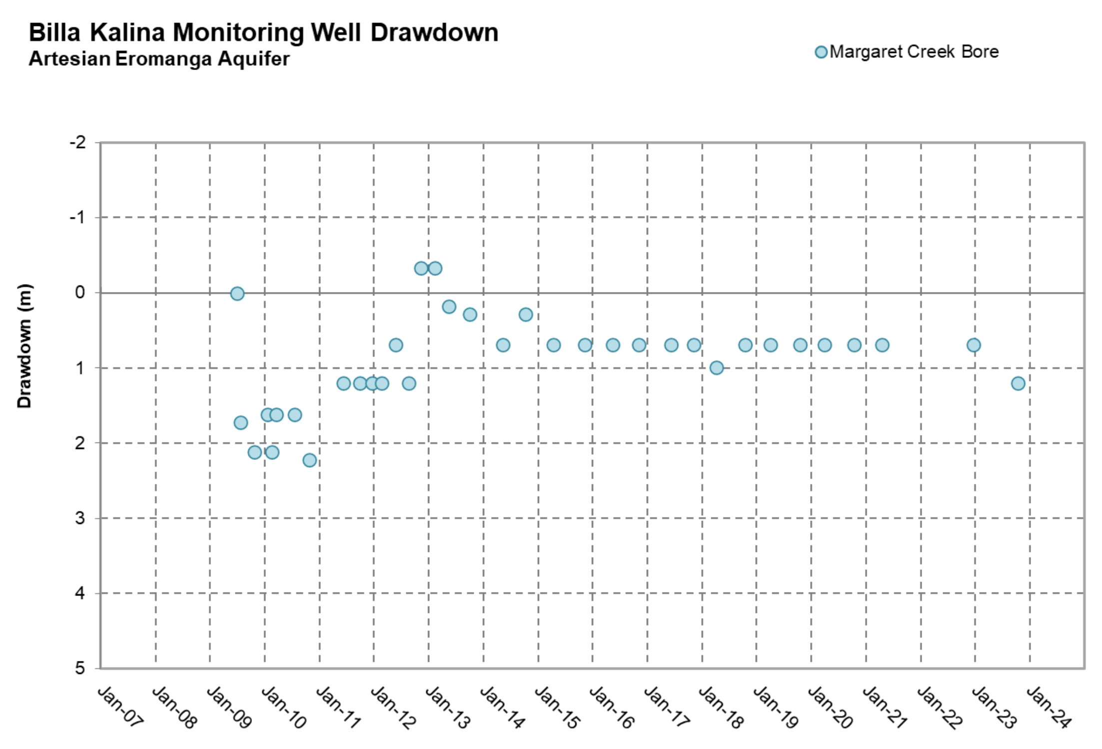

Billa Kalina Homestead Bore Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

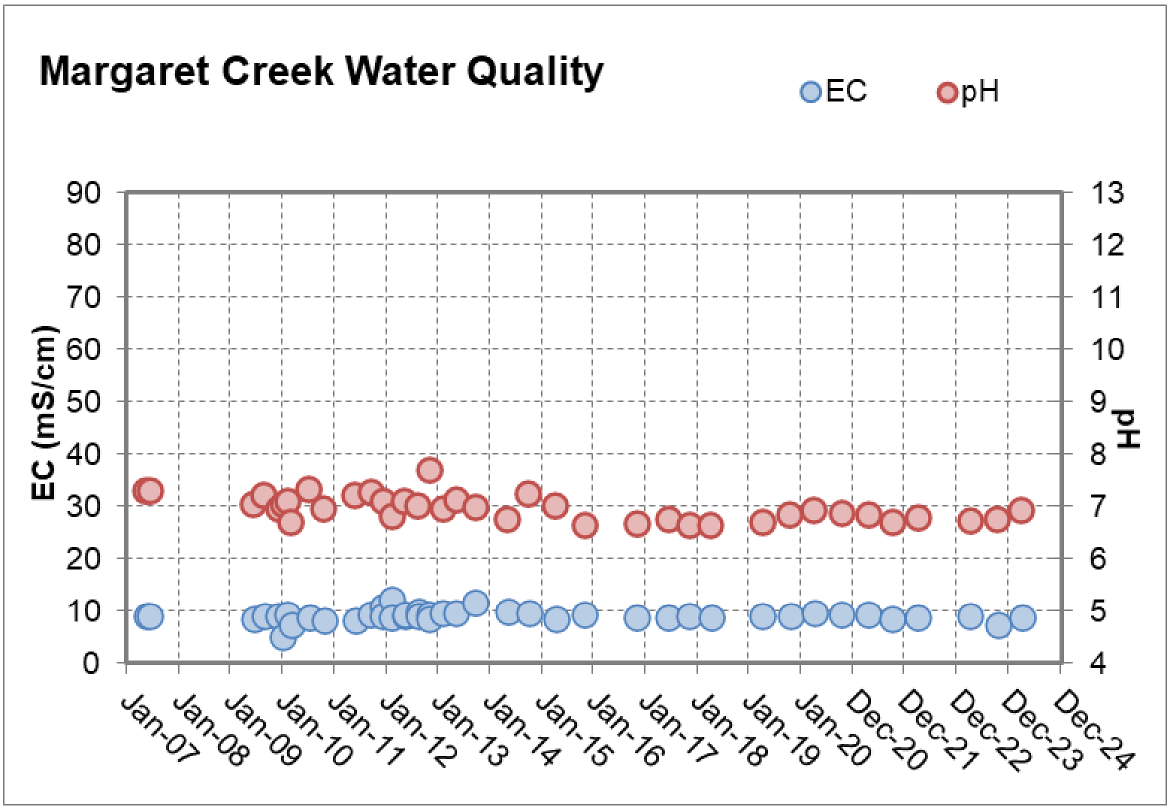

Homestead Monwell Water Quality
EC
pH
EC (mS/cm)
pH
0
10
20
30
40
50
60
70
80
3
4
5
6
7
8
9
10
11
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25


No.6 Monwell S Water Quality
EC
pH
EC (mS/cm)
pH
80
70
60
50
40
30
20
10
0
11
10
9
8
7
6
5
4
3
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25


No.2 Monwell Water Quality
EC
pH
EC (mS/cm)
pH
80
70
60
50
40
30
20
10
0
11
10
9
8
7
6
5
4
3
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25


New Mudla Monwell Water Quality
EC
pH
EC (mS/cm)
pH
80
70
60
50
40
30
20
10
0
11
10
9
8
7
6
5
4
3
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25

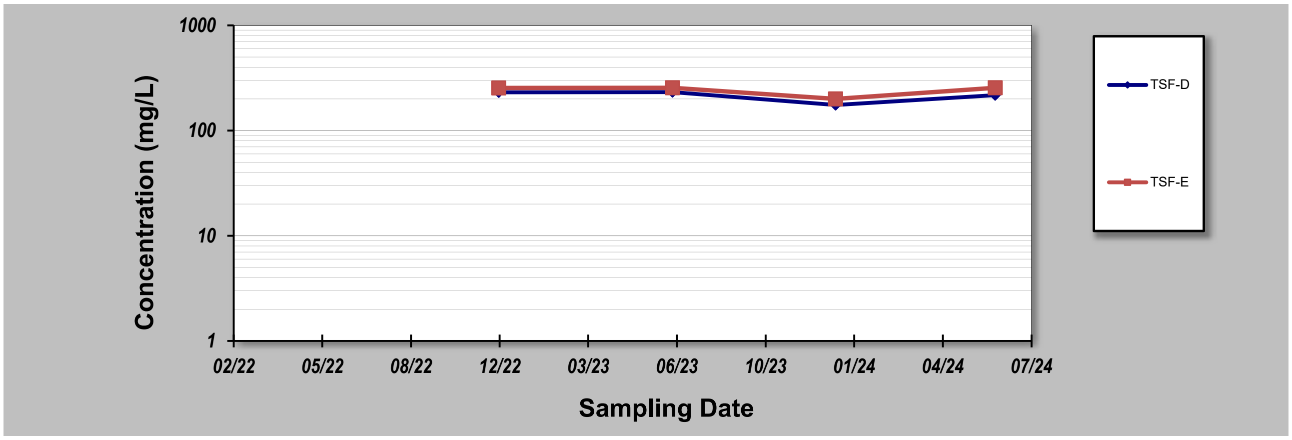

Billa Kalina Monitoring Well Drawdown
Artesian Eromanga Aquifer
Margaret Creek Bore
Drawdown (m)
-2
-1
0
1
2
3
4
5
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24


Margaret Creek Water Quality
EC
pH
EC (mS/cm)
pH
90
80
70
60
50
40
30
20
10
0
13
12
11
10
9
8
7
6
5
4
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Bicarbonate Alkalinity
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	BICARBONATE ALKALINITY CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	231	254					
3	18-Jun-23	232	255					
4	19-Dec-23	175	200					
5	16-Jun-24	217	255					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.13	0.11					
Mann-Kendall Statistic (S):		-2	1					
Confidence Factor:		62.5%	50.0%					
Concentration Trend:		Stable	No Trend					



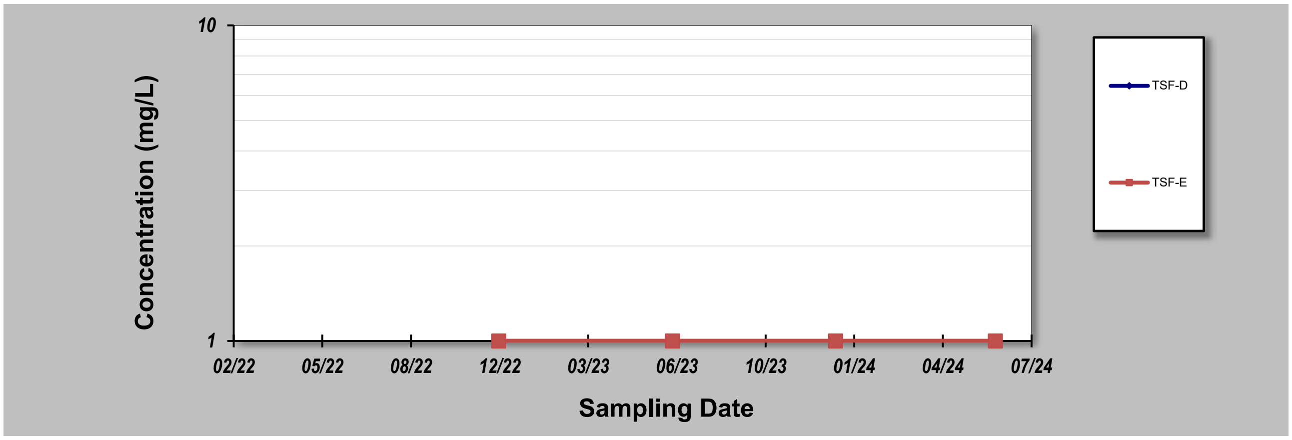
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Carbonate Alkalinity
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	CARBONATE ALKALINITY CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	1	1					
3	18-Jun-23	1	1					
4	19-Dec-23	1	1					
5	16-Jun-24	1	1					
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:	37.5%	37.5%					
	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.

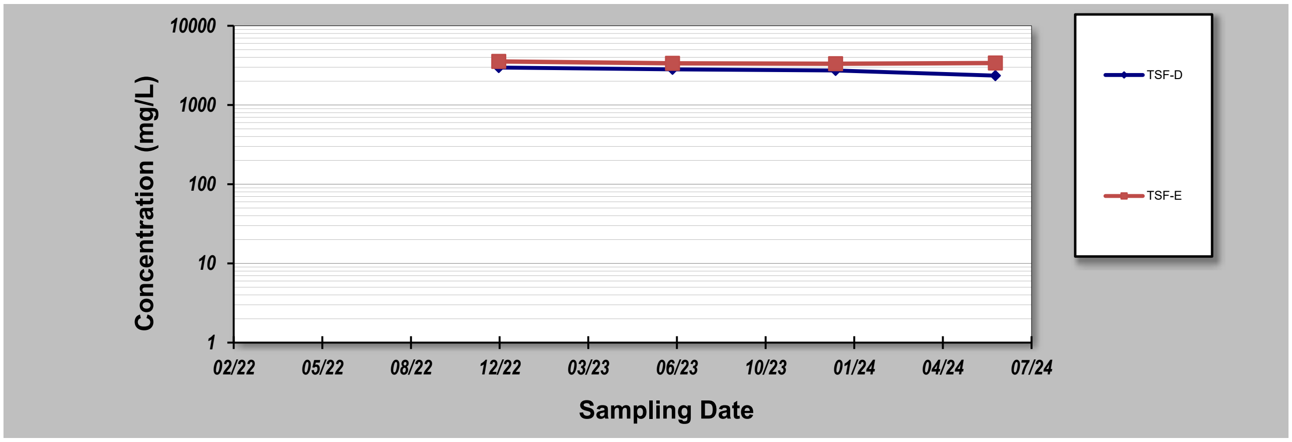
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Chloride
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	2970	3550					
3	18-Jun-23	2820	3360					
4	19-Dec-23	2730	3320					
5	16-Jun-24	2350	3390					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.10	0.03					
	Mann-Kendall Statistic (S):	-6	-2					
	Confidence Factor:	95.8%	62.5%					
	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.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Depth to Water
Concentration Units: m

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DEPTH TO WATER CONCENTRATION (m)						
1	19-Jun-22	90.53	95.62					
2	4-Dec-22	90.43	95.57					
3	18-Jun-23	90.45	95.64					
4	19-Dec-23	90.37	95.56					
5	16-Jun-24	90.36	95.65					
6								
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10								
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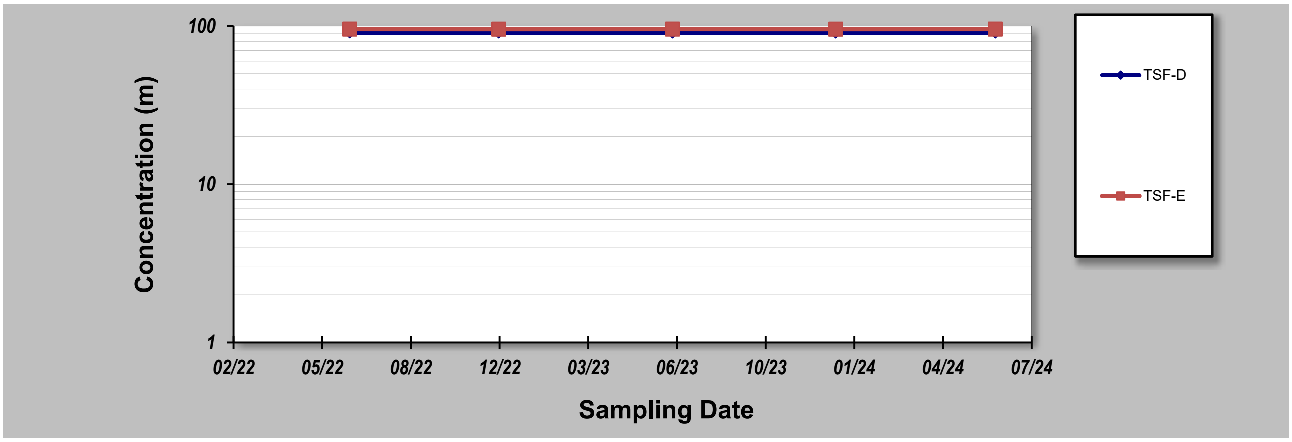
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		-8	2					
Confidence Factor:		95.8%	59.2%					
Concentration Trend:		Decreasing	No Trend					



Notes:

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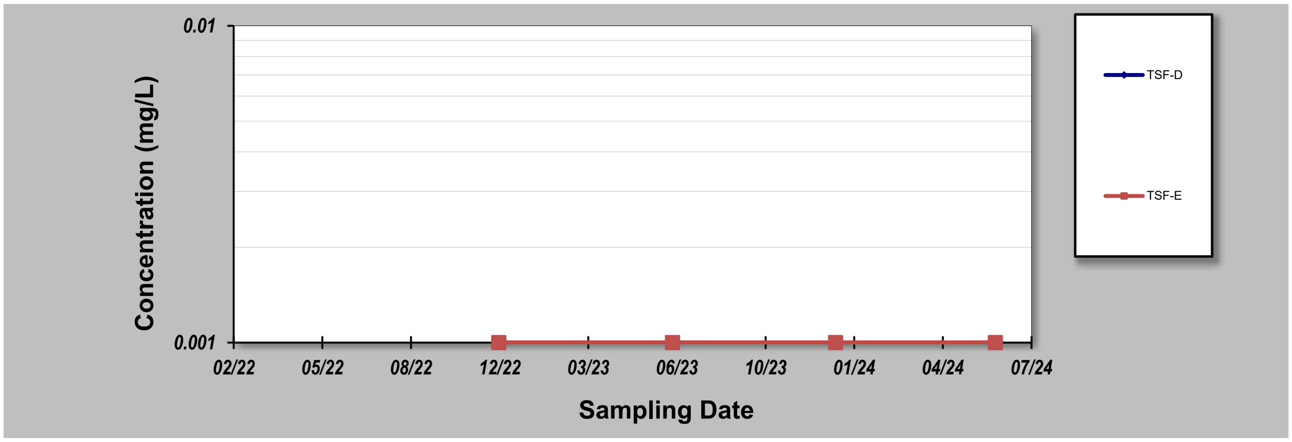
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Antimony
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ANTIMONY CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Arsenic
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
7								
8								
9								
10								
11								
12								
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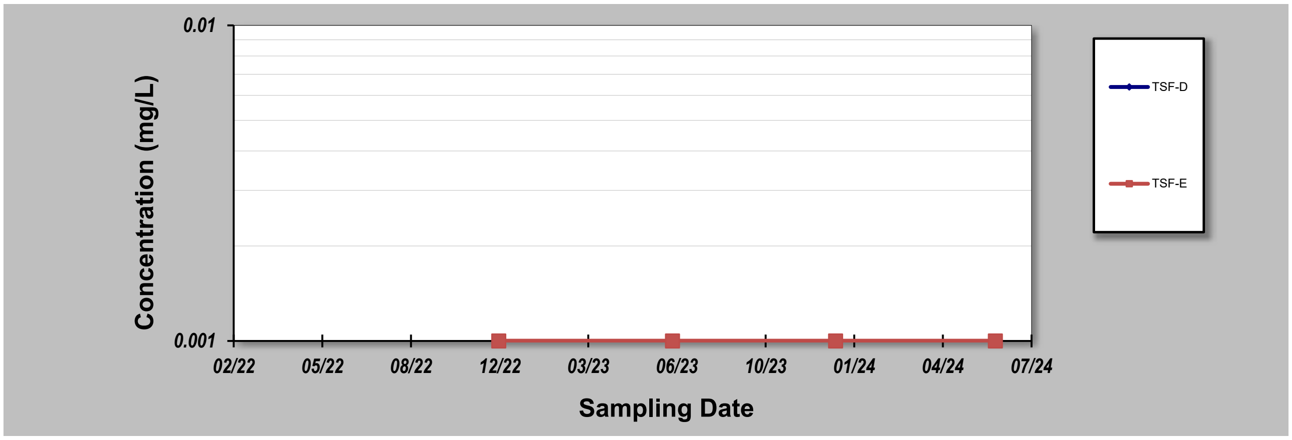
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Boron
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED BORON CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.66	4.4					
3	18-Jun-23	3.36	3.54					
4	19-Dec-23	3.16	3.63					
5	16-Jun-24	3.06	4.45					
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9								
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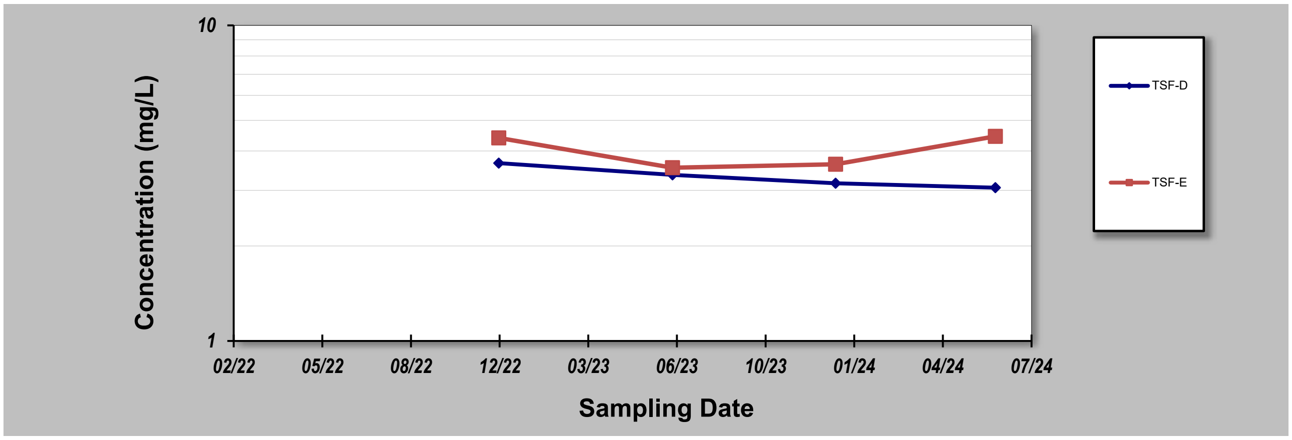
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.08	0.12					
	Mann-Kendall Statistic (S):	-6	2					
	Confidence Factor:	95.8%	62.5%					
	Concentration Trend:	Decreasing	No Trend					



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.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Cadmium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.0001	0.0001					
3	18-Jun-23	0.0001	0.0001					
4	19-Dec-23	0.0001	0.0001					
5	16-Jun-24	0.0001	0.0001					
6								
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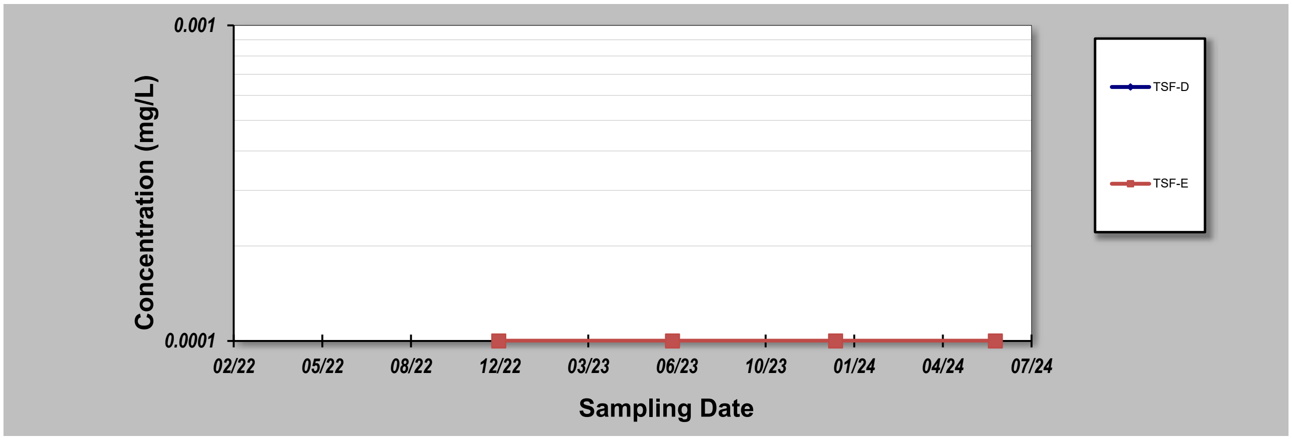
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Calcium
Concentration Units: mg/L

Sampling Event	Sampling Date	DISSOLVED CALCIUM CONCENTRATION (mg/L)						
	Sampling Point ID:	TSF-D	TSF-E					
1	19-Jun-22							
2	4-Dec-22	281	298					
3	18-Jun-23	265	309					
4	19-Dec-23	245	290					
5	16-Jun-24	235	288					
6								
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10								
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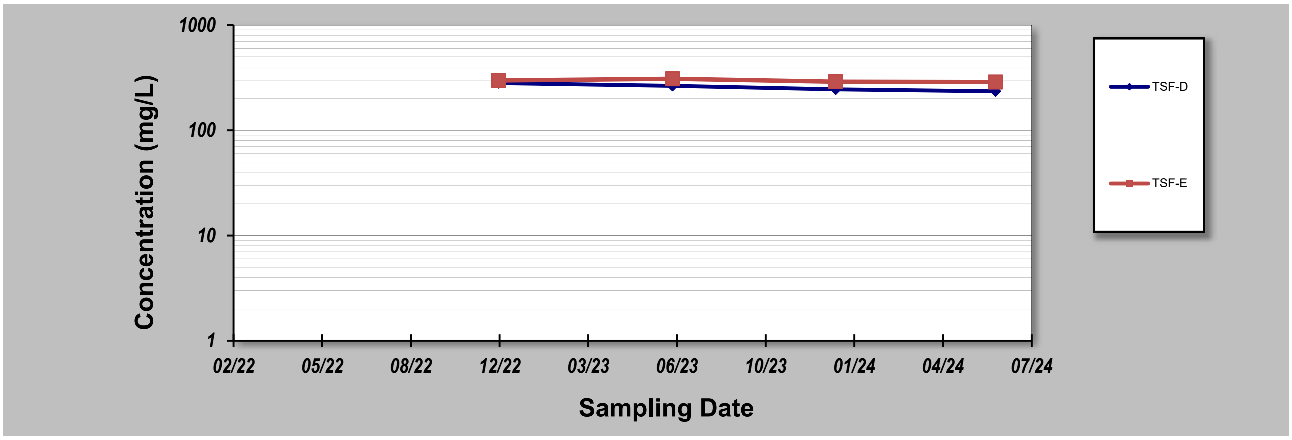
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.08	0.03					
	Mann-Kendall Statistic (S):	-6	-4					
	Confidence Factor:	95.8%	83.3%					
	Concentration Trend:	Decreasing	Stable					



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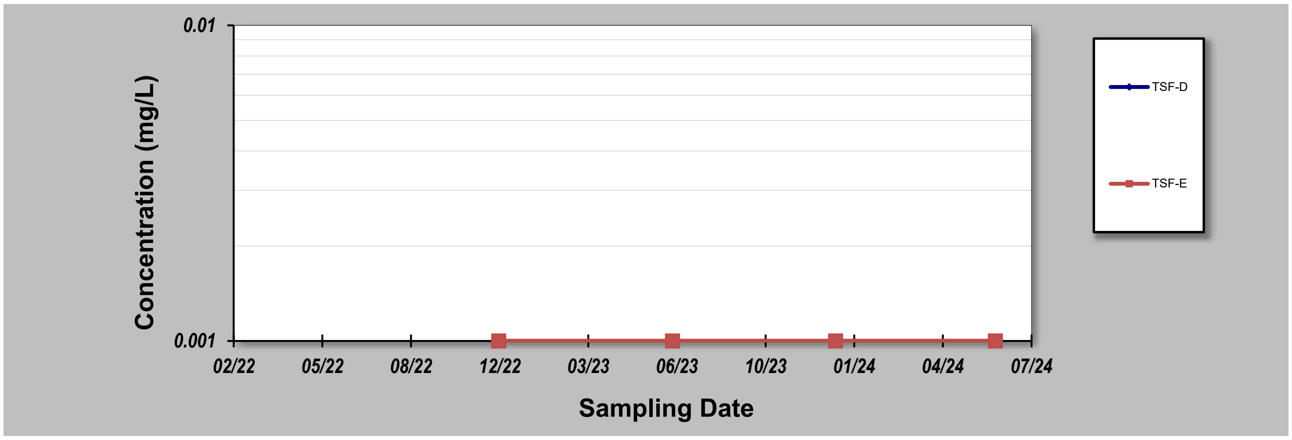
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Chromium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED CHROMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



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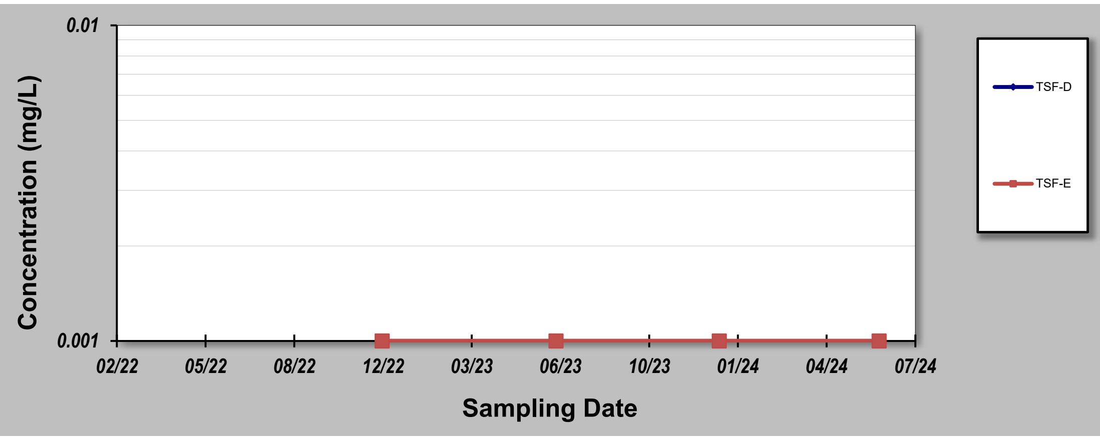
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cobalt
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED COBALT CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Copper
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.002					
5	16-Jun-24	0.001	0.002					
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13								
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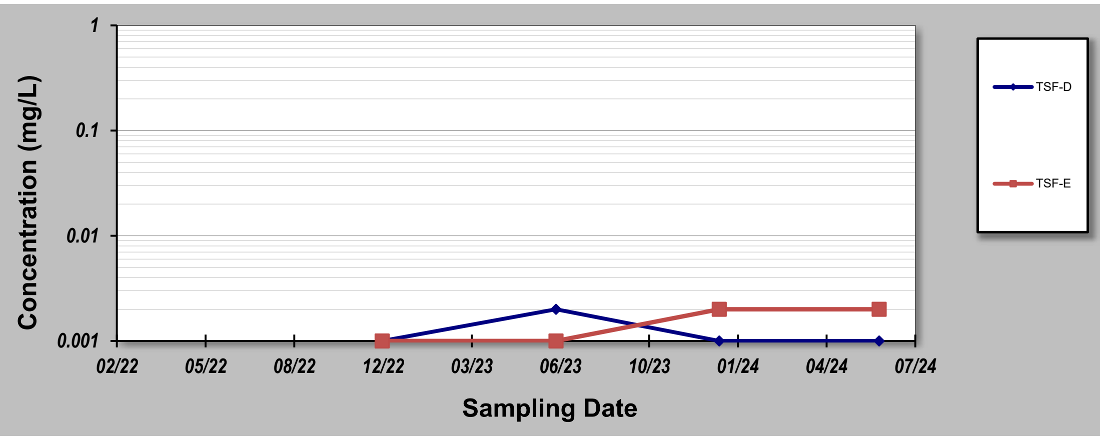
18								
19								
20								
	Coefficient of Variation:	0.40	0.38					
	Mann-Kendall Statistic (S):	-1	4					
	Confidence Factor:	50.0%	83.3%					
	Concentration Trend:	Stable	No Trend					



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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Magnesium
Concentration Units: mg/L

Sampling Event	Sampling Date	TSF-D	TSF-E					
		DISSOLVED MAGNESIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	161	240					
3	18-Jun-23	166	217					
4	19-Dec-23	158	212					
5	16-Jun-24	146	219					
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9								
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13								
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15								
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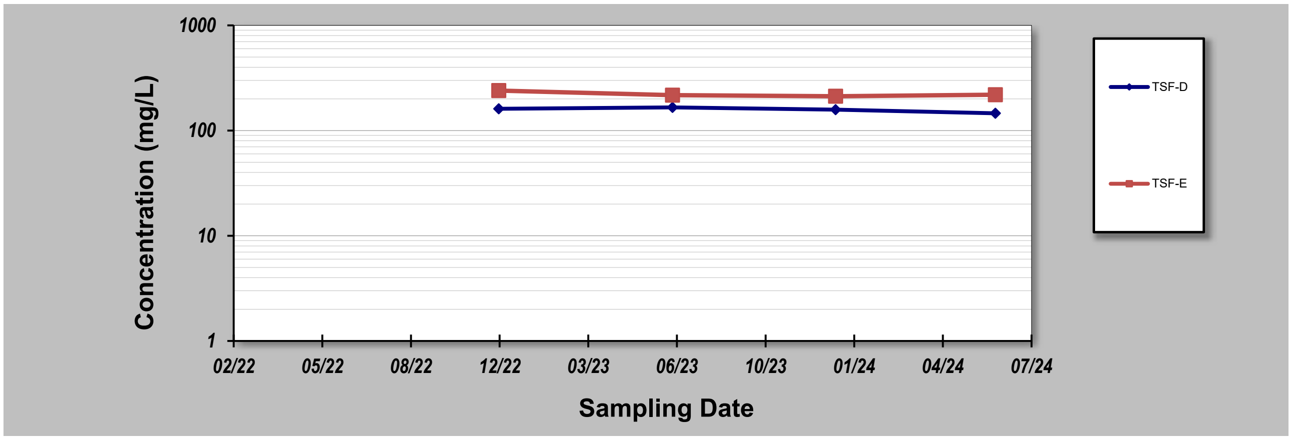
18								
19								
20								
Coefficient of Variation:		0.05	0.06					
Mann-Kendall Statistic (S):		-4	-2					
Confidence Factor:		83.3%	62.5%					
Concentration Trend:		Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Manganese
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED MANGANESE CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.433	0.352					
3	18-Jun-23	0.457	0.33					
4	19-Dec-23	0.418	0.262					
5	16-Jun-24	0.295	0.325					
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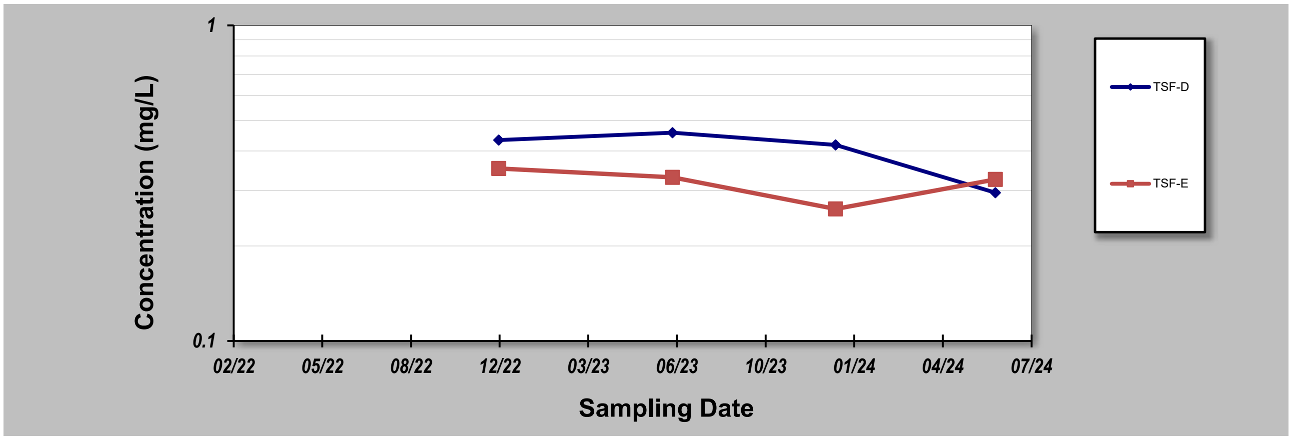
16								
17								
18								
19								
20								
Coefficient of Variation:		0.18	0.12					
Mann-Kendall Statistic (S):		-4	-4					
Confidence Factor:		83.3%	83.3%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED MOLYBDENUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.002	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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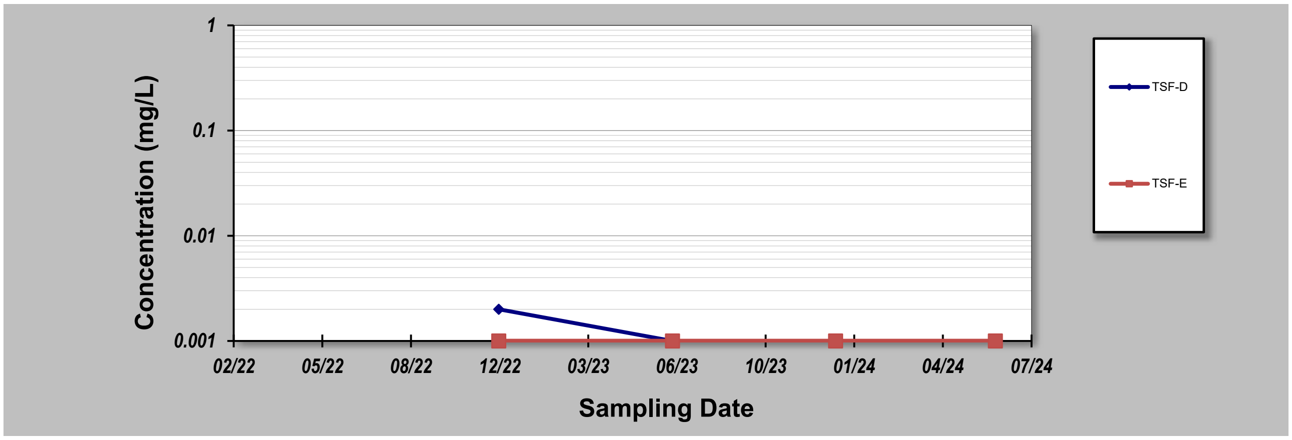
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.40	0.00					
	Mann-Kendall Statistic (S):	-3	0					
	Confidence Factor:	72.9%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

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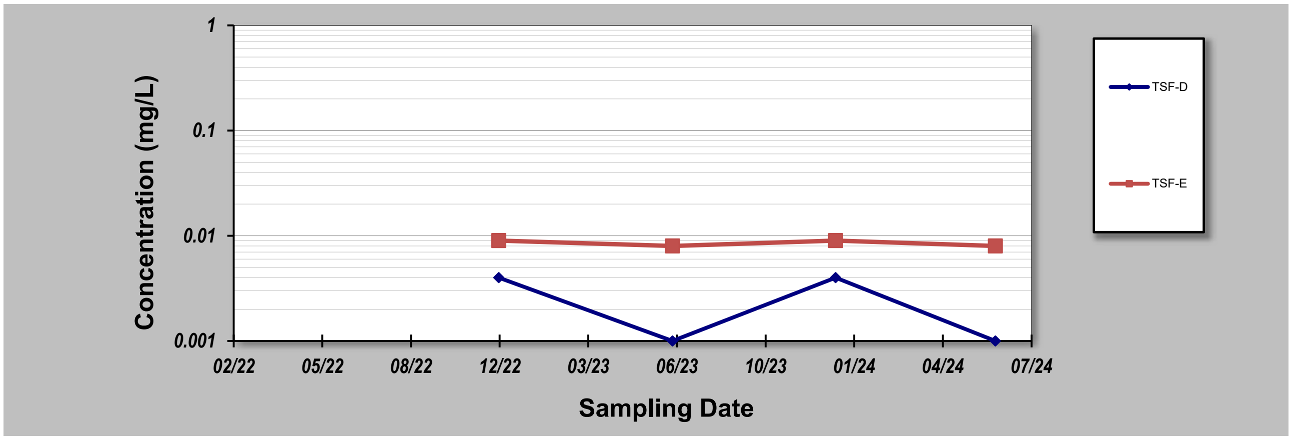
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Nickel
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED NICKEL CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.004	0.009					
3	18-Jun-23	0.001	0.008					
4	19-Dec-23	0.004	0.009					
5	16-Jun-24	0.001	0.008					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.69	0.07					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:		62.5%	62.5%					
Concentration Trend:		Stable	Stable					



Notes:

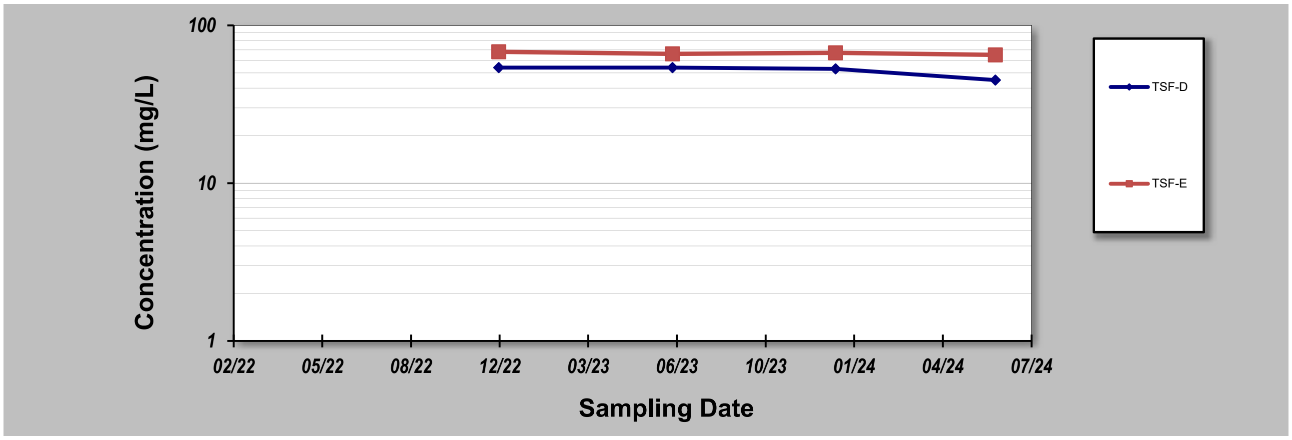
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Potassium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED POTASSIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	54	68					
3	18-Jun-23	54	66					
4	19-Dec-23	53	67					
5	16-Jun-24	45	65					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.08	0.02					
	Mann-Kendall Statistic (S):	-5	-4					
	Confidence Factor:	89.6%	83.3%					
	Concentration Trend:	Stable	Stable					



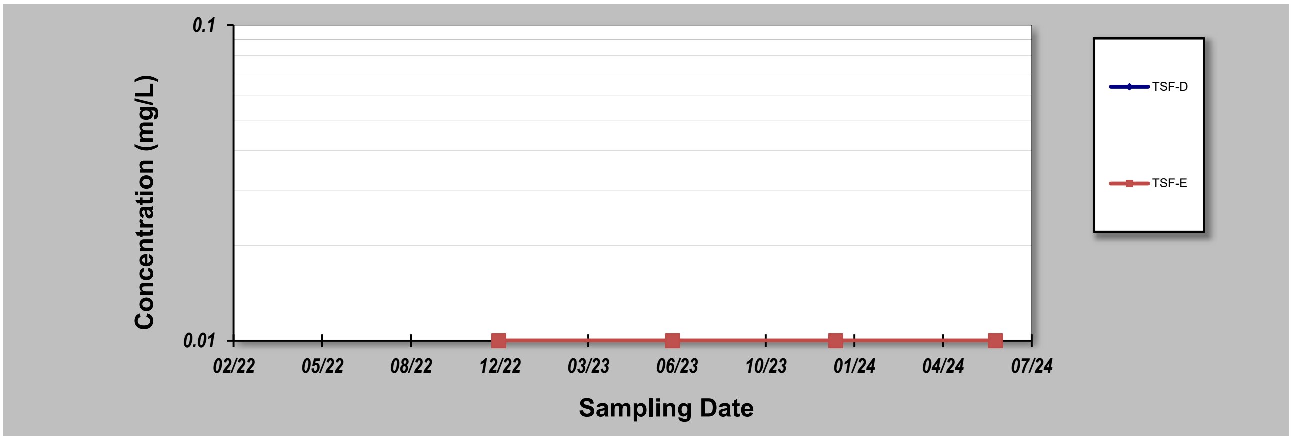
Notes:

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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED SELENIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

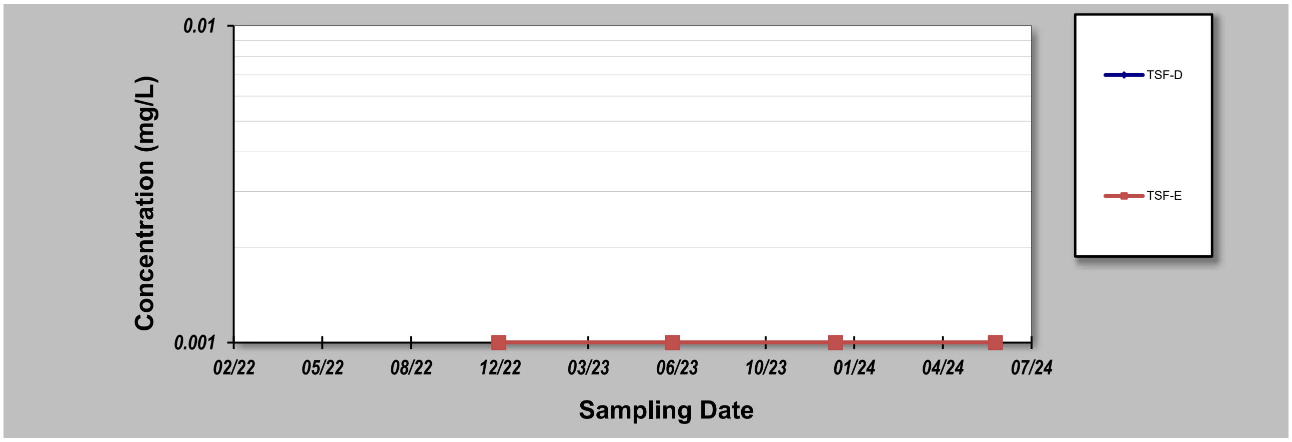
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Silver
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED SILVER CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



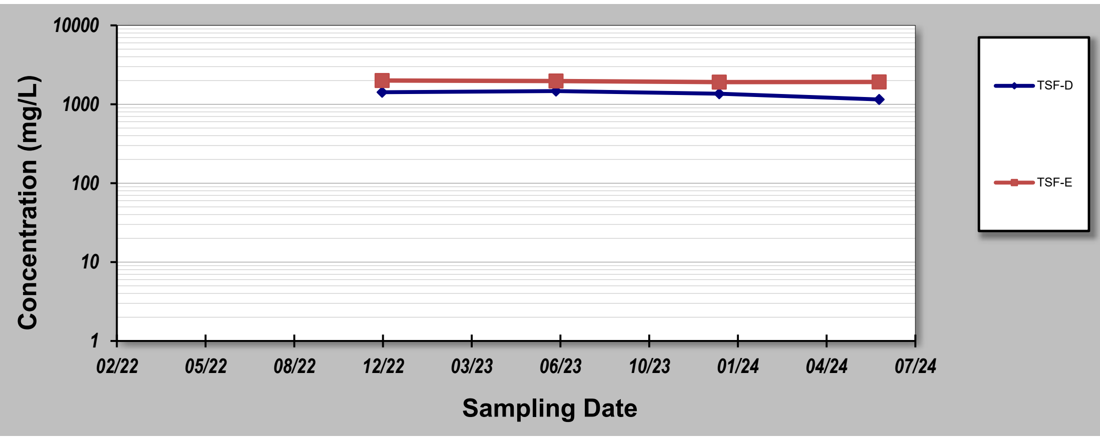
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Sodium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-D**	**TSF-E**					
Sampling Event	**Sampling Date**	**DISSOLVED SODIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	1420	2000					
3	18-Jun-23	1470	1970					
4	19-Dec-23	1360	1910					
5	16-Jun-24	1150	1920					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.10	0.02					
	Mann-Kendall Statistic (S):	-4	-4					
	Confidence Factor:	83.3%	83.3%					
	Concentration Trend:	Stable	Stable					



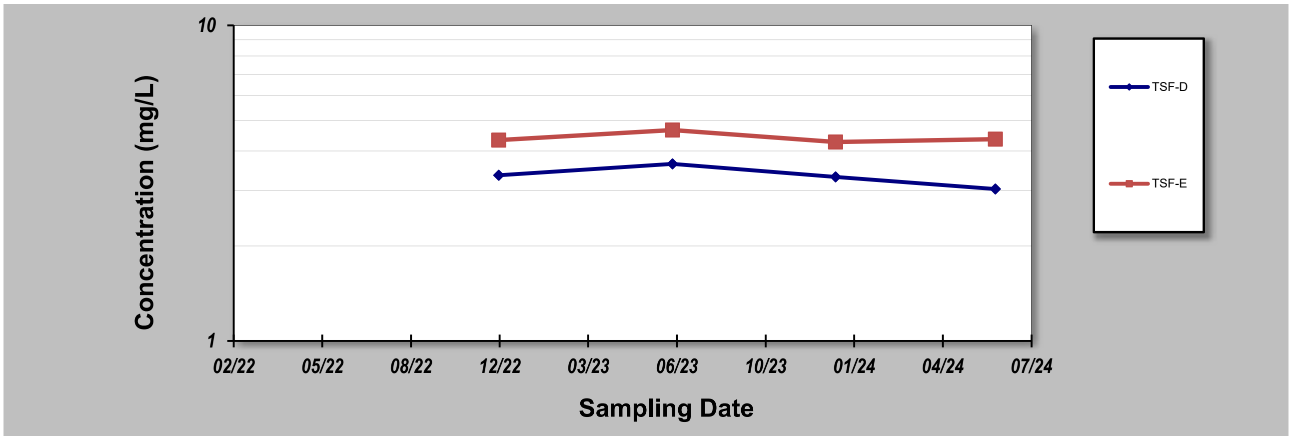
Notes:

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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Strontium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED STRONTIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.35	4.33					
3	18-Jun-23	3.64	4.66					
4	19-Dec-23	3.31	4.27					
5	16-Jun-24	3.03	4.36					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.07	0.04					
	Mann-Kendall Statistic (S):	-4	0					
	Confidence Factor:	83.3%	37.5%					
	Concentration Trend:	Stable	Stable					



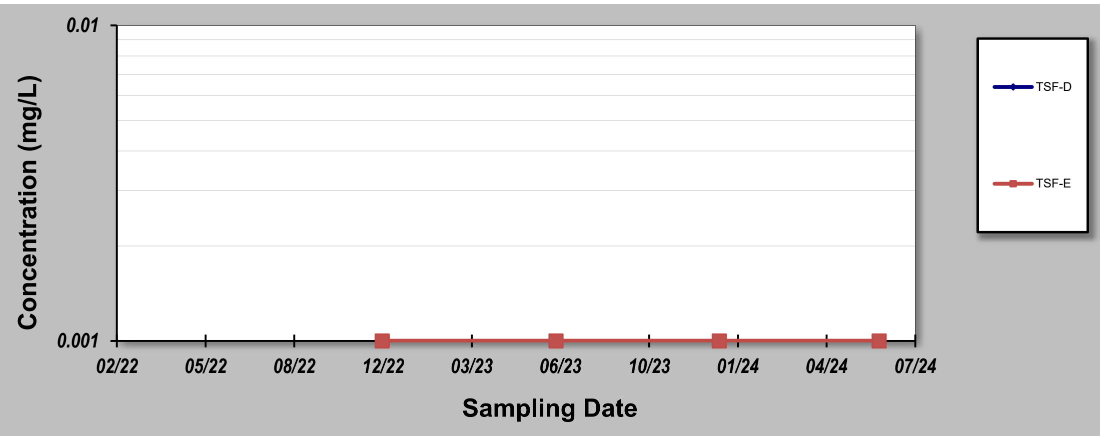
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Tin
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED TIN CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

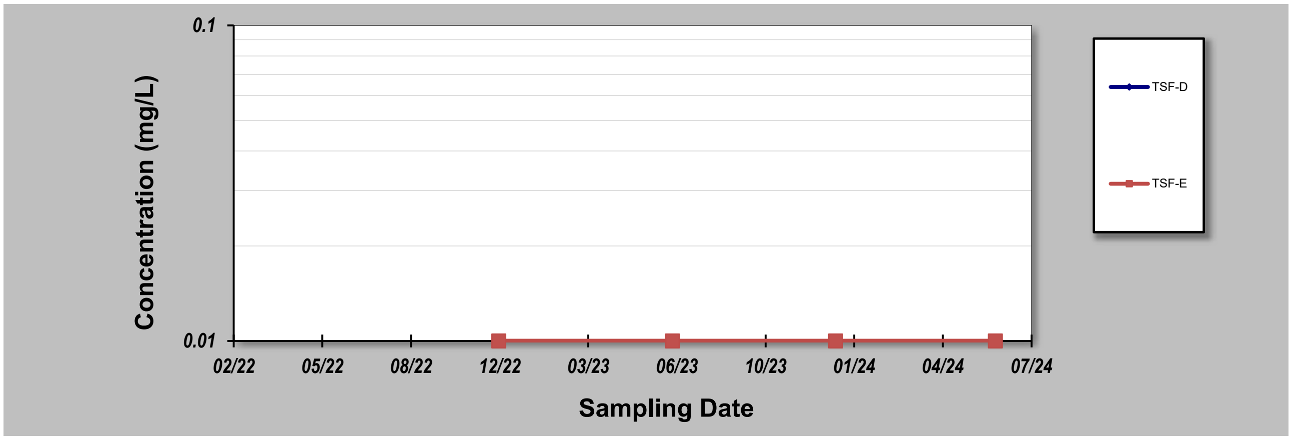
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Titanium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED TITANIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

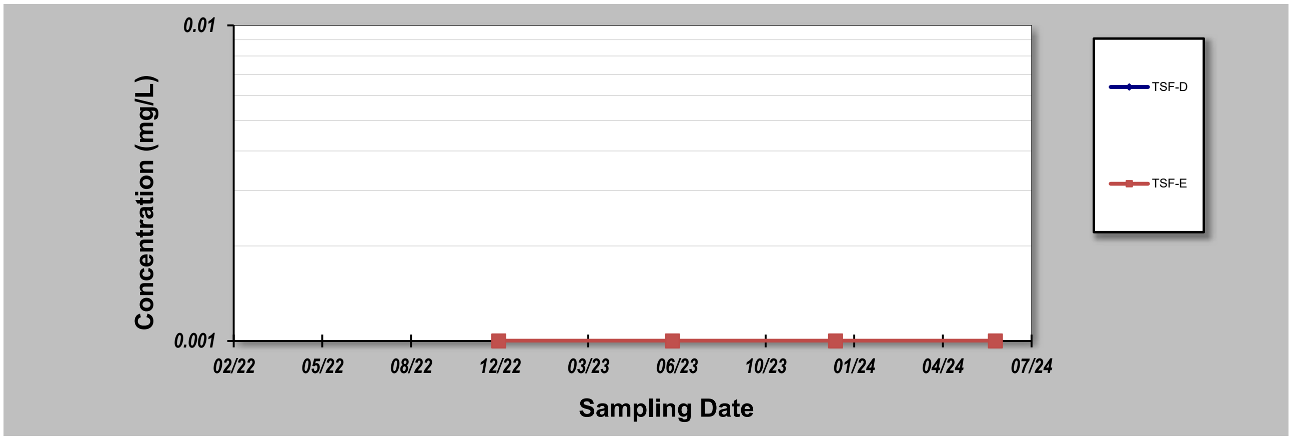
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Uranium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

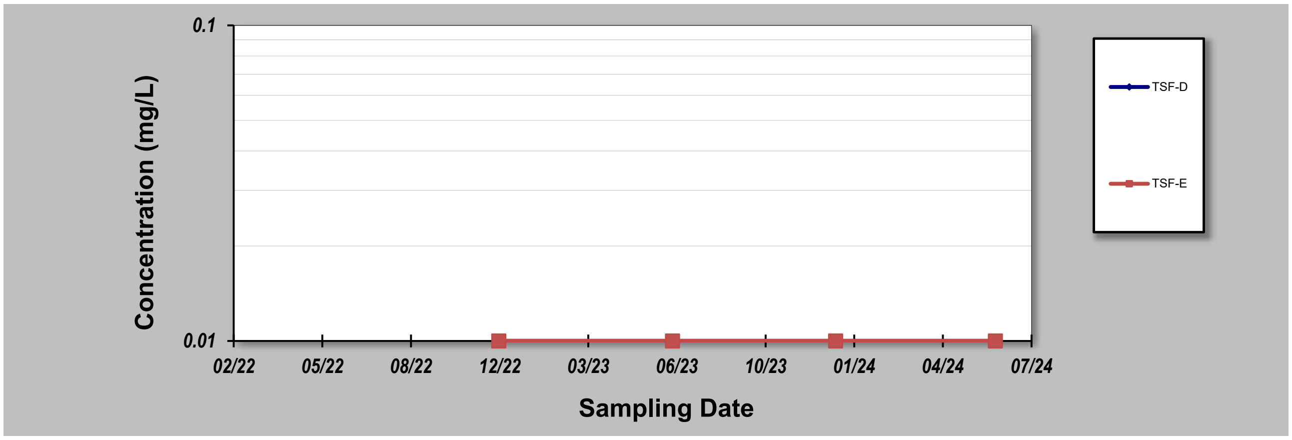
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Vanadium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED VANADIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



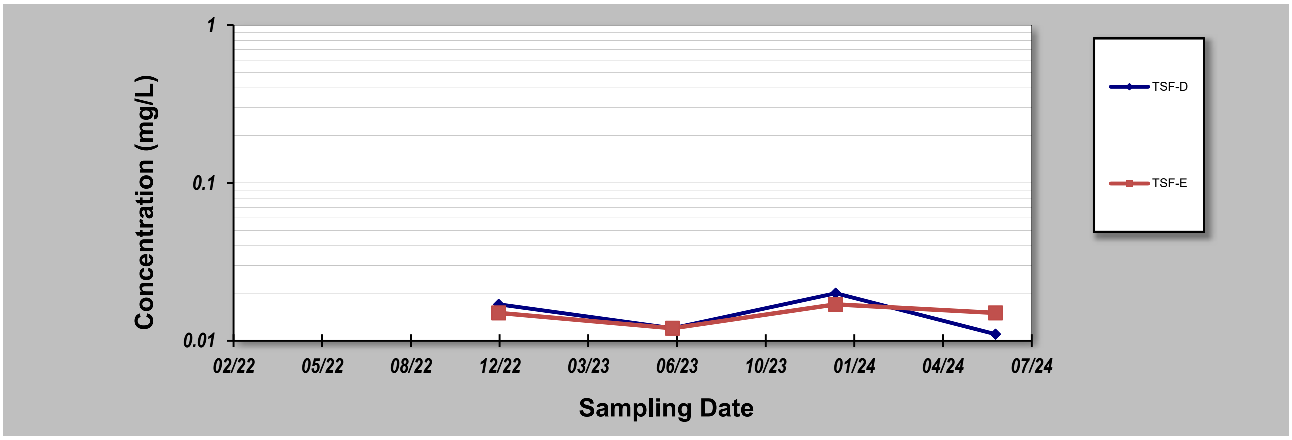
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Zinc
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ZINC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.017	0.015					
3	18-Jun-23	0.012	0.012					
4	19-Dec-23	0.02	0.017					
5	16-Jun-24	0.011	0.015					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.28	0.14					
	Mann-Kendall Statistic (S):	-2	1					
	Confidence Factor:	62.5%	50.0%					
	Concentration Trend:	Stable	No Trend					



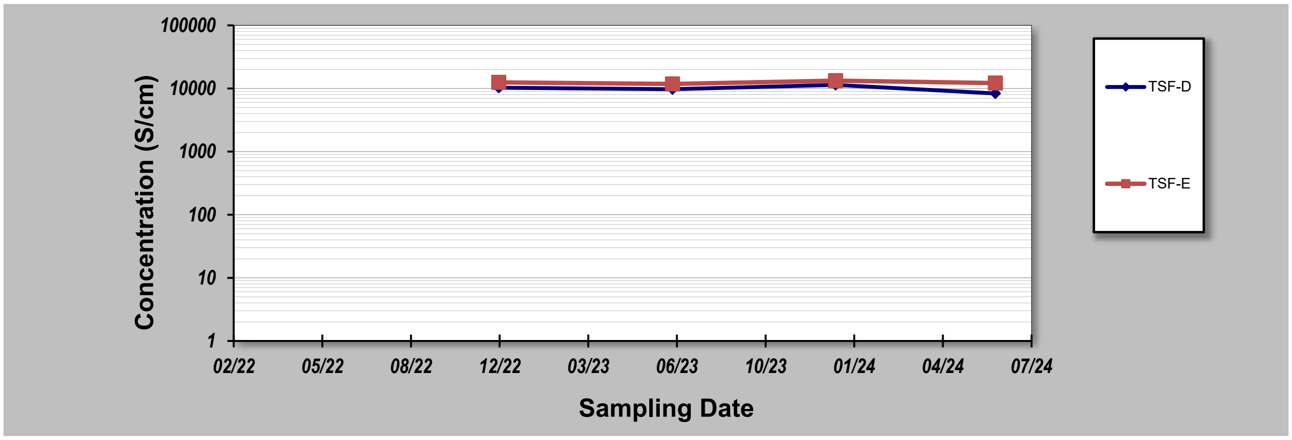
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Electrical Conductivity
Concentration Units: S/cm

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	ELECTRICAL CONDUCTIVITY CONCENTRATION (S/cm)						
1	19-Jun-22							
2	4-Dec-22	10300	12500					
3	18-Jun-23	9730	11800					
4	19-Dec-23	11400	13300					
5	16-Jun-24	8340	12200					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.13	0.05					
Mann-Kendall Statistic (S):		-2	0					
Confidence Factor:		62.5%	37.5%					
Concentration Trend:		Stable	Stable					



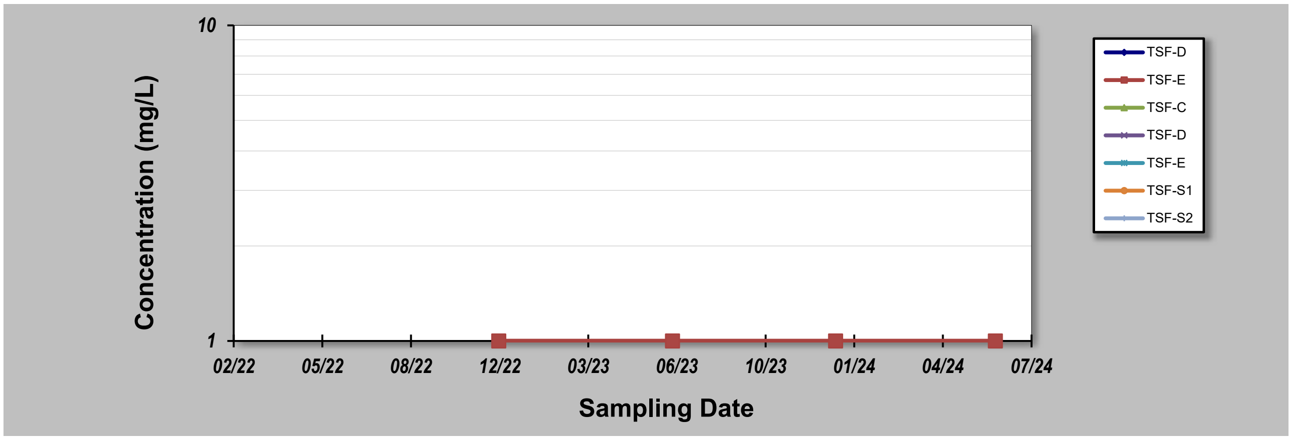
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Hydroxide Alkalinity as CaCO3
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Sampling Event	**Sampling Date**	**HYDROXIDE ALKALINITY AS CACO3 CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	1	1					
3	18-Jun-23	1	1					
4	19-Dec-23	1	1					
5	16-Jun-24	1	1					
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:		37.5%	37.5%					
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: pH
Concentration Units: pH Unit

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**PH CONCENTRATION (pH Unit)**						
1	19-Jun-22							
2	4-Dec-22	7.91	7.94					
3	18-Jun-23	7.47	7.44					
4	17-Dec-23	7.9	7.97					
5	16-Jun-24	7.62	7.6					
6								
7								
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9								
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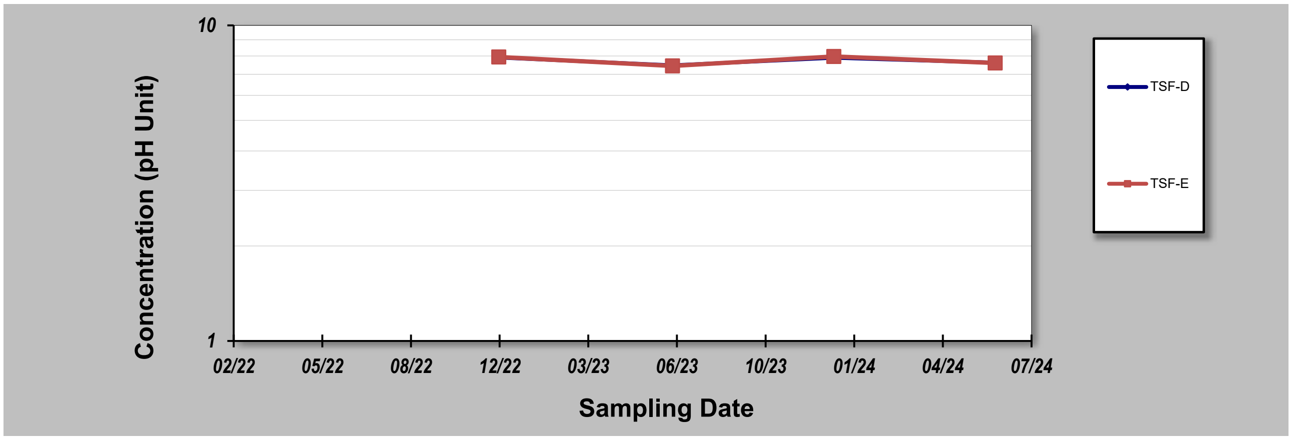
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.03	0.03					
Mann-Kendall Statistic (S):		-2	0					
Confidence Factor:		62.5%	37.5%					
Concentration Trend:		Stable	Stable					



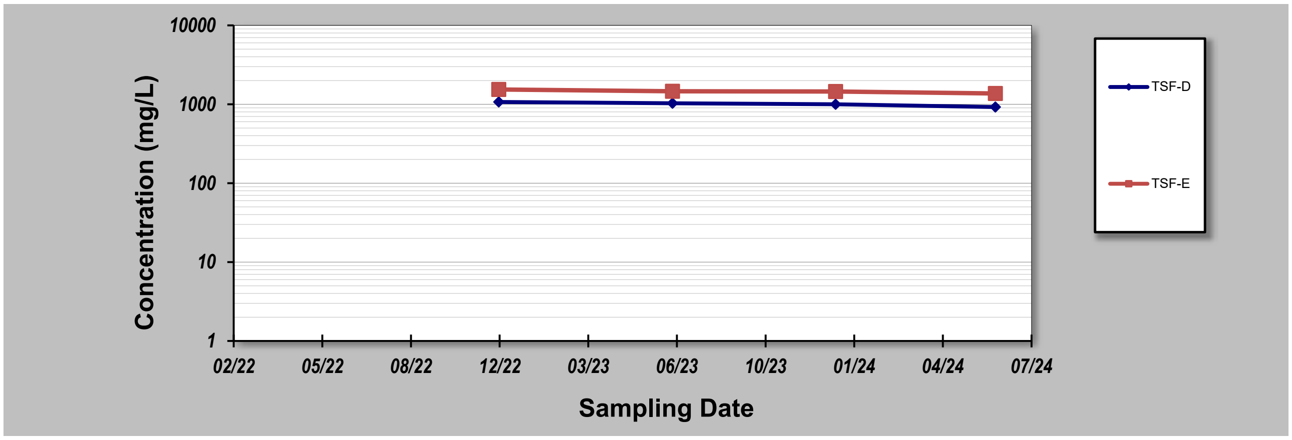
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Sulfate as SO4 - Turbidimetric (Dissolved)
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**SULFATE AS SO4 - TURBIDIMETRIC (DISSOLVED) CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	1070	1540					
3	18-Jun-23	1030	1460					
4	19-Dec-23	1000	1450					
5	16-Jun-24	922	1370					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.06	0.05					
	Mann-Kendall Statistic (S):	-6	-6					
	Confidence Factor:	95.8%	95.8%					
	Concentration Trend:	Decreasing	Decreasing					



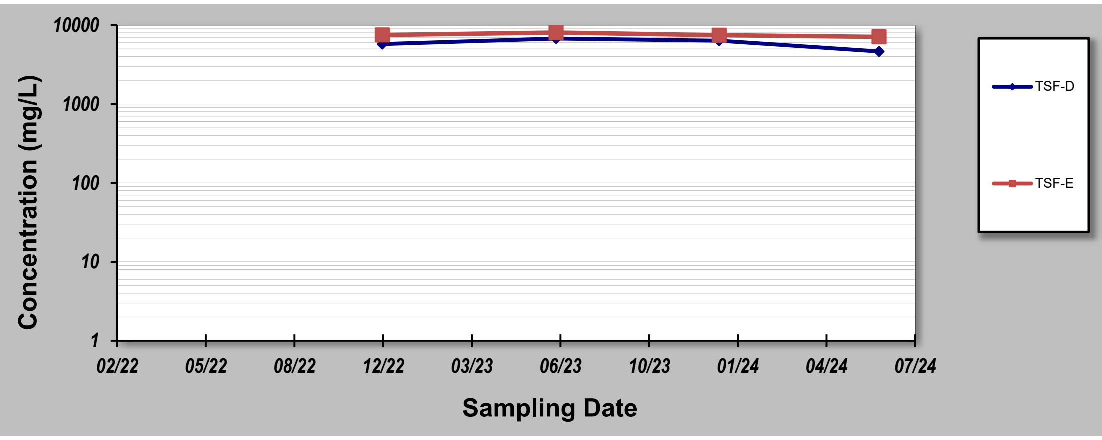
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Dissolved Solids
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	5760	7510					
3	18-Jun-23	6770	8060					
4	19-Dec-23	6350	7460					
5	16-Jun-24	4640	7110					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.16	0.05					
Mann-Kendall Statistic (S):		-2	-4					
Confidence Factor:		62.5%	83.3%					
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.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Alkalinity as CaCO3
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL ALKALINITY AS CACO3 CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	231	254					
3	18-Jun-23	232	255					
4	19-Dec-23	175	200					
5	16-Jun-24	217	255					
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8								
9								
10								
11								
12								
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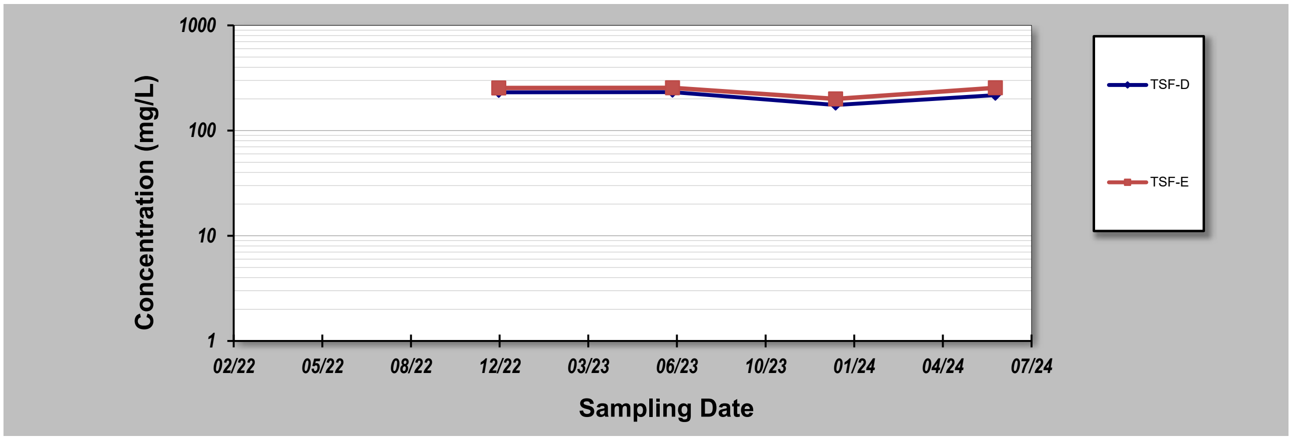
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.13	0.11					
Mann-Kendall Statistic (S):		-2	1					
Confidence Factor:		62.5%	50.0%					
Concentration Trend:		Stable	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Antimony
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL ANTIMONY CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.002	0.002					
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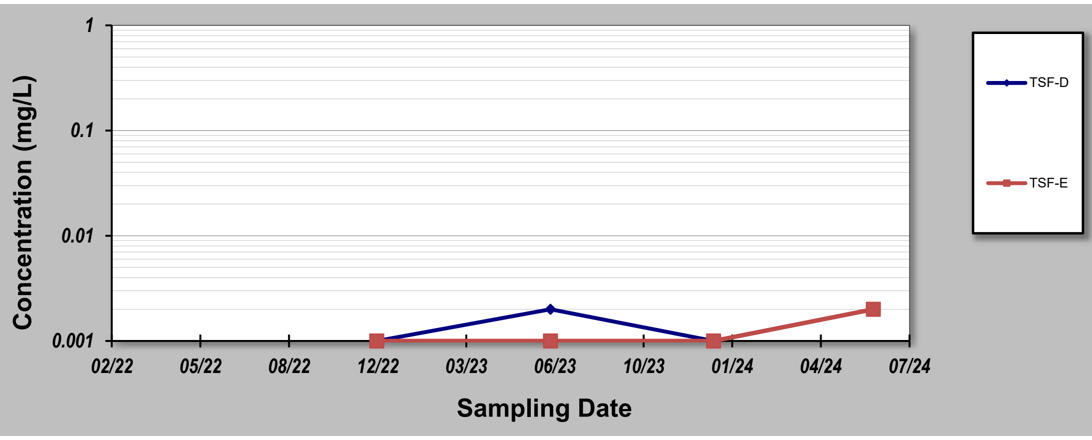
17								
18								
19								
20								
	Coefficient of Variation:	0.38	0.40					
	Mann-Kendall Statistic (S):	2	3					
	Confidence Factor:	62.5%	72.9%					
	Concentration Trend:	No Trend	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Arsenic
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.002					
5	16-Jun-24	0.001	0.001					
6								
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12								
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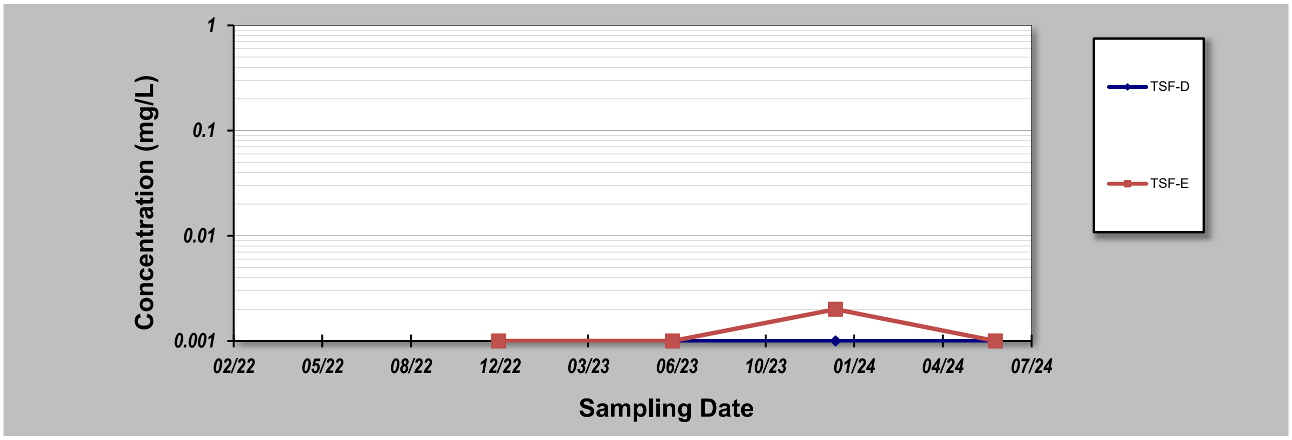
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.40					
Mann-Kendall Statistic (S):		0	1					
Confidence Factor:		37.5%	50.0%					
Concentration Trend:		Stable	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Boron
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL BORON CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.58	4.19					
3	18-Jun-23	3.94	4.42					
4	19-Dec-23	3.83	4.41					
5	16-Jun-24	2.8	3.96					
6								
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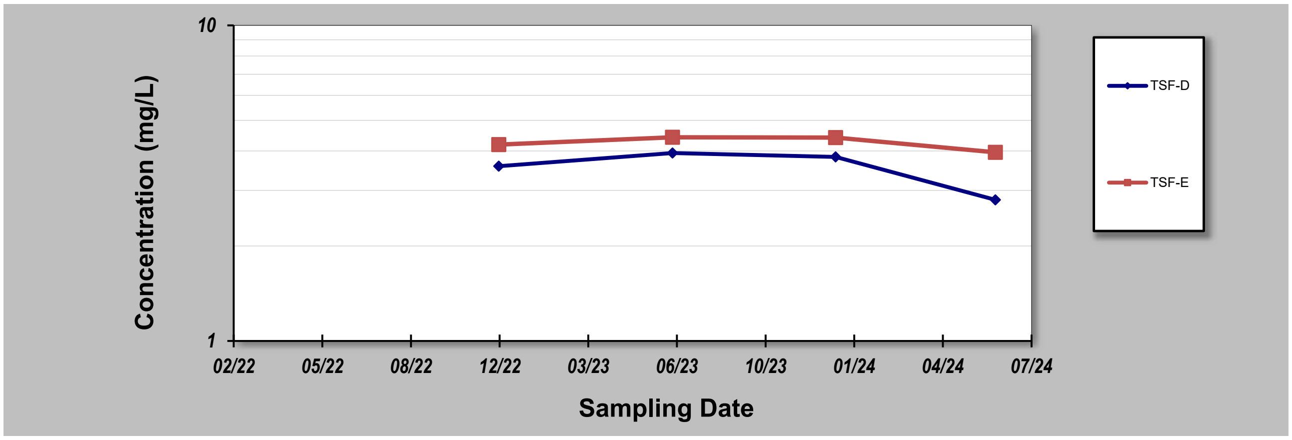
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.15	0.05					
	Mann-Kendall Statistic (S):	-2	-2					
	Confidence Factor:	62.5%	62.5%					
	Concentration Trend:	Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cadmium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.0001	0.0001					
3	18-Jun-23	0.0001	0.0001					
4	19-Dec-23	0.0005	0.0005					
5	16-Jun-24	0.0001	0.0001					
6								
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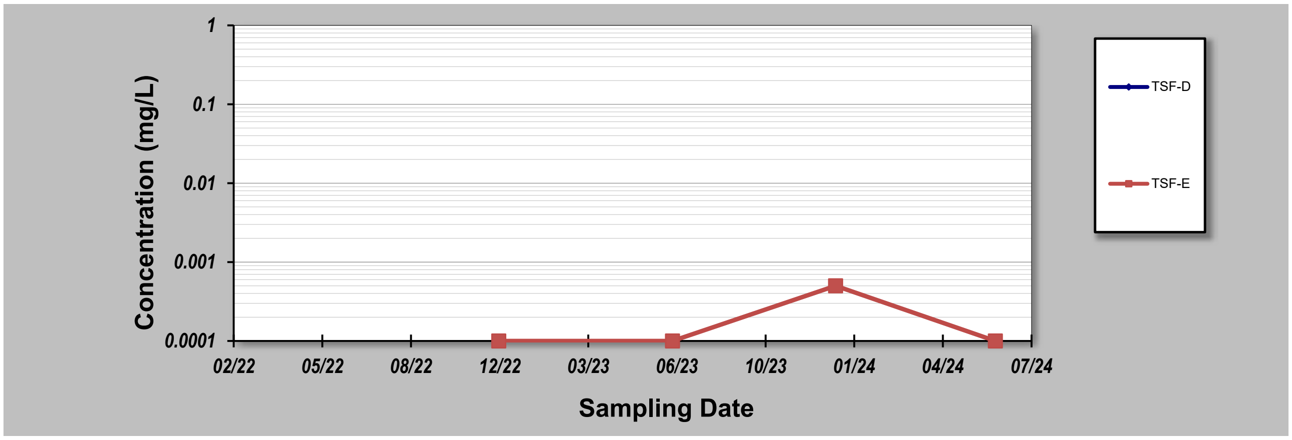
17								
18								
19								
20								
Coefficient of Variation:		1.00	1.00					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		No Trend	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Chromium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL CHROMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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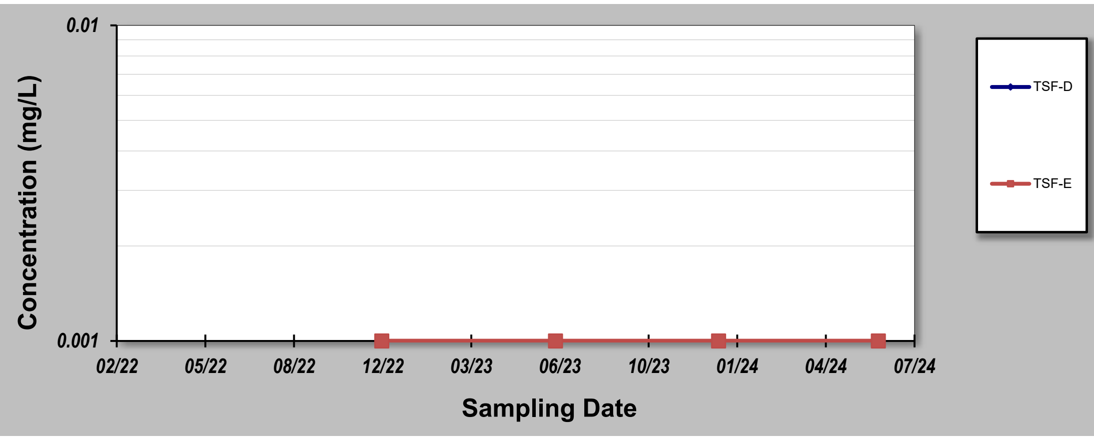
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



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:	1-Aug-24	**Job ID:**	FD-01-21
Facility Name:	Land & Water Consulting	**Constituent:**	Total Cobalt
Conducted By:	Levi Wilkins	**Concentration Units:**	mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL COBALT CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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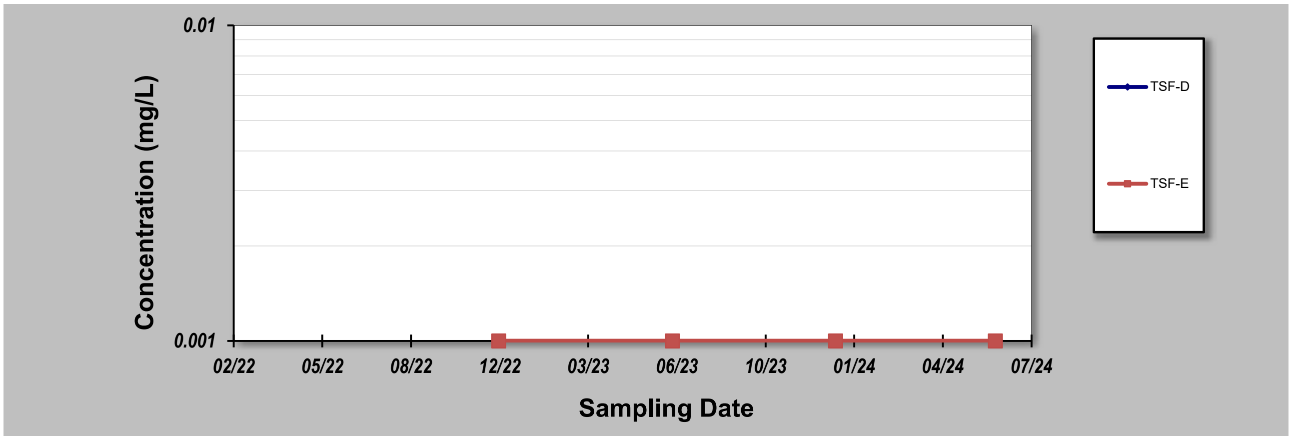
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Copper
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.003	0.003					
3	18-Jun-23	0.015	0.006					
4	19-Dec-23	0.004	0.006					
5	16-Jun-24	0.004	0.004					
6								
7								
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9								
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11								
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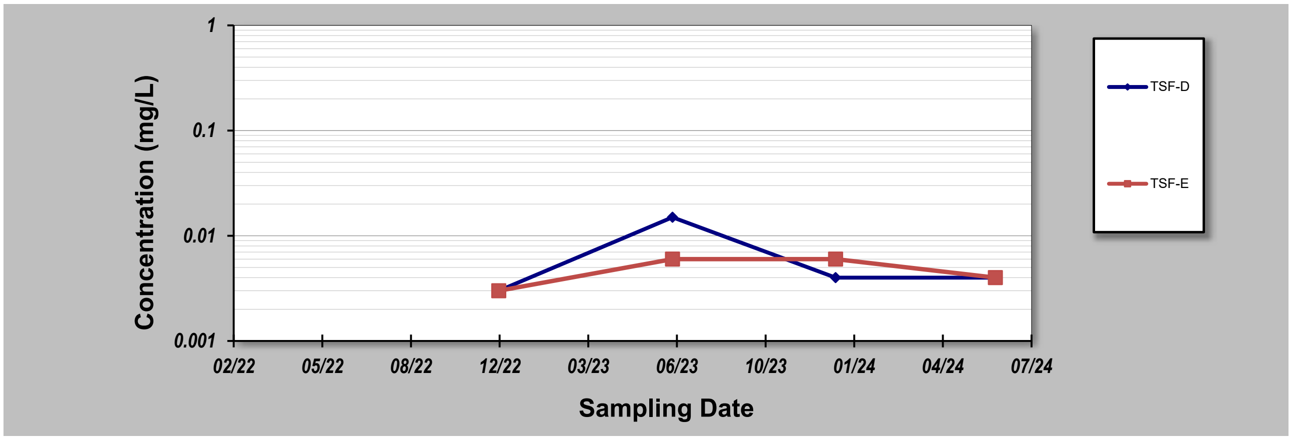
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.87	0.32					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		No Trend	No Trend					



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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Lead
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL LEAD CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
7								
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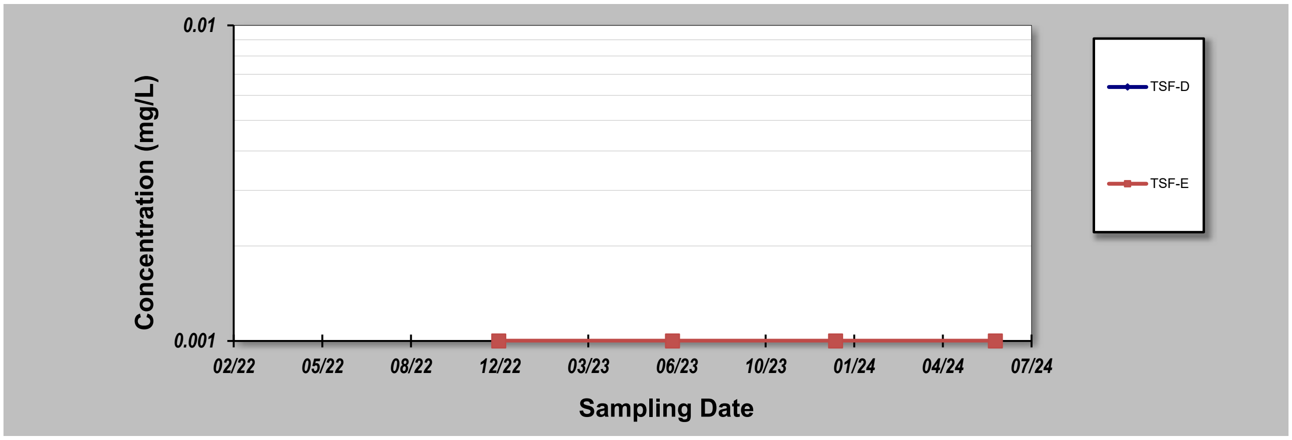
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



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.
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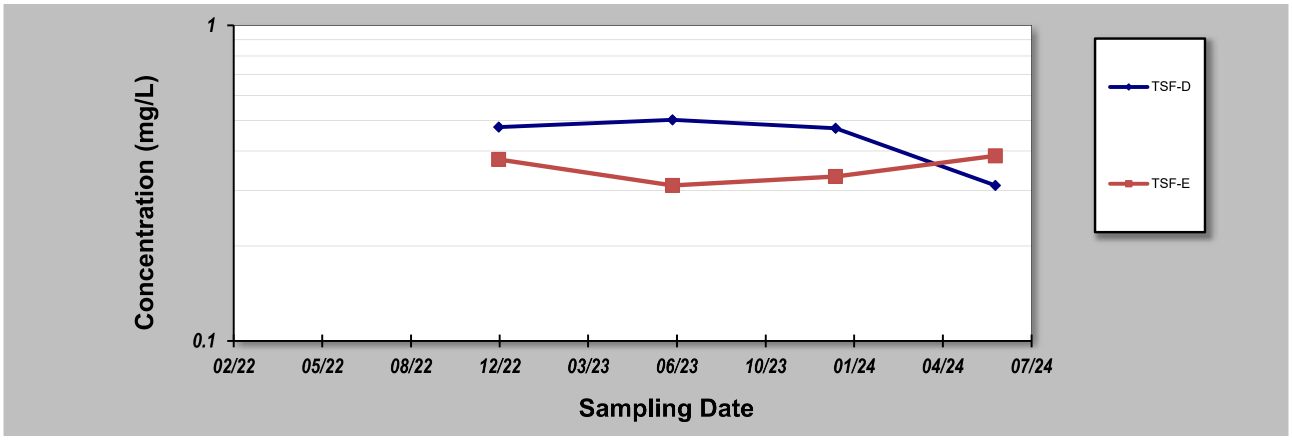
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Manganese
Concentration Units: mg/L

Sampling Event	Sampling Date	TOTAL MANGANESE CONCENTRATION (mg/L)						
Sampling Point ID:		TSF-D	TSF-E					
1	19-Jun-22							
2	4-Dec-22	0.476	0.376					
3	18-Jun-23	0.502	0.311					
4	19-Dec-23	0.472	0.332					
5	16-Jun-24	0.311	0.386					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.20	0.10					
Mann-Kendall Statistic (S):		-4	2					
Confidence Factor:		83.3%	62.5%					
Concentration Trend:		Stable	No Trend					



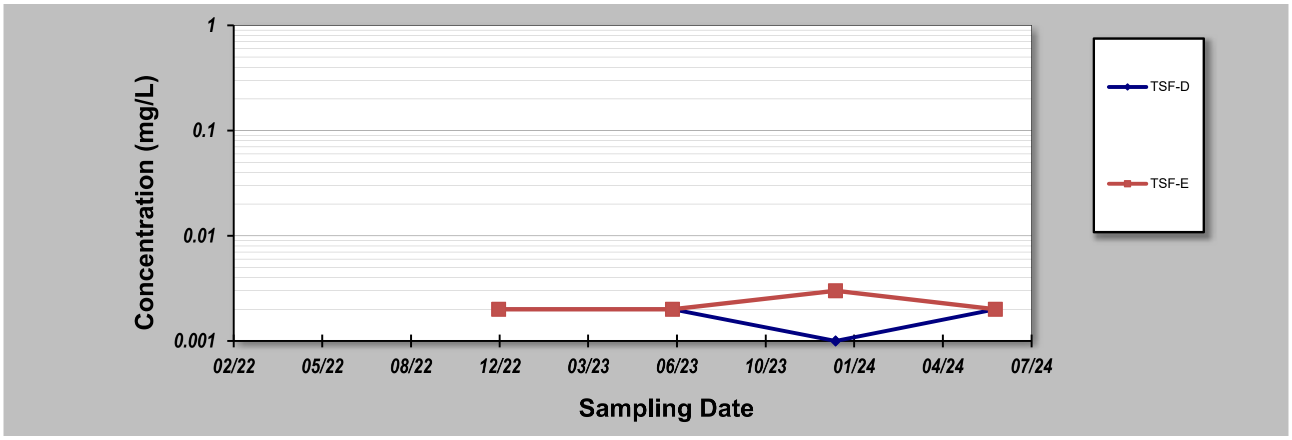
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL MOLYBDENUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.002	0.002					
3	18-Jun-23	0.002	0.002					
4	19-Dec-23	0.001	0.003					
5	16-Jun-24	0.002	0.002					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.29	0.22					
	Mann-Kendall Statistic (S):	-1	1					
	Confidence Factor:	50.0%	50.0%					
	Concentration Trend:	Stable	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.
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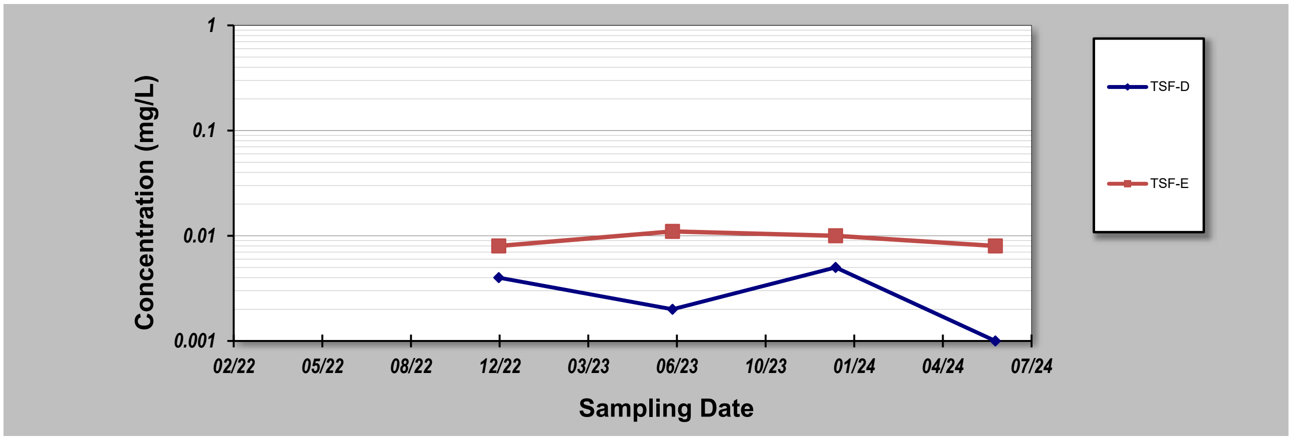
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Nickel
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL NICKEL CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.004	0.008					
3	18-Jun-23	0.002	0.011					
4	19-Dec-23	0.005	0.01					
5	16-Jun-24	0.001	0.008					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.61	0.16					
Mann-Kendall Statistic (S):		-2	-1					
Confidence Factor:		62.5%	50.0%					
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.

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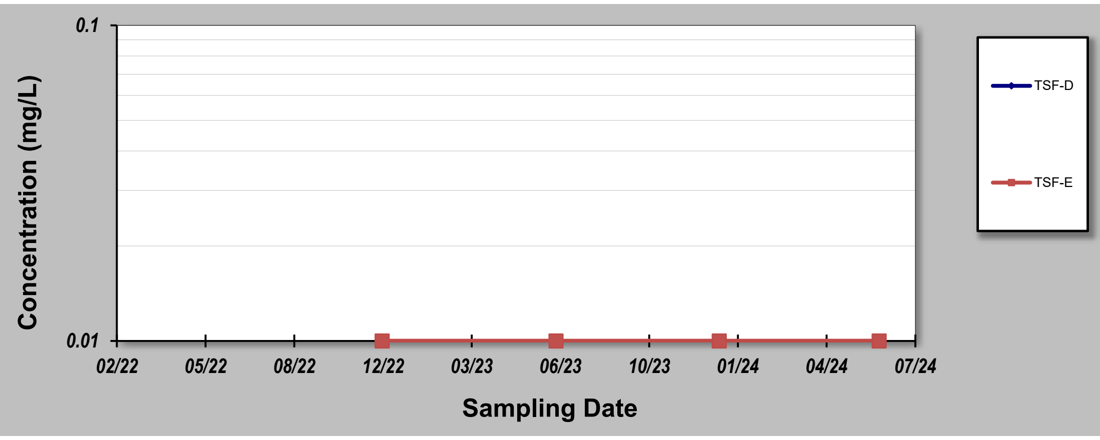
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Selenium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL SELENIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:		37.5%	37.5%					
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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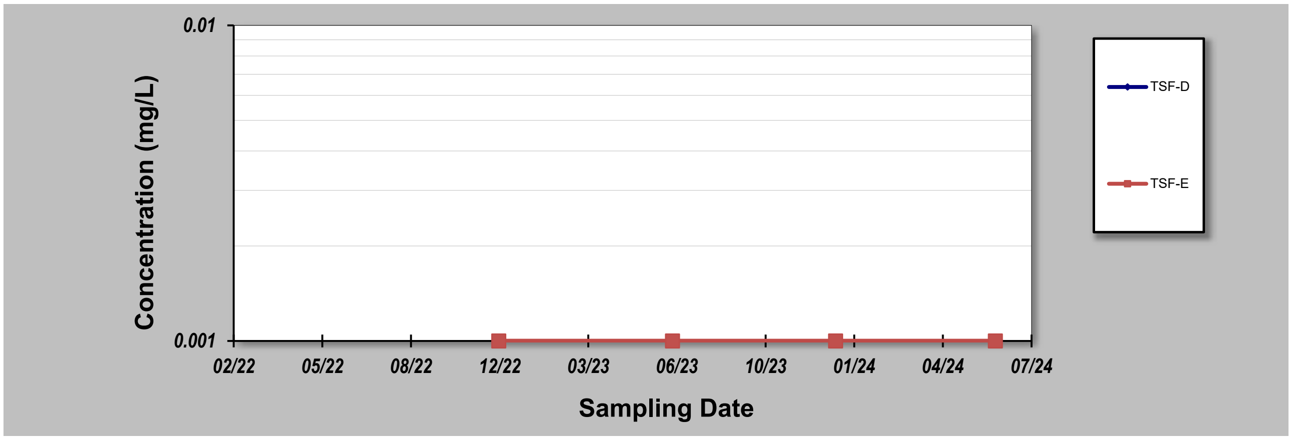
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Silver
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL SILVER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:	37.5%	37.5%					
	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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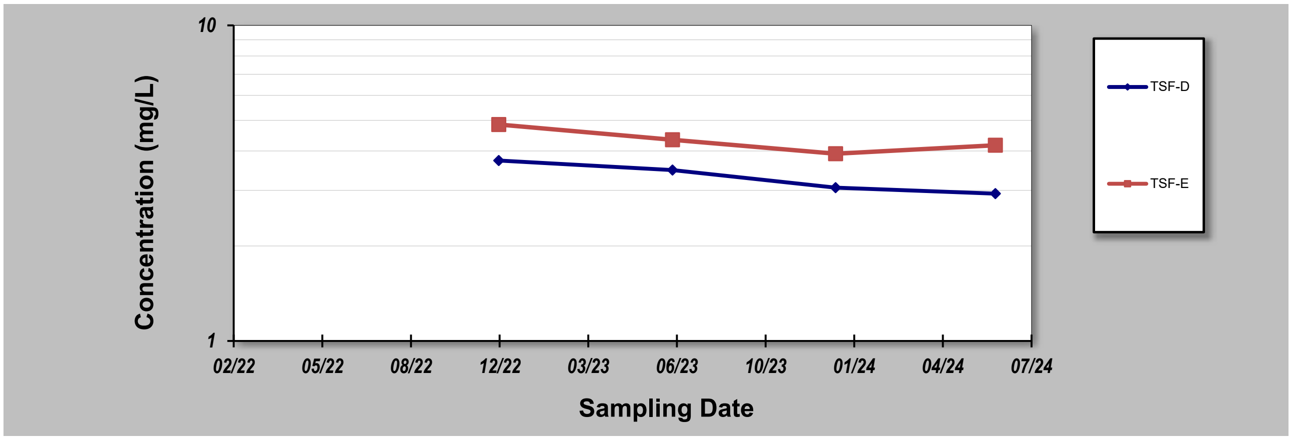
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Strontium
Concentration Units: mg/L

Sampling Event	Sampling Date	TOTAL STRONTIUM CONCENTRATION (mg/L)						
Sampling Point ID:		TSF-D	TSF-E					
1	19-Jun-22							
2	4-Dec-22	3.73	4.85					
3	18-Jun-23	3.48	4.34					
4	19-Dec-23	3.06	3.92					
5	16-Jun-24	2.93	4.17					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.11	0.09					
Mann-Kendall Statistic (S):		-6	-4					
Confidence Factor:		95.8%	83.3%					
Concentration Trend:		Decreasing	Stable					



Notes:

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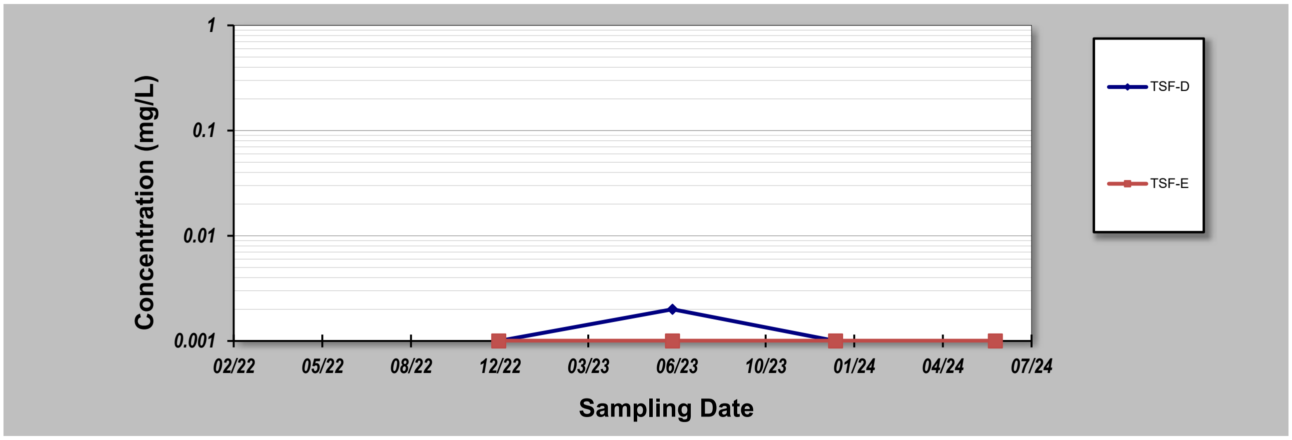
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Tin
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL TIN CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.40	0.00					
Mann-Kendall Statistic (S):		-1	0					
Confidence Factor:		50.0%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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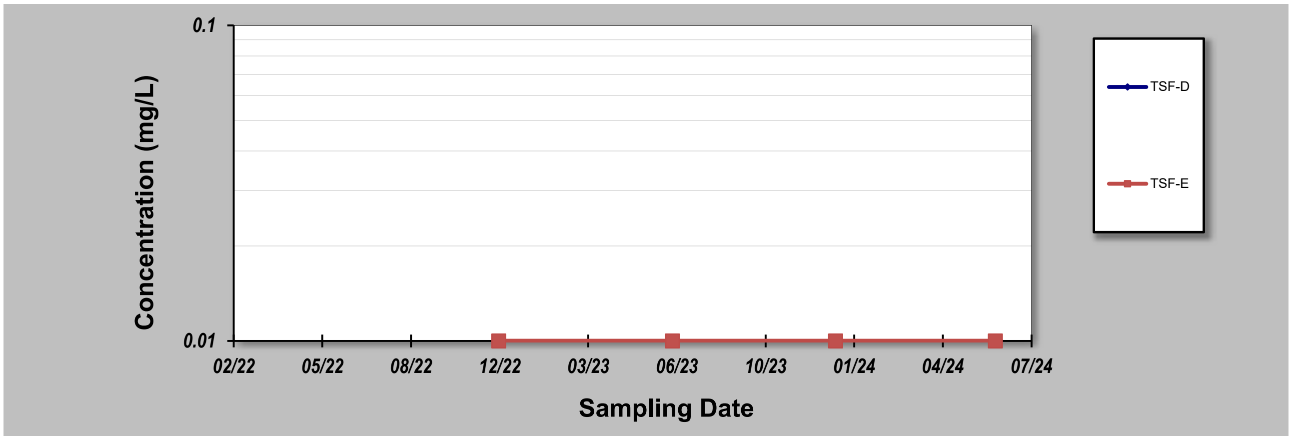
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Titanium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL TITANIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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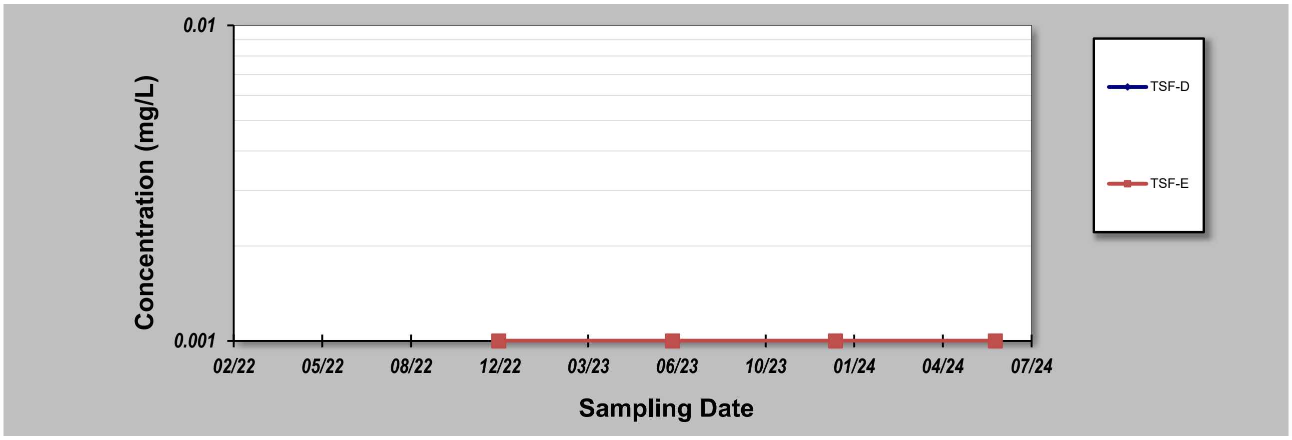
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

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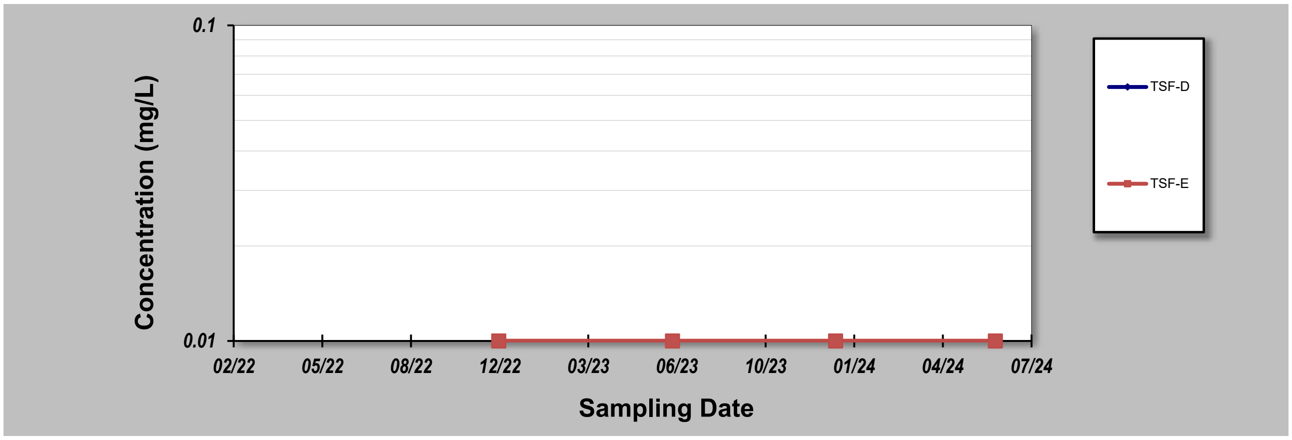
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Vanadium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL VANADIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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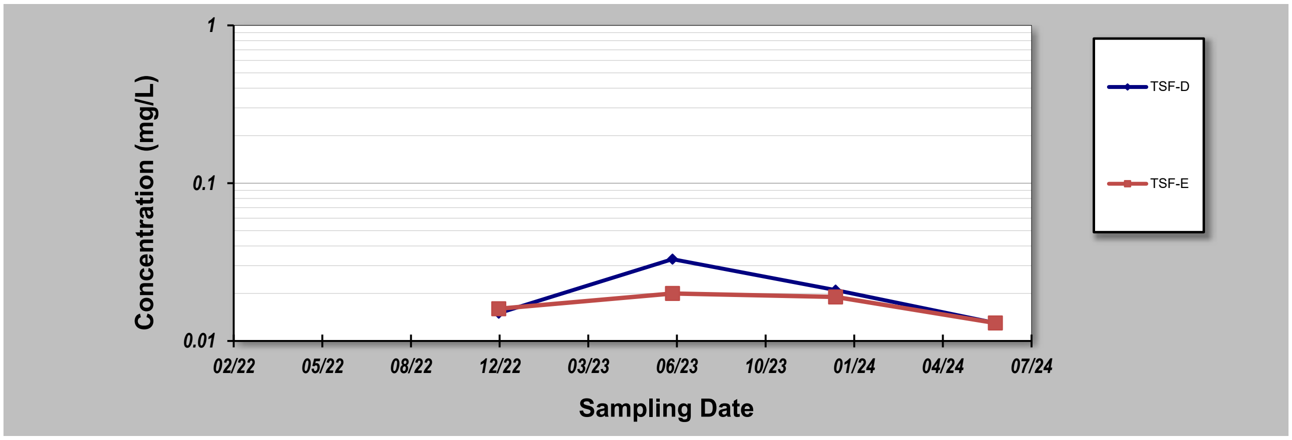
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Zinc
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL ZINC CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.015	0.016					
3	18-Jun-23	0.033	0.02					
4	19-Dec-23	0.021	0.019					
5	16-Jun-24	0.013	0.013					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.44	0.19					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:		62.5%	62.5%					
Concentration Trend:		Stable	Stable					



Notes:

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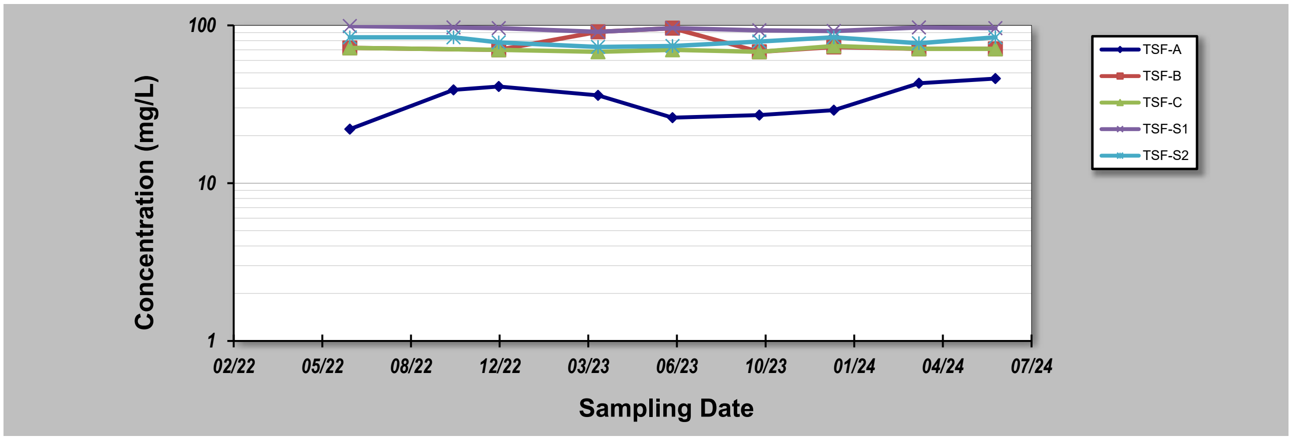
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Bicarbonate Alkalinity
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	BICARBONATE ALKALINITY CONCENTRATION (mg/L)						
1	19-Jun-22	22	72	72	99	84		
2	14-Oct-22	39			97	84		
3	4-Dec-22	41	70	70	96	78		
4	26-Mar-23	36	91	68	91	73		
5	18-Jun-23	26	96	70	96	74		
6	24-Sep-23	27	68	68	93	79		
7	17-Dec-23	29	73	74	92	84		
8	22-Mar-24	43	71	71	97	77		
9	16-Jun-24	46	71	71	96	84		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.25	0.14	0.03	0.03	0.06		
	Mann-Kendall Statistic (S):	14	-3	3	-10	0		
	Confidence Factor:	91.0%	59.4%	59.4%	82.1%	46.0%		
	Concentration Trend:	Prob. Increasing	Stable	No 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Chloride
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**CHLORIDE CONCENTRATION (mg/L)**						
1	19-Jun-22	264	2520	1770	1000	7850		
2	14-Oct-22	3510			1100	8570		
3	4-Dec-22	3650	2660	1920	1050	8030		
4	26-Mar-23	3140	1090	1790	1090	7100		
5	18-Jun-23	272	1030	1790	1030	7060		
6	24-Sep-23	368	2620	1820	1040	7850		
7	17-Dec-23	266	2620	1850	1060	7790		
8	22-Mar-24	3320	2770	1940	1080	7260		
9	16-Jun-24	3660	2810	1940	1100	8110		
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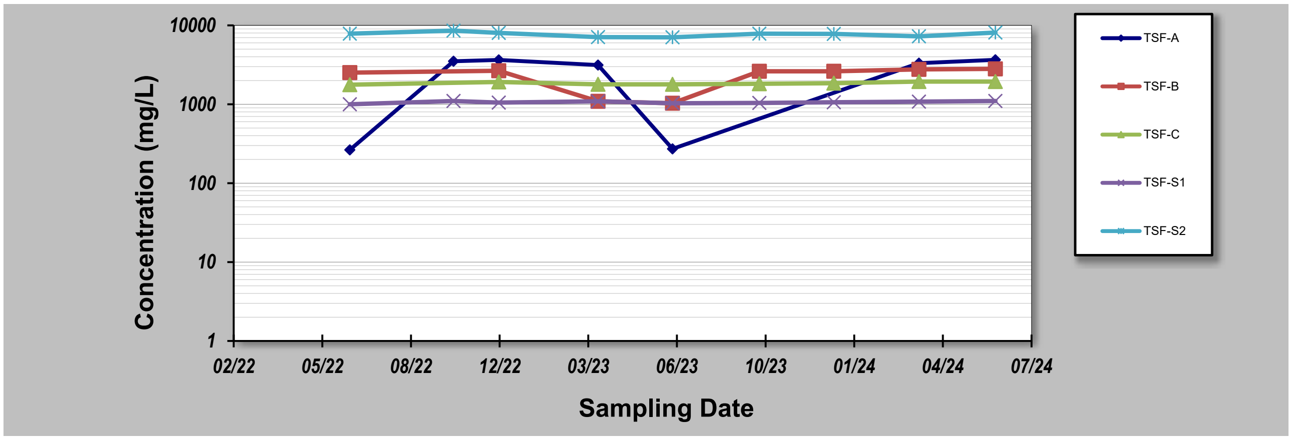
	Coefficient of Variation:	0.62	0.33	0.04	0.03	0.07		
	Mann-Kendall Statistic (S):	12	13	18	11	-5		
	Confidence Factor:	94.9%	92.9%	98.4%	84.6%	65.7%		
	Concentration Trend:	Prob. Increasing	Prob. Increasing	Increasing	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Depth to Water
Concentration Units: m

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DEPTH TO WATER CONCENTRATION (m)**						
1	19-Jun-22	5.39	5.19	12.31	25.61	21.09		
2	14-Oct-22	5.61			25.6	22.34		
3	4-Dec-22	4.95	5.07	12.15	25.59	19.7		
4	26-Mar-23	5.58	4.93	12.09	25.57	20.71		
5	18-Jun-23	5.45	4.97	12.07	25.56	21.28		
6	24-Sep-23	5.56	4.9	11.96	25.57	21.7		
7	17-Dec-23	5.09	4.92	11.92	25.57	22.13		
8	22-Mar-24	5.33	4.99	11.96	25.57	21.45		
9	16-Jun-24	5.86	5.04	11.96	25.62	21.99		
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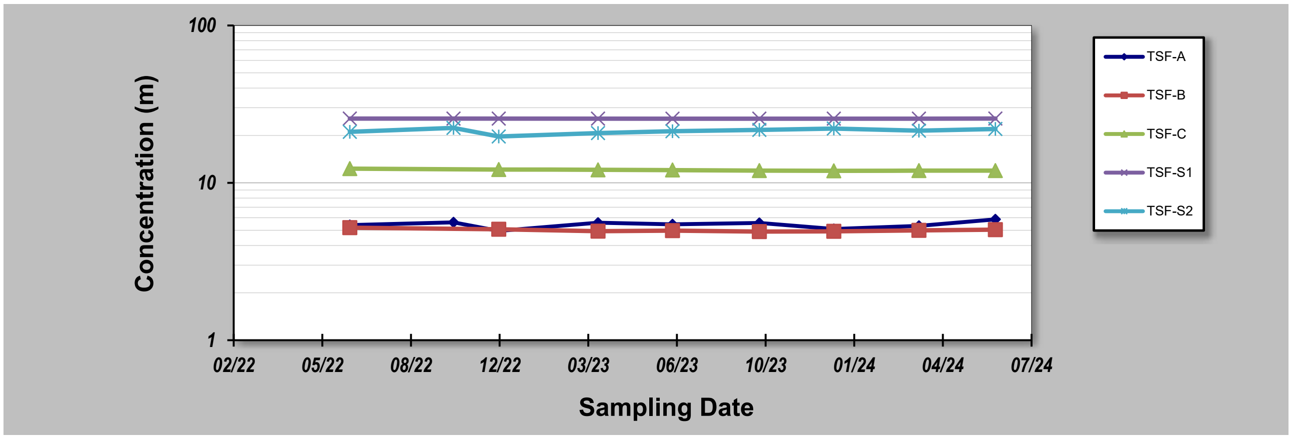
20								
	Coefficient of Variation:	0.05	0.02	0.01	0.00	0.04		
	Mann-Kendall Statistic (S):	2	-6	-21	-8	12		
	Confidence Factor:	54.0%	72.6%	99.6%	76.2%	87.0%		
	Concentration Trend:	No Trend	Stable	Decreasing	Stable	No Trend		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Antimony
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED ANTIMONY CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.01		
2	14-Oct-22	0.001			0.001	0.011		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.016		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.041		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.009		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.011		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.013		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.057		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.012		
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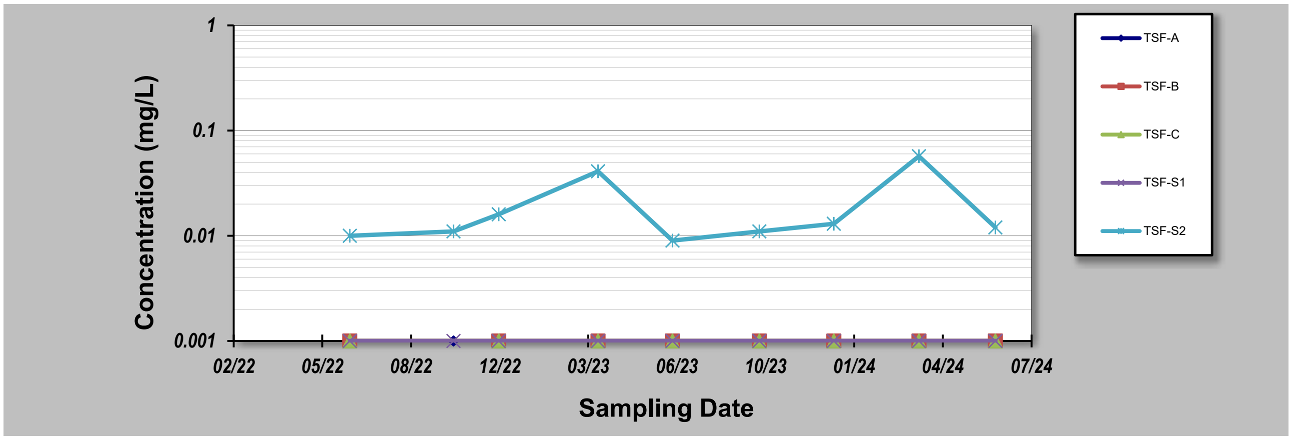
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.85		
	Mann-Kendall Statistic (S):	0	0	0	0	11		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	84.6%		
	Concentration Trend:	Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Arsenic
Concentration Units: mg/L

Sampling Event	Sampling Date	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
		DISSOLVED ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.002	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.002	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.002	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.002	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.002	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.002	0.001	0.001		
9	16-Jun-24	0.002	0.001	0.002	0.001	0.002		
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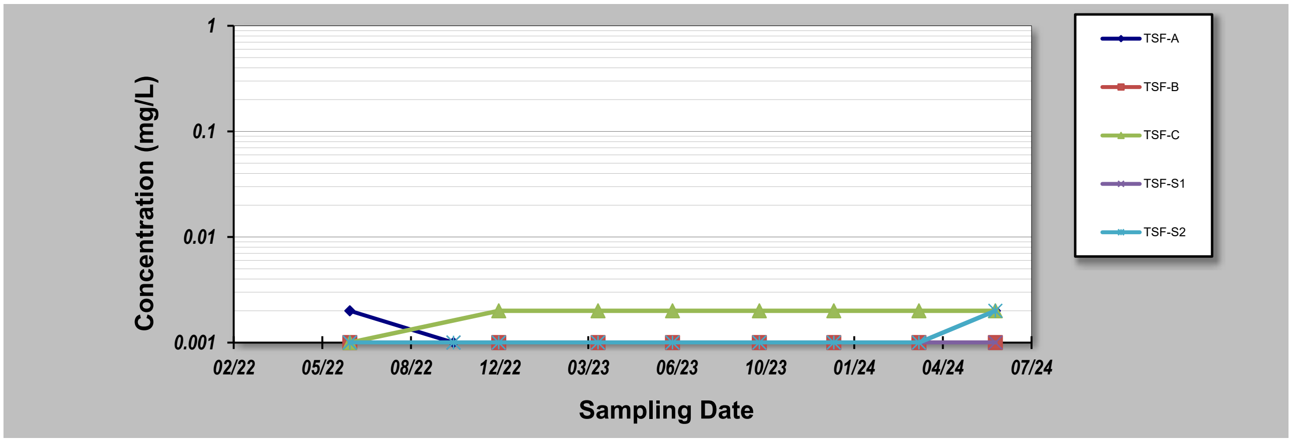
Coefficient of Variation:		0.36	0.00	0.19	0.00	0.30		
Mann-Kendall Statistic (S):		0	0	7	0	8		
Confidence Factor:		46.0%	45.2%	76.4%	46.0%	76.2%		
Concentration Trend:		Stable	Stable	No Trend	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Boron
Concentration Units: mg/L

Sampling Event	Sampling Point ID: Sampling Date	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
		DISSOLVED BORON CONCENTRATION (mg/L)						
1	19-Jun-22	0.35	1.38	1.8	1.36	1.79		
2	14-Oct-22	4.29			1.08	2.35		
3	4-Dec-22	4.14	1.15	1.54	1.1	2.23		
4	26-Mar-23	2.02	1.14	1.61	1.14	2.22		
5	18-Jun-23	0.21	0.84	1.41	0.84	1.96		
6	24-Sep-23	0.4	1.16	1.49	1.13	2.38		
7	17-Dec-23	0.25	1.15	1.46	0.98	1.79		
8	22-Mar-24	3.51	1.12	1.51	1.12	1.92		
9	16-Jun-24	4.22	1.18	1.56	1.05	2.49		
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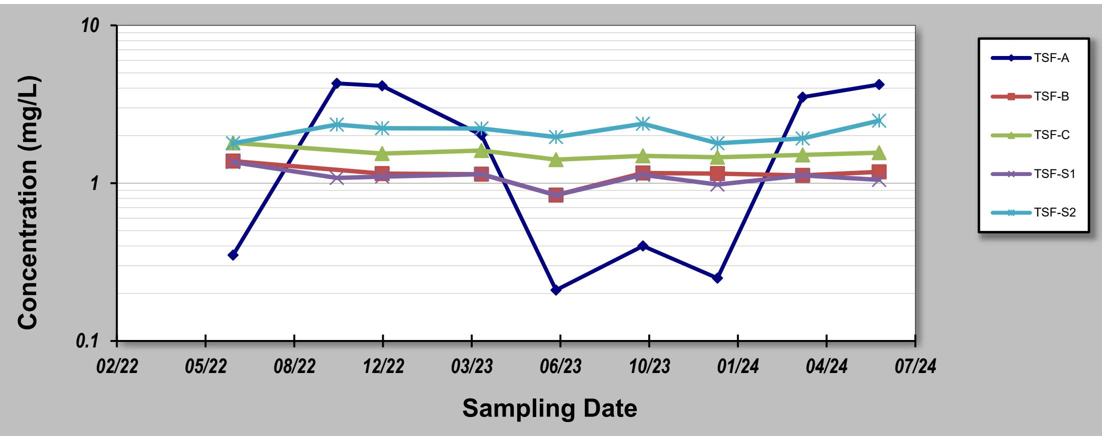
	Coefficient of Variation:	0.87	0.13	0.08	0.13	0.12		
	Mann-Kendall Statistic (S):	0	-3	-6	-10	3		
	Confidence Factor:	46.0%	59.4%	72.6%	82.1%	58.0%		
	Concentration Trend:	Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cadmium
Concentration Units: mg/L

Sampling Point ID:		**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DISSOLVED CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.0001	0.0001	0.0001	0.0001	0.0001		
2	14-Oct-22	0.0001			0.0002	0.0002		
3	4-Dec-22	0.0001	0.0001	0.0001	0.0003	0.0002		
4	26-Mar-23	0.0001	0.0002	0.0001	0.0002	0.0004		
5	18-Jun-23	0.0001	0.0002	0.0001	0.0002	0.0002		
6	24-Sep-23	0.0001	0.0001	0.0001	0.0003	0.0002		
7	17-Dec-23	0.0001	0.0001	0.0001	0.0003	0.0003		
8	22-Mar-24	0.0001	0.0001	0.0001	0.0003	0.0004		
9	16-Jun-24	0.0001	0.0001	0.0001	0.0002	0.0002		
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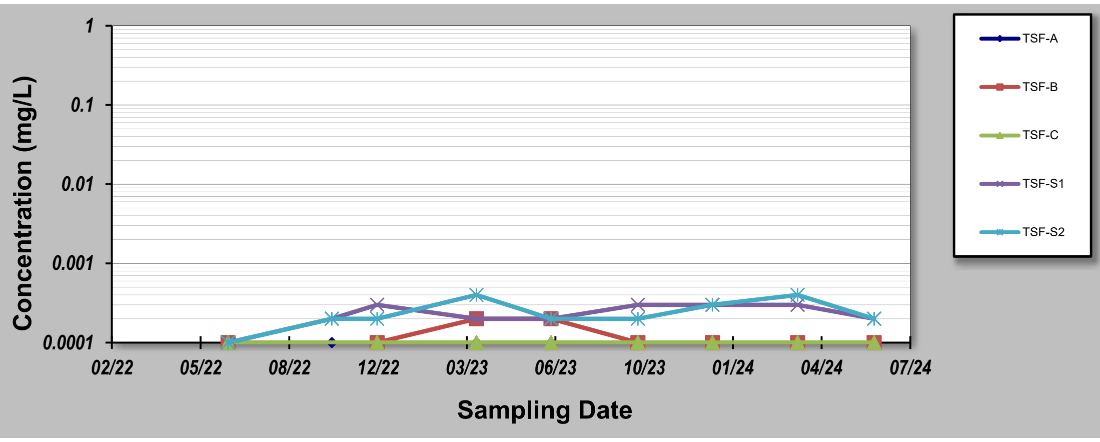
Coefficient of Variation:		0.00	0.37	0.00	0.30	0.41		
Mann-Kendall Statistic (S):		0	-4	0	12	13		
Confidence Factor:		46.0%	64.0%	45.2%	87.0%	89.0%		
Concentration Trend:		Stable	Stable	Stable	No Trend	No Trend		



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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Calcium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED CALCIUM CONCENTRATION (mg/L)						
1	19-Jun-22	61	484	323	165	1070		
2	14-Oct-22	463			180	1230		
3	4-Dec-22	431	518	351	173	1170		
4	26-Mar-23	221	184	370	184	995		
5	18-Jun-23	70	188	374	188	1140		
6	24-Sep-23	85	585	383	195	1190		
7	17-Dec-23	65	539	342	178	1090		
8	22-Mar-24	363	561	366	192	830		
9	16-Jun-24	423	563	361	182	1070		
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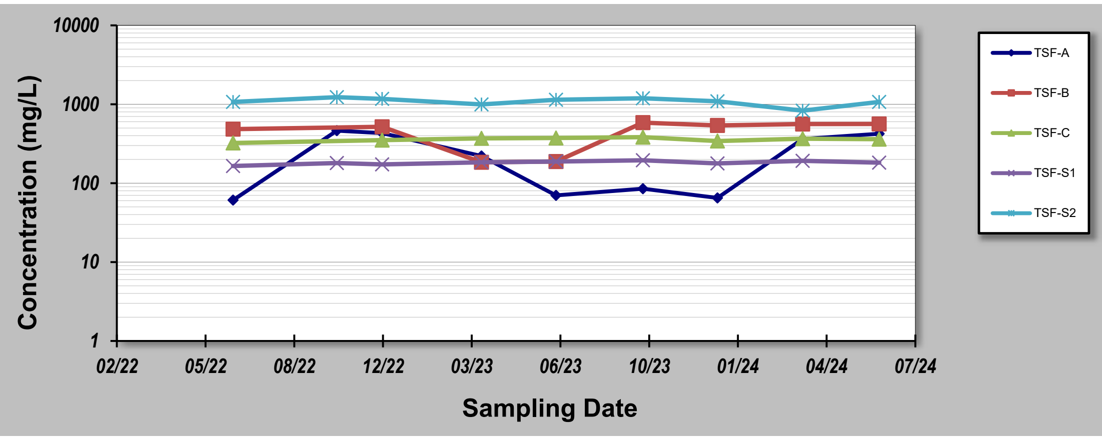
Coefficient of Variation:		0.73	0.37	0.05	0.05	0.11		
Mann-Kendall Statistic (S):		0	14	6	16	-11		
Confidence Factor:		46.0%	94.6%	72.6%	94.0%	84.6%		
Concentration Trend:		Stable	Prob. Increasing	No Trend	Prob. Increasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Chromium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED CHROMIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.004	0.002	0.002		
2	14-Oct-22	0.002			0.002	0.002		
3	4-Dec-22	0.002	0.001	0.004	0.002	0.002		
4	26-Mar-23	0.002	0.002	0.004	0.002	0.002		
5	18-Jun-23	0.001	0.002	0.004	0.002	0.002		
6	24-Sep-23	0.001	0.001	0.004	0.002	0.002		
7	17-Dec-23	0.001	0.001	0.004	0.002	0.002		
8	22-Mar-24	0.002	0.001	0.004	0.002	0.001		
9	16-Jun-24	0.004	0.001	0.004	0.002	0.002		
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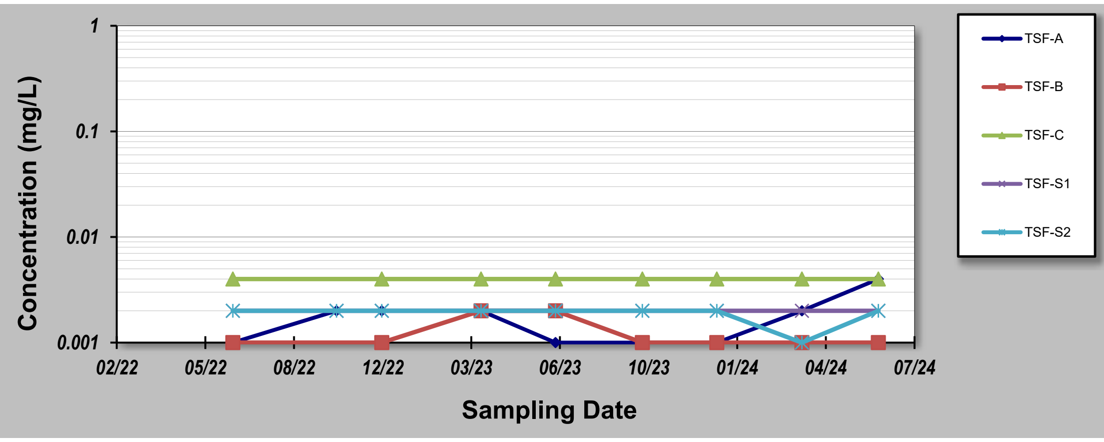
	Coefficient of Variation:	0.55	0.37	0.00	0.00	0.18		
	Mann-Kendall Statistic (S):	6	-4	0	0	-6		
	Confidence Factor:	69.4%	64.0%	45.2%	46.0%	69.4%		
	Concentration Trend:	No Trend	Stable	Stable	Stable	Stable		



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cobalt
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED COBALT CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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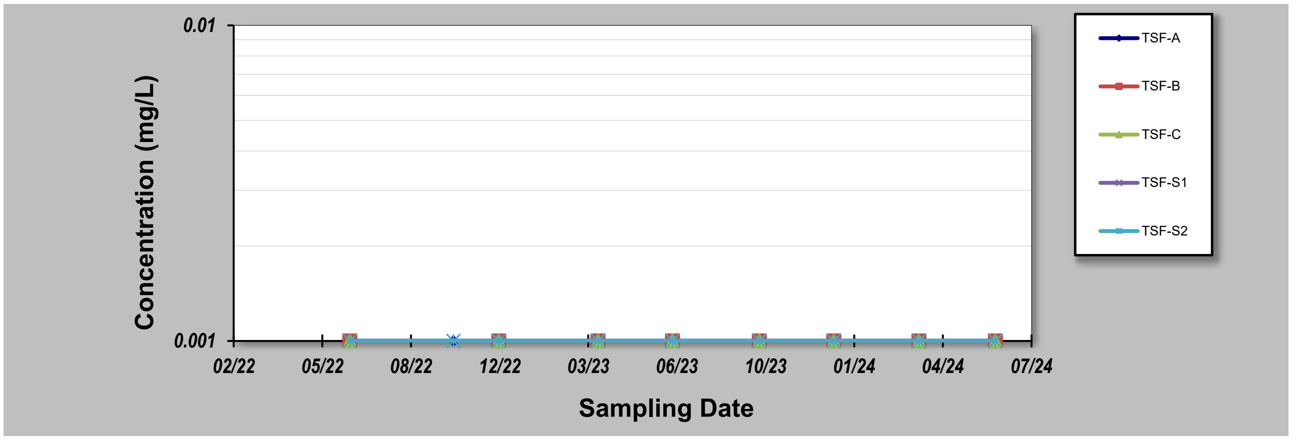
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.00		
	Mann-Kendall Statistic (S):	0	0	0	0	0		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	46.0%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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.

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GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Copper
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DISSOLVED COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22	0.013	0.001	0.001	0.002	0.007		
2	14-Oct-22	0.008			0.001	0.006		
3	4-Dec-22	0.007	0.003	0.001	0.002	0.01		
4	26-Mar-23	0.01	0.003	0.002	0.003	0.019		
5	18-Jun-23	0.012	0.001	0.001	0.001	0.008		
6	24-Sep-23	0.013	0.002	0.001	0.002	0.007		
7	17-Dec-23	0.014	0.002	0.002	0.002	0.007		
8	22-Mar-24	0.008	0.001	0.001	0.001	0.024		
9	16-Jun-24	0.007	0.002	0.001	0.001	0.007		
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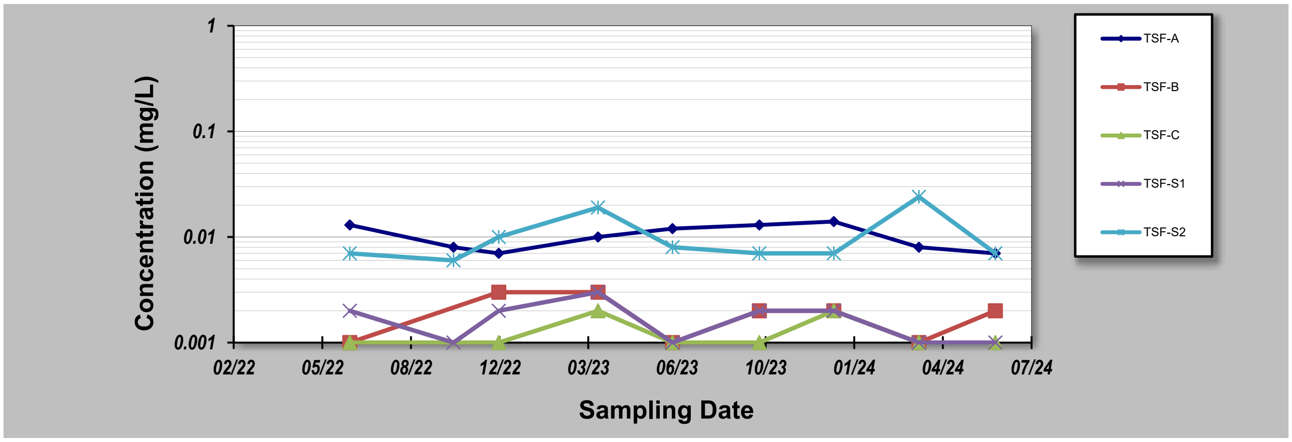
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.28	0.45	0.37	0.42	0.61		
	Mann-Kendall Statistic (S):	-1	-3	0	-8	4		
	Confidence Factor:	50.0%	59.4%	45.2%	76.2%	61.9%		
	Concentration Trend:	Stable	Stable	Stable	Stable	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Manganese
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED MANGANESE CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.002	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.002		
4	26-Mar-23	0.001	0.002	0.001	0.002	0.003		
5	18-Jun-23	0.001	0.003	0.001	0.003	0.001		
6	24-Sep-23	0.001	0.002	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.002	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.002	0.004		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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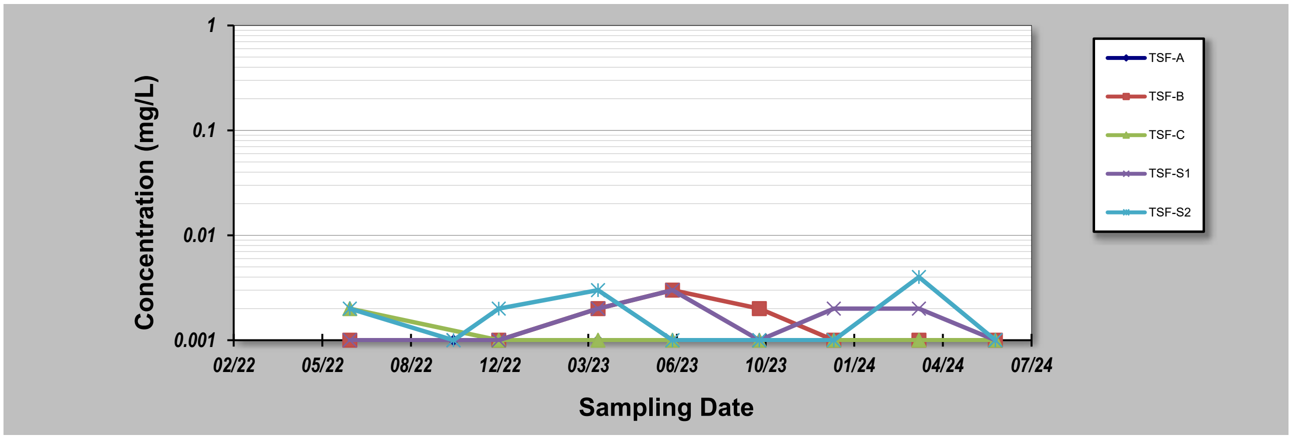
Coefficient of Variation:		0.00	0.50	0.31	0.47	0.61		
Mann-Kendall Statistic (S):		0	-3	-7	7	-3		
Confidence Factor:		46.0%	59.4%	76.4%	72.8%	58.0%		
Concentration Trend:		Stable	Stable	Stable	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED MOLYBDENUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.008	0.006	0.008	0.002	0.003		
2	14-Oct-22	0.008			0.024	0.01		
3	4-Dec-22	0.007	0.006	0.003	0.004	0.004		
4	26-Mar-23	0.006	0.003	0.002	0.003	0.005		
5	18-Jun-23	0.009	0.003	0.002	0.003	0.003		
6	24-Sep-23	0.009	0.006	0.002	0.003	0.004		
7	17-Dec-23	0.009	0.007	0.003	0.002	0.003		
8	22-Mar-24	0.004	0.006	0.002	0.003	0.008		
9	16-Jun-24	0.005	0.007	0.003	0.003	0.004		
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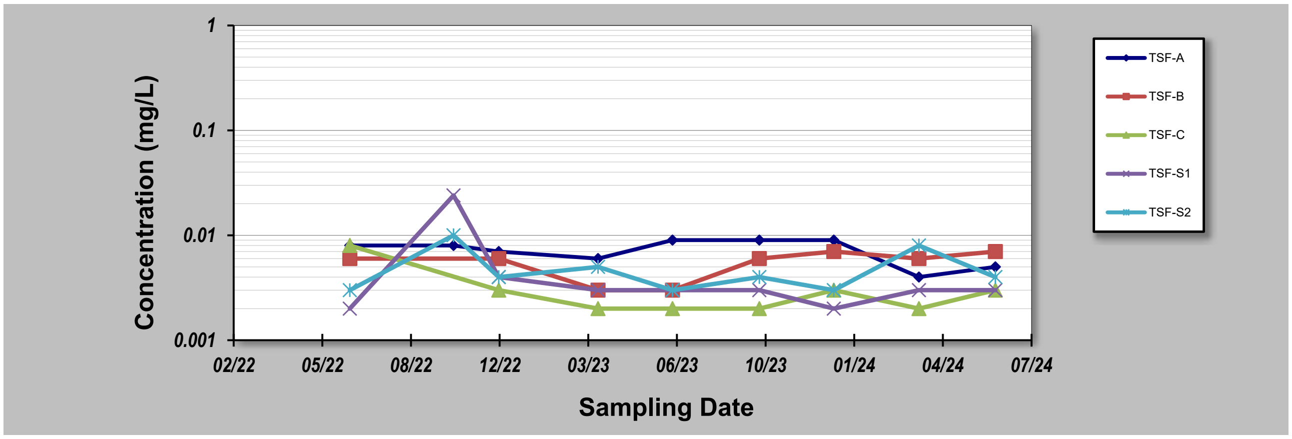
20								
	Coefficient of Variation:	0.26	0.29	0.65	1.35	0.51		
	Mann-Kendall Statistic (S):	-6	10	-5	-7	0		
	Confidence Factor:	69.4%	86.2%	68.3%	72.8%	46.0%		
	Concentration Trend:	Stable	No Trend	Stable	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Potassium
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED POTASSIUM CONCENTRATION (mg/L)						
1	19-Jun-22	7	31	28	18	66		
2	14-Oct-22	52			19	82		
3	4-Dec-22	50	35	32	19	78		
4	26-Mar-23	25	19	31	19	64		
5	18-Jun-23	9	20	32	20	71		
6	24-Sep-23	10	37	33	20	73		
7	17-Dec-23	9	37	33	20	77		
8	22-Mar-24	41	35	30	19	57		
9	16-Jun-24	46	35	32	20	69		
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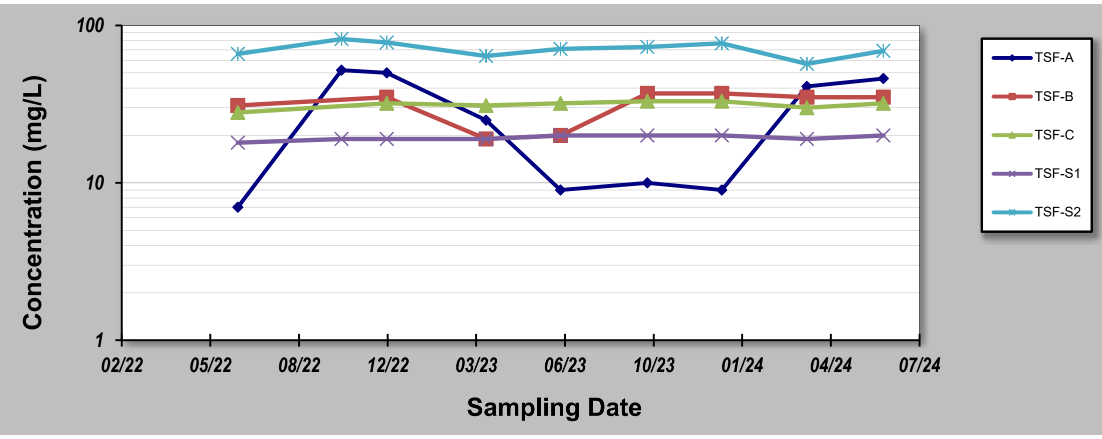
20								
Coefficient of Variation:		0.71	0.24	0.05	0.04	0.11		
Mann-Kendall Statistic (S):		1	8	8	18	-8		
Confidence Factor:		50.0%	80.1%	80.1%	96.2%	76.2%		
Concentration Trend:		No Trend	No Trend	No Trend	Increasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED SELENIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.01	0.02	0.01	0.01	0.01		
2	14-Oct-22	0.02			0.01	0.01		
3	4-Dec-22	0.02	0.02	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.02	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.02	0.01	0.01	0.01		
8	22-Mar-24	0.02	0.02	0.01	0.01	0.01		
9	16-Jun-24	0.02	0.02	0.01	0.01	0.01		
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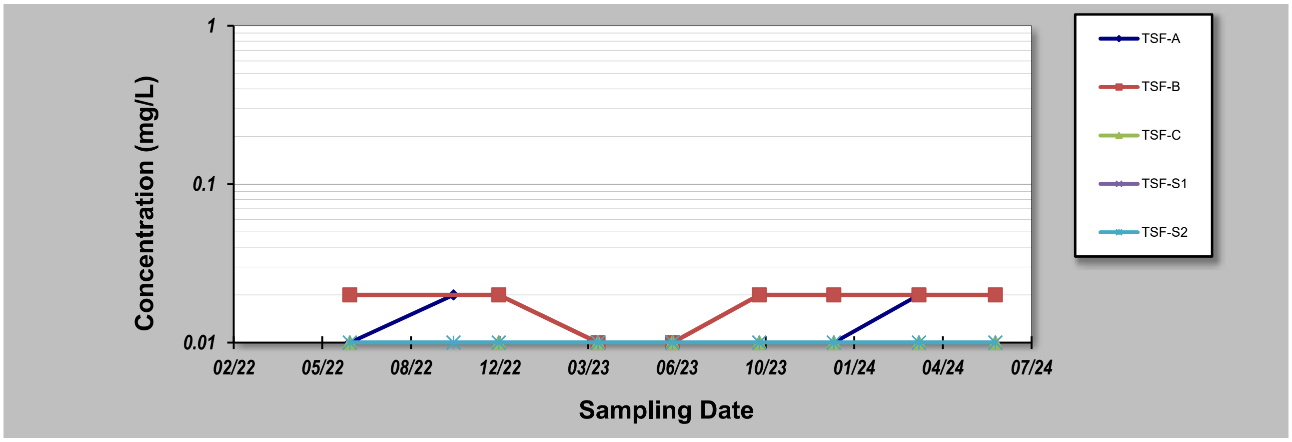
	Coefficient of Variation:	0.36	0.26	0.00	0.00	0.00		
	Mann-Kendall Statistic (S):	4	4	0	0	0		
	Confidence Factor:	61.9%	64.0%	45.2%	46.0%	46.0%		
	Concentration Trend:	No Trend	No Trend	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Silver
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED SILVER CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.003		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.003	0.004	0.003	0.01		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.002		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.002		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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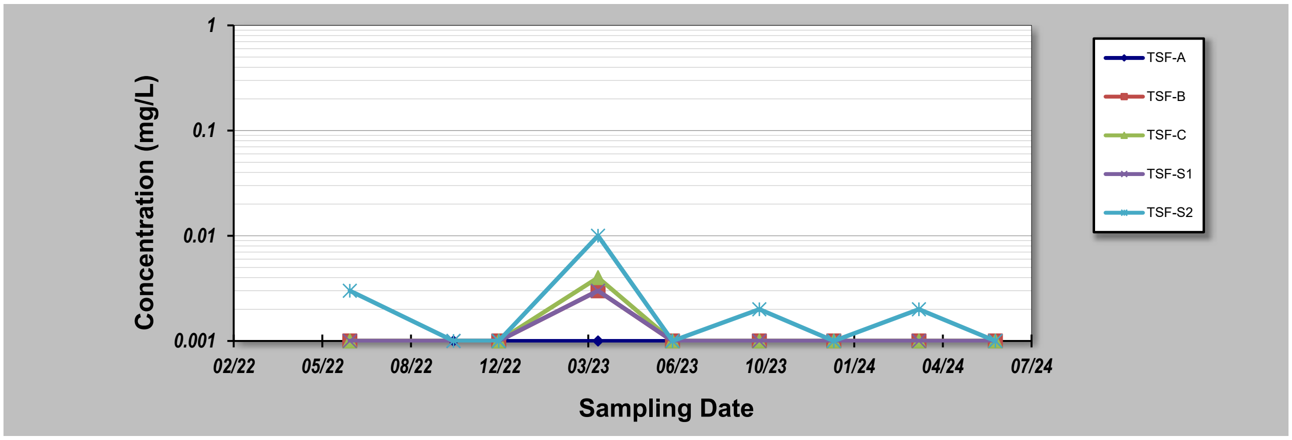
Coefficient of Variation:		0.00	0.57	0.77	0.55	1.19		
Mann-Kendall Statistic (S):		0	-3	-3	-2	-5		
Confidence Factor:		46.0%	59.4%	59.4%	54.0%	65.7%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Strontium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DISSOLVED STRONTIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.51	6.13	4.35	2.2	14.7		
2	14-Oct-22	6.03			2.46	15.5		
3	4-Dec-22	4.88	5.56	4.07	2.08	12.3		
4	26-Mar-23	2.62	2.22	4.24	2.22	11.5		
5	18-Jun-23	0.522	2.4	4.45	2.4	13.8		
6	24-Sep-23	0.679	5.85	4.08	2.11	12.3		
7	17-Dec-23	0.499	5.98	4.23	2.26	12.7		
8	22-Mar-24	4.96	6.26	4.26	2.23	10.4		
9	16-Jun-24	5.52	6.27	4.31	2.3	13		
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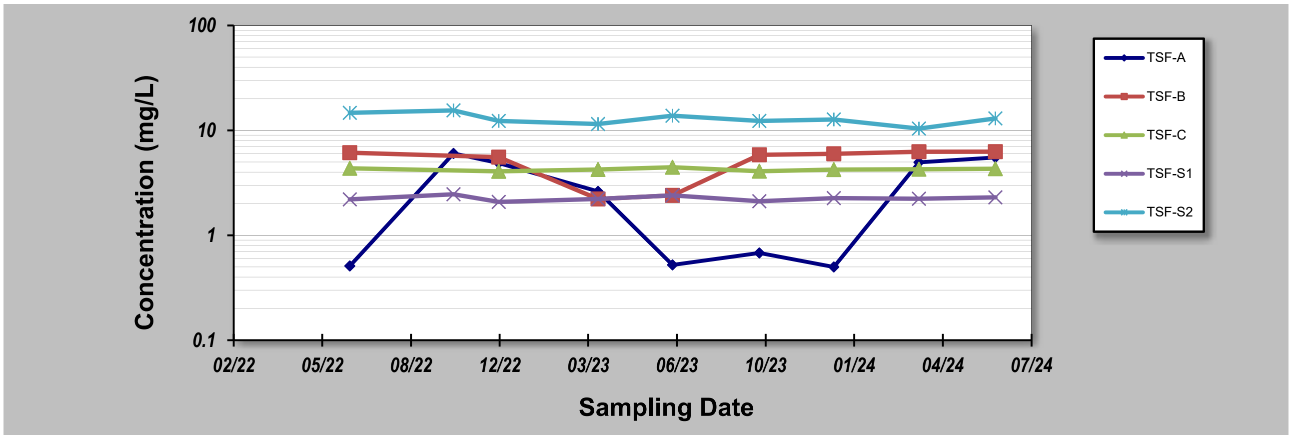
	Coefficient of Variation:	0.83	0.34	0.03	0.05	0.12		
	Mann-Kendall Statistic (S):	2	14	4	6	-11		
	Confidence Factor:	54.0%	94.6%	64.0%	69.4%	84.6%		
	Concentration Trend:	No Trend	Prob. Increasing	No Trend	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Tin
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED TIN CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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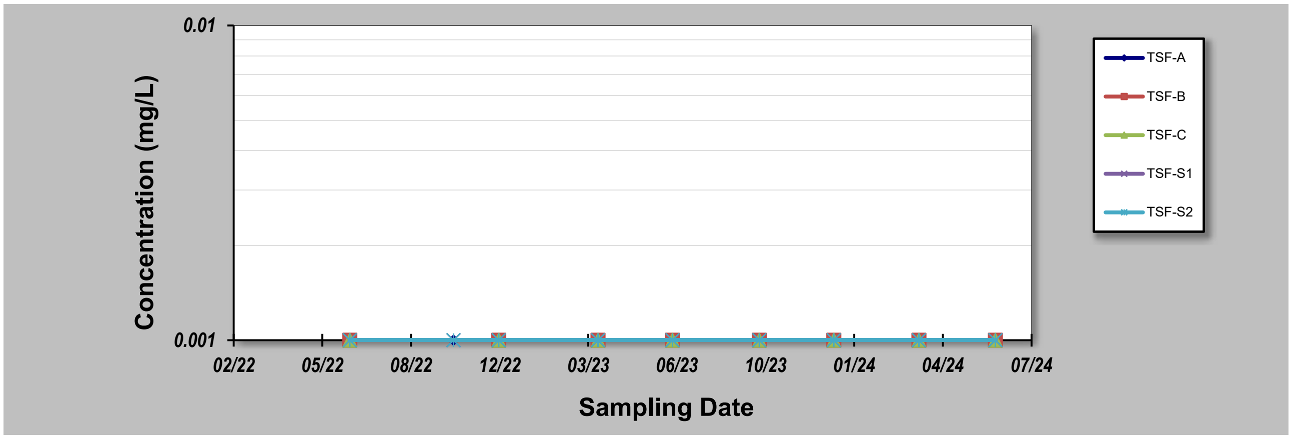
Coefficient of Variation:		0.00	0.00	0.00	0.00	0.00		
Mann-Kendall Statistic (S):		0	0	0	0	0		
Confidence Factor:		46.0%	45.2%	45.2%	46.0%	46.0%		
Concentration Trend:		Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.002	0.002	0.002	0.009		
2	14-Oct-22	0.001			0.005	0.007		
3	4-Dec-22							
4	26-Mar-23	0.001	0.002	0.001	0.002	0.005		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.005		
6	24-Sep-23	0.001	0.001	0.001	0.002	0.005		
7	17-Dec-23	0.001	0.001	0.002	0.001	0.002		
8	22-Mar-24	0.001	0.001	0.001	0.002	0.007		
9	16-Jun-24	0.001	0.001	0.002	0.002	0.006		
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17								
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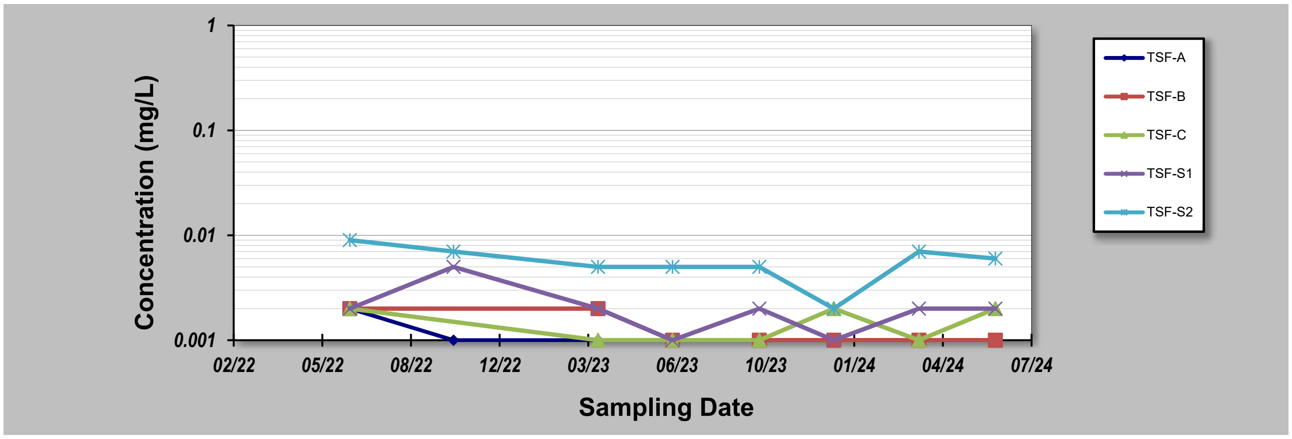
19								
20								
Coefficient of Variation:		0.31	0.38	0.37	0.59	0.36		
Mann-Kendall Statistic (S):		-7	-10	2	-5	-8		
Confidence Factor:		76.4%	90.7%	55.7%	68.3%	80.1%		
Concentration Trend:		Stable	Prob. Decreasing	No Trend	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Vanadium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED VANADIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.01	0.01	0.01	0.01	0.01		
2	14-Oct-22	0.01			0.01	0.01		
3	4-Dec-22	0.01	0.01	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.01	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.01	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.01	0.01	0.01	0.01		
9	16-Jun-24	0.01	0.01	0.01	0.01	0.01		
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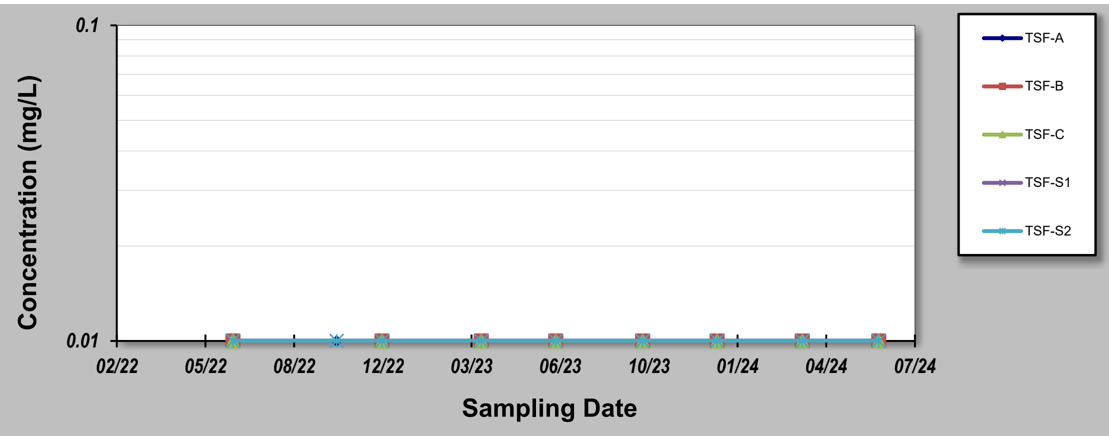
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.00		
	Mann-Kendall Statistic (S):	0	0	0	0	0		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	46.0%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Zinc
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED ZINC CONCENTRATION (mg/L)						
1	19-Jun-22	0.025	0.009	0.008	0.023	0.034		
2	14-Oct-22	0.014			0.02	0.031		
3	4-Dec-22	0.016	0.01	0.009	0.022	0.048		
4	26-Mar-23	0.021	0.028	0.019	0.028	0.048		
5	18-Jun-23	0.021	0.023	0.009	0.023	0.034		
6	24-Sep-23	0.025	0.012	0.008	0.024	0.033		
7	17-Dec-23	0.018	0.007	0.011	0.030	0.040		
8	22-Mar-24	0.013	0.009	0.007	0.027	0.058		
9	16-Jun-24	0.02	0.010	0.007	0.026	0.036		
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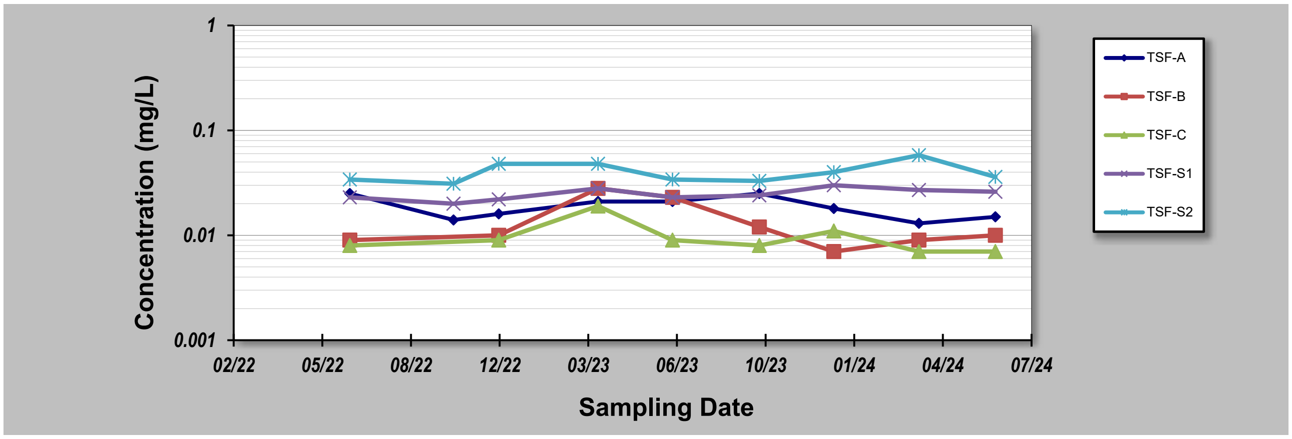
Coefficient of Variation:		0.24	0.57	0.41	0.13	0.23		
Mann-Kendall Statistic (S):		-8	-4	-9	17	8		
Confidence Factor:		76.2%	64.0%	83.2%	95.1%	76.2%		
Concentration Trend:		Stable	Stable	Stable	Increasing	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Electrical Conductivity
Concentration Units: S/cm

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**ELECTRICAL CONDUCTIVITY CONCENTRATION (S/cm)**						
1	19-Jun-22	1220	7940	6630	3840	22800		
2	14-Oct-22	11100			3960	24600		
3	4-Dec-22	12400	8820	6410	3720	24600		
4	26-Mar-23	10600	4250	7040	4250	22900		
5	18-Jun-23	1230	3960	7060	3960	21400		
6	24-Sep-23	1540	8260	6640	3990	22700		
7	17-Dec-23	1370	10600	8230	4180	27000		
8	22-Mar-24	11600	9030	7140	4030	22000		
9	16-Jun-24	12300	9230	7160	4050	24300		
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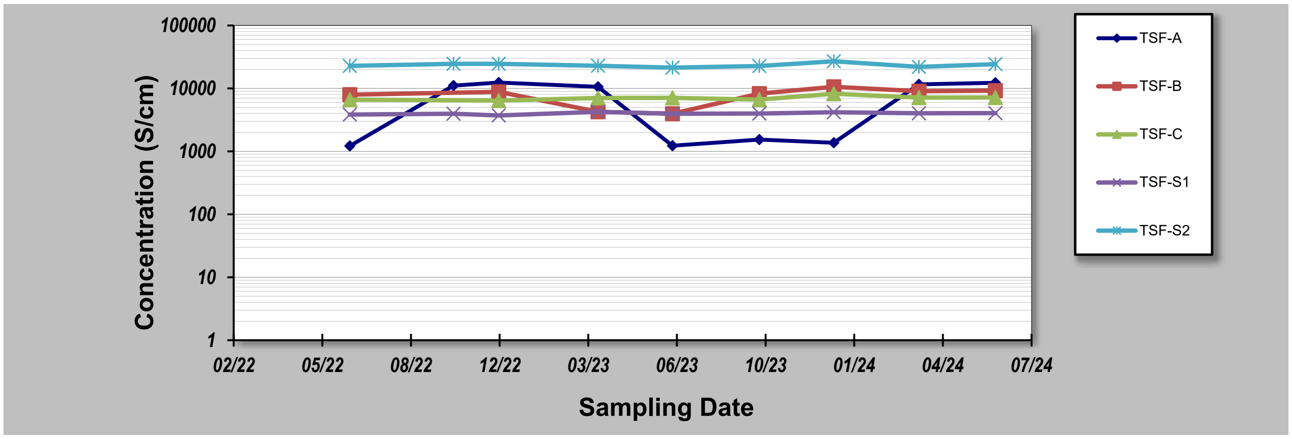
	Coefficient of Variation:	0.77	0.31	0.08	0.04	0.07		
	Mann-Kendall Statistic (S):	8	12	18	17	-3		
	Confidence Factor:	76.2%	91.1%	98.4%	95.1%	58.0%		
	Concentration Trend:	No Trend	Prob. Increasing	Increasing	Increasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: pH
Concentration Units: pH Unit

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**PH CONCENTRATION (pH Unit)**						
1	19-Jun-22	7.34	7.49	7.65	7.73	7.54		
2	14-Oct-22	7.41			7.76	7.56		
3	4-Dec-22	7.23	7.46	7.55	7.67	7.53		
4	26-Mar-23	7.06	7.61	7.59	7.61	7.56		
5	18-Jun-23	6.78	7.31	7.19	7.31	7.22		
6	24-Sep-23	7.01	7.56	7.67	7.81	7.6		
7	17-Dec-23	7.06	7.65	7.74	7.14	7.6		
8	22-Mar-24	7.2	7.3	7.44	7.5	7.34		
9	16-Jun-24	7.15	7.22	7.37	7.37	7.24		
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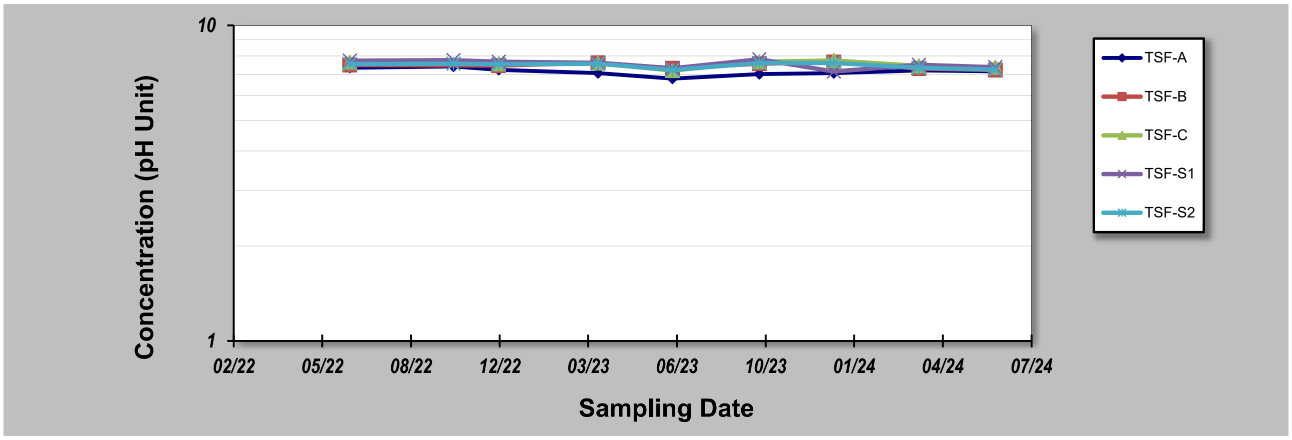
Coefficient of Variation:		0.03	0.02	0.02	0.03	0.02		
Mann-Kendall Statistic (S):		-11	-8	-4	-16	-4		
Confidence Factor:		84.6%	80.1%	64.0%	94.0%	61.9%		
Concentration Trend:		Stable	Stable	Stable	Prob. Decreasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Sulfate as SO4 - Turbidimetric (Dissolved)
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	SULFATE AS SO4 - TURBIDIMETRIC (DISSOLVED) CONCENTRATION (mg/L)						
1	19-Jun-22	185	937	751	349	2130		
2	14-Oct-22	1420			372	2330		
3	4-Dec-22	1530	980	792	363	2210		
4	26-Mar-23	1270	358	693	358	1920		
5	18-Jun-23	193	353	772	353	1890		
6	24-Sep-23	231	958	763	352	2070		
7	17-Dec-23	194	982	775	364	2180		
8	22-Mar-24	1340	988	765	366	1900		
9	16-Jun-24	1500	954	759	356	2090		
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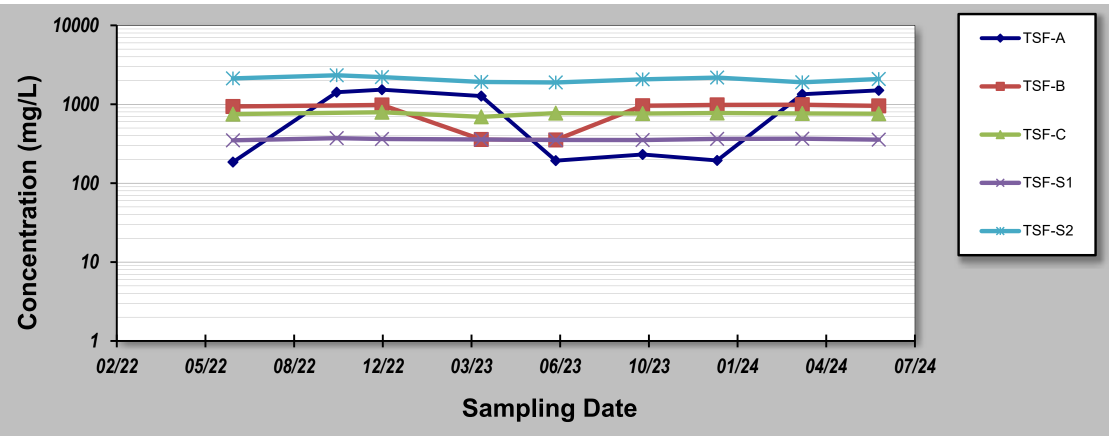
Coefficient of Variation:		0.74	0.35	0.04	0.02	0.07		
Mann-Kendall Statistic (S):		6	8	0	2	-10		
Confidence Factor:		69.4%	80.1%	45.2%	54.0%	82.1%		
Concentration Trend:		No Trend	No Trend	Stable	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Dissolved Solids
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)						
1	19-Jun-22	700	5930	4270	2500	17500		
2	14-Oct-22	16000			2320	16100		
3	4-Dec-22	7770	5600	4340	2480	15500		
4	26-Mar-23	6730	2440	4470	2440	14900		
5	18-Jun-23	811	2280	5260	2280	16100		
6	24-Sep-23	1300	4270	4420	2070	15000		
7	17-Dec-23	775	6210	3740	2180	16000		
8	22-Mar-24	7480	6520	4820	2380	16300		
9	16-Jun-24	6560	5340	3850	2070	16800		
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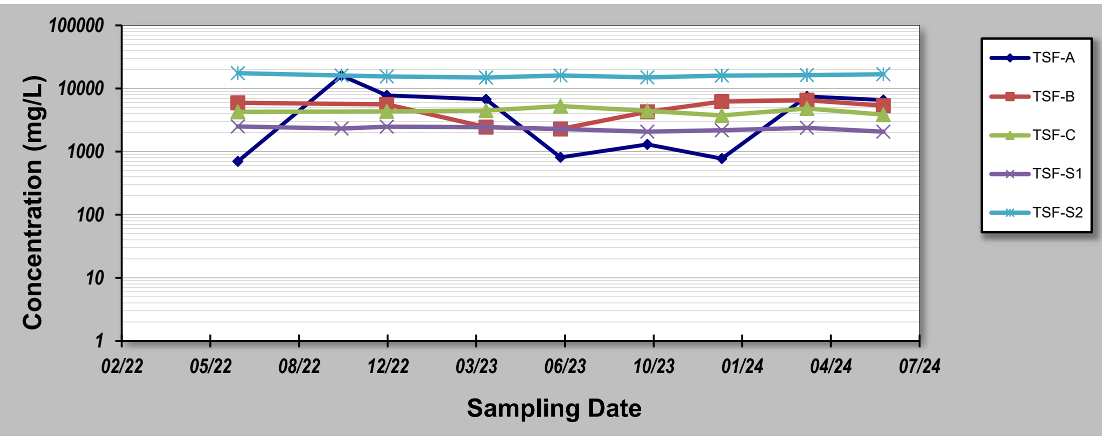
Coefficient of Variation:		0.95	0.34	0.11	0.07	0.05		
Mann-Kendall Statistic (S):		-4	4	0	-21	3		
Confidence Factor:		61.9%	64.0%	45.2%	98.3%	58.0%		
Concentration Trend:		Stable	No Trend	Stable	Decreasing	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Antimony
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL ANTIMONY CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.012		
2	14-Oct-22	0.001			0.001	0.009		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.025		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.043		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.037		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.013		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.014		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.060		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.016		
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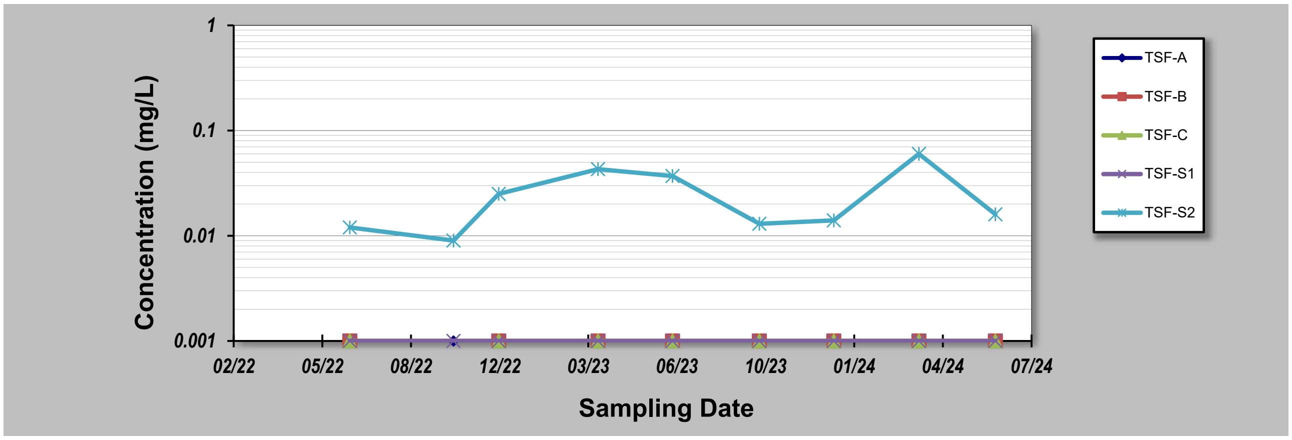
Coefficient of Variation:		0.00	0.00	0.00	0.00	0.69		
Mann-Kendall Statistic (S):		0	0	0	0	12		
Confidence Factor:		46.0%	45.2%	45.2%	46.0%	87.0%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Arsenic
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL ARSENIC CONCENTRATION (mg/L)**						
1	19-Jun-22	0.002	0.001	0.002	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.002	0.001	0.002		
4	26-Mar-23	0.002	0.001	0.002	0.001	0.002		
5	18-Jun-23	0.002	0.001	0.002	0.001	0.002		
6	24-Sep-23	0.002	0.002	0.002	0.001	0.002		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.002	0.001	0.002		
9	16-Jun-24	0.002	0.001	0.002	0.001	0.002		
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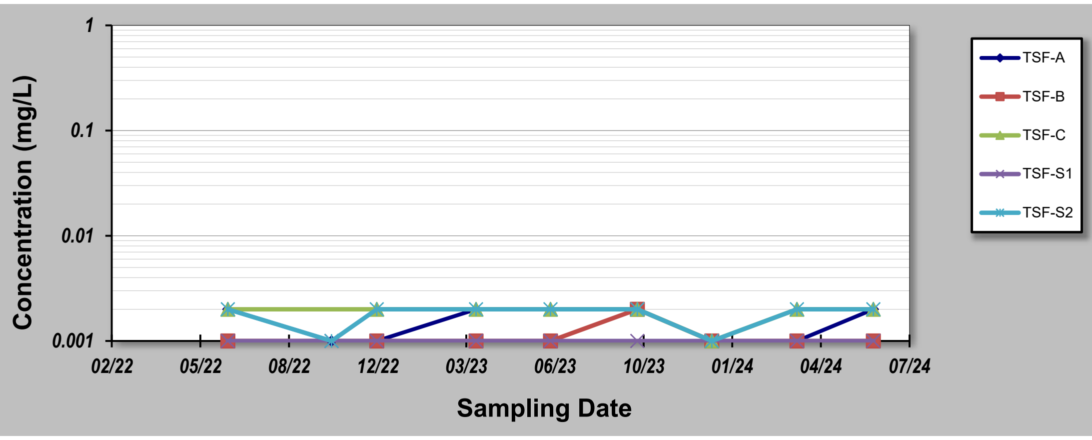
Coefficient of Variation:		0.34	0.31	0.19	0.00	0.25		
Mann-Kendall Statistic (S):		0	1	-3	0	2		
Confidence Factor:		46.0%	50.0%	59.4%	46.0%	54.0%		
Concentration Trend:		Stable	No Trend	Stable	Stable	No Trend		



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 Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Boron
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL BORON CONCENTRATION (mg/L)						
1	19-Jun-22	0.24	1.22	1.7	1.16	2.05		
2	14-Oct-22	4.32			1.02	2.31		
3	4-Dec-22	4.05	1.24	1.66	1.17	2.4		
4	26-Mar-23	2.05	1.17	1.56	1.17	2.33		
5	18-Jun-23	0.27	1.18	1.56	1.18	2.23		
6	24-Sep-23	0.36	1.08	1.43	1.16	2.38		
7	17-Dec-23	0.26	1.27	1.66	1.12	2.6		
8	22-Mar-24	3.28	1.14	1.5	1.08	1.91		
9	16-Jun-24	4.03	1.2	1.55	1.14	2.3		
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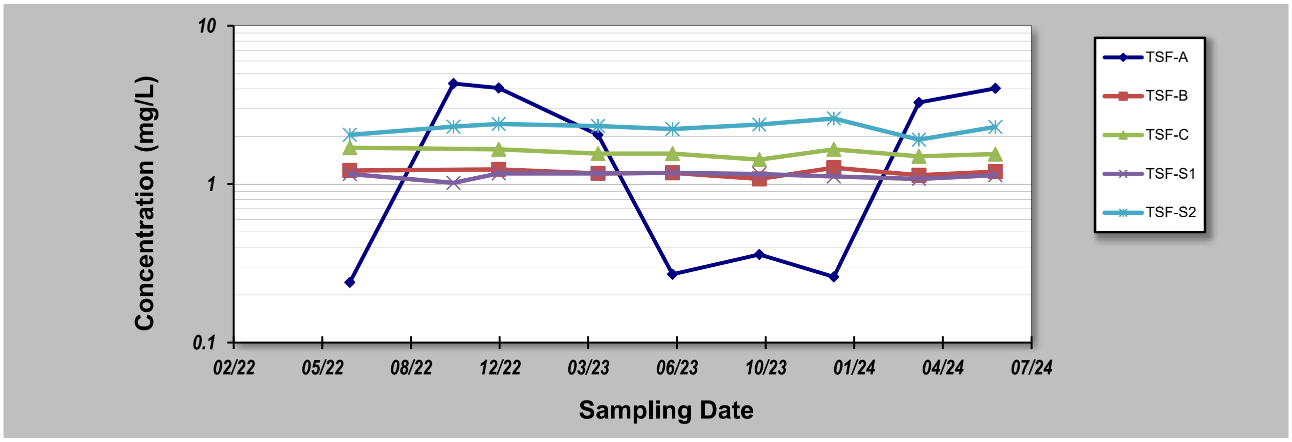
Coefficient of Variation:		0.88	0.05	0.06	0.05	0.09		
Mann-Kendall Statistic (S):		0	-4	-14	-6	2		
Confidence Factor:		46.0%	64.0%	94.6%	69.4%	54.0%		
Concentration Trend:		Stable	Stable	Prob. Decreasing	Stable	No Trend		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cadmium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.0001	0.0001	0.0001	0.0004	0.0003		
2	14-Oct-22	0.0001			0.0003	0.0002		
3	4-Dec-22	0.0001	0.0001	0.0001	0.0002	0.0002		
4	26-Mar-23	0.0001	0.0002	0.0001	0.0002	0.0004		
5	18-Jun-23	0.0001	0.0002	0.0001	0.0002	0.0003		
6	24-Sep-23	0.0001	0.0001	0.0001	0.0002	0.0002		
7	17-Dec-23	0.0001	0.0001	0.0001	0.0001	0.0002		
8	22-Mar-24	0.0001	0.0001	0.0001	0.0003	0.0003		
9	16-Jun-24	0.0001	0.0001	0.0001	0.0003	0.0002		
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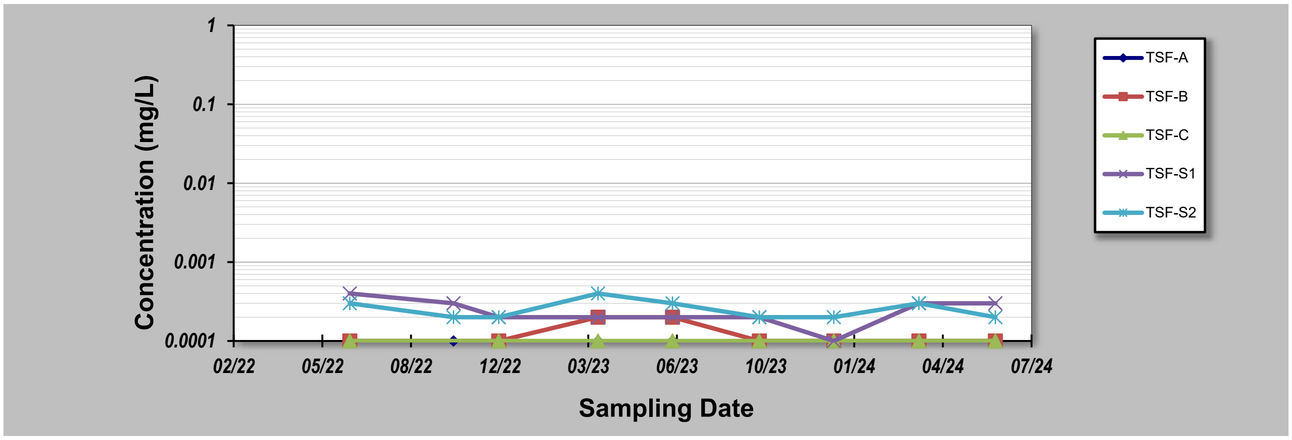
	Coefficient of Variation:	0.00	0.37	0.00	0.36	0.28		
	Mann-Kendall Statistic (S):	0	-4	0	-7	-5		
	Confidence Factor:	46.0%	64.0%	45.2%	72.8%	65.7%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Chromium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL CHROMIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.004	0.003	0.004		
2	14-Oct-22	0.002			0.002	0.002		
3	4-Dec-22	0.002	0.002	0.004	0.002	0.003		
4	26-Mar-23	0.002	0.002	0.004	0.002	0.003		
5	18-Jun-23	0.001	0.002	0.004	0.002	0.003		
6	24-Sep-23	0.003	0.001	0.004	0.003	0.003		
7	17-Dec-23	0.001	0.001	0.004	0.003	0.002		
8	22-Mar-24	0.004	0.001	0.013	0.003	0.002		
9	16-Jun-24	0.005	0.001	0.004	0.002	0.003		
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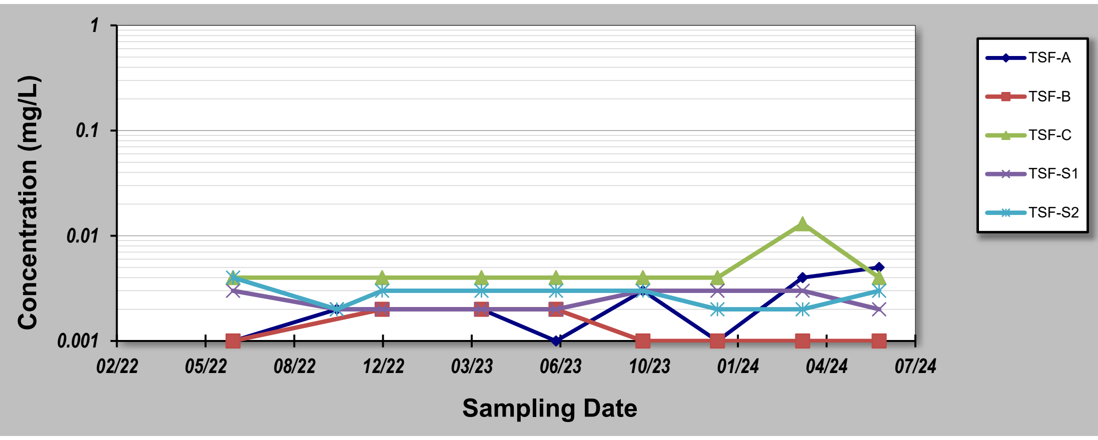
	Coefficient of Variation:	0.61	0.38	0.62	0.22	0.24		
	Mann-Kendall Statistic (S):	16	-9	5	4	-9		
	Confidence Factor:	94.0%	83.2%	68.3%	61.9%	79.2%		
	Concentration Trend:	Prob. Increasing	Stable	No Trend	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cobalt
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**TOTAL COBALT CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.012	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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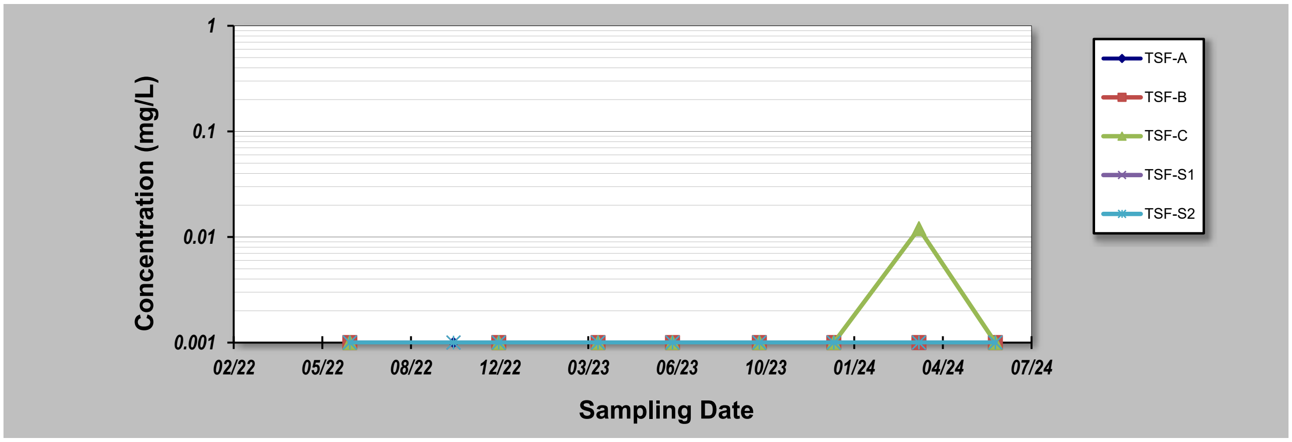
	Coefficient of Variation:	0.00	0.00	1.64	0.00	0.00		
	Mann-Kendall Statistic (S):	0	0	5	0	0		
	Confidence Factor:	46.0%	45.2%	68.3%	46.0%	46.0%		
	Concentration Trend:	Stable	Stable	No Trend	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Copper
Concentration Units: mg/L

Sampling Point ID:		**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**TOTAL COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22	0.028	0.003	0.002	0.003	0.034		
2	14-Oct-22	0.02			0.003	0.019		
3	4-Dec-22	0.016	0.004	0.002	0.003	0.047		
4	26-Mar-23	0.024	0.004	0.003	0.004	0.079		
5	18-Jun-23	0.032	0.004	0.003	0.006	0.216		
6	24-Sep-23	0.031	0.006	0.003	0.003	0.035		
7	17-Dec-23	0.04	0.002	0.003	0.004	0.025		
8	22-Mar-24	0.022	0.002	0.008	0.006	0.055		
9	16-Jun-24	0.017	0.004	0.002	0.004	0.017		
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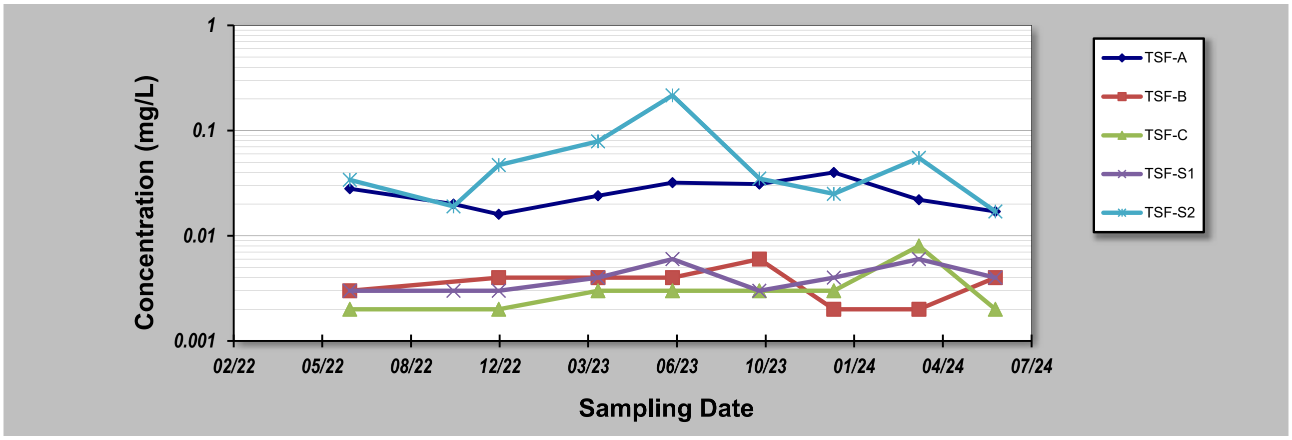
Coefficient of Variation:		0.31	0.36	0.61	0.31	1.06		
Mann-Kendall Statistic (S):		2	-1	9	16	-2		
Confidence Factor:		54.0%	50.0%	83.2%	94.0%	54.0%		
Concentration Trend:		No Trend	Stable	No Trend	Prob. Increasing	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Manganese
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL MANGANESE CONCENTRATION (mg/L)**						
1	19-Jun-22	0.004	0.005	0.002	0.004	0.011		
2	14-Oct-22	0.003			0.001	0.016		
3	4-Dec-22	0.003	0.004	0.002	0.004	0.015		
4	26-Mar-23	0.004	0.007	0.002	0.007	0.019		
5	18-Jun-23	0.006	0.02	0.002	0.02	0.03		
6	24-Sep-23	0.005	0.009	0.002	0.004	0.015		
7	17-Dec-23	0.005	0.002	0.002	0.01	0.008		
8	22-Mar-24	0.006	0.002	0.472	0.008	0.011		
9	16-Jun-24	0.004	0.004	0.001	0.008	0.022		
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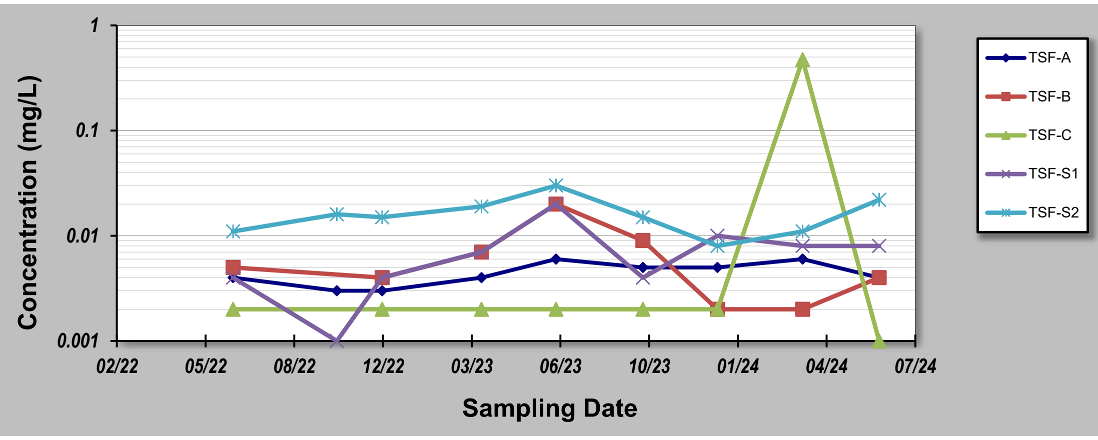
Coefficient of Variation:		0.25	0.89	2.74	0.75	0.41		
Mann-Kendall Statistic (S):		14	-6	-1	16	2		
Confidence Factor:		91.0%	72.6%	50.0%	94.0%	54.0%		
Concentration Trend:		Prob. Increasing	Stable	No Trend	Prob. Increasing	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL MOLYBDENUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.008	0.006	0.004	0.003	0.003		
2	14-Oct-22	0.007			0.007	0.006		
3	4-Dec-22	0.007	0.008	0.004	0.003	0.003		
4	26-Mar-23	0.01	0.004	0.003	0.004	0.009		
5	18-Jun-23	0.012	0.004	0.003	0.004	0.008		
6	24-Sep-23	0.012	0.009	0.004	0.004	0.005		
7	17-Dec-23	0.012	0.008	0.004	0.004	0.004		
8	22-Mar-24	0.007	0.008	0.004	0.005	0.012		
9	16-Jun-24	0.006	0.009	0.004	0.004	0.005		
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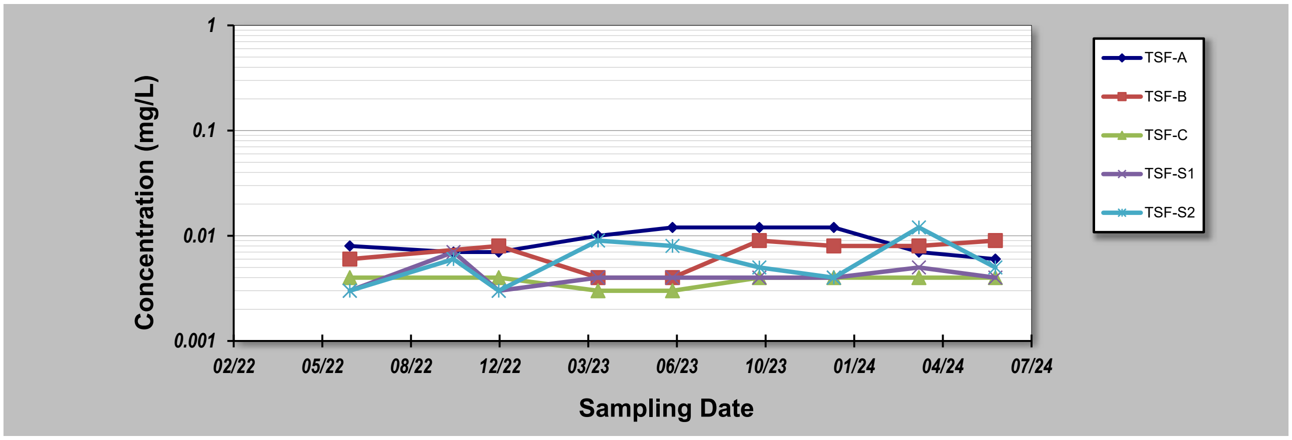
Coefficient of Variation:		0.28	0.30	0.12	0.28	0.49		
Mann-Kendall Statistic (S):		0	11	4	9	8		
Confidence Factor:		46.0%	88.7%	64.0%	79.2%	76.2%		
Concentration Trend:		Stable	No Trend	No Trend	No Trend	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL SELENIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.01	0.02	0.01	0.01	0.01		
2	14-Oct-22	0.02			0.01	0.01		
3	4-Dec-22	0.02	0.02	0.02	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.02	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.02	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.02	0.01	0.01	0.01		
9	16-Jun-24	0.02	0.02	0.01	0.01	0.01		
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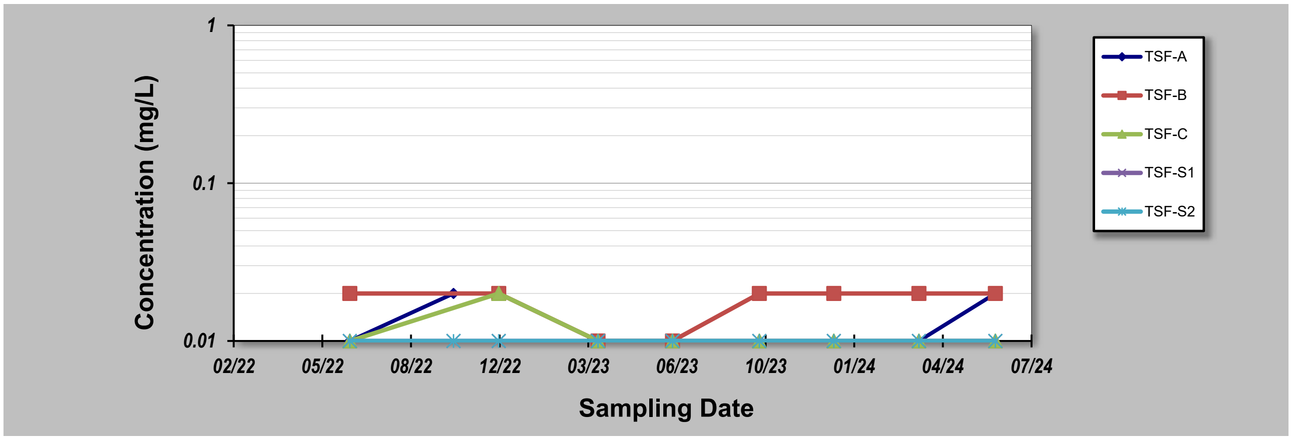
Coefficient of Variation:		0.38	0.26	0.31	0.00	0.00		
Mann-Kendall Statistic (S):		-2	4	-5	0	0		
Confidence Factor:		54.0%	64.0%	68.3%	46.0%	46.0%		
Concentration Trend:		Stable	No Trend	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Silver
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL SILVER CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.008		
4	26-Mar-23	0.001	0.002	0.001	0.002	0.011		
5	18-Jun-23	0.001	0.002	0.001	0.002	0.006		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.006		
7	17-Dec-23	0.001	0.001	0.001	0.002	0.002		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.003		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.007		
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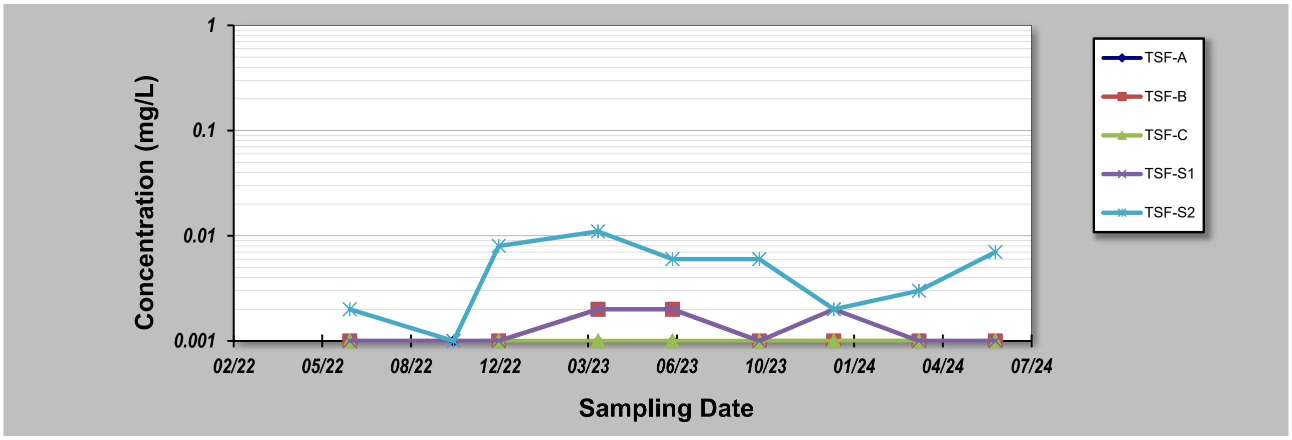
Coefficient of Variation:		0.00	0.37	0.00	0.38	0.65		
Mann-Kendall Statistic (S):		0	-4	0	2	4		
Confidence Factor:		46.0%	64.0%	45.2%	54.0%	61.9%		
Concentration Trend:		Stable	Stable	Stable	No Trend	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Strontium
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL STRONTIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.489	5.63	4.19	2.08	13.7		
2	14-Oct-22	5.77			2.32	14.9		
3	4-Dec-22	5.58	6.23	4.64	2.32	14.7		
4	26-Mar-23	2.87	2.35	4.47	2.35	12.4		
5	18-Jun-23	0.52	2.29	4.16	2.29	11.5		
6	24-Sep-23	0.703	6.16	4.24	2.3	13.2		
7	17-Dec-23	0.502	5.61	3.68	1.97	11.6		
8	22-Mar-24	4.9	6.48	4.41	2.26	10.3		
9	16-Jun-24	5.14	6.03	4.18	2.24	12.3		
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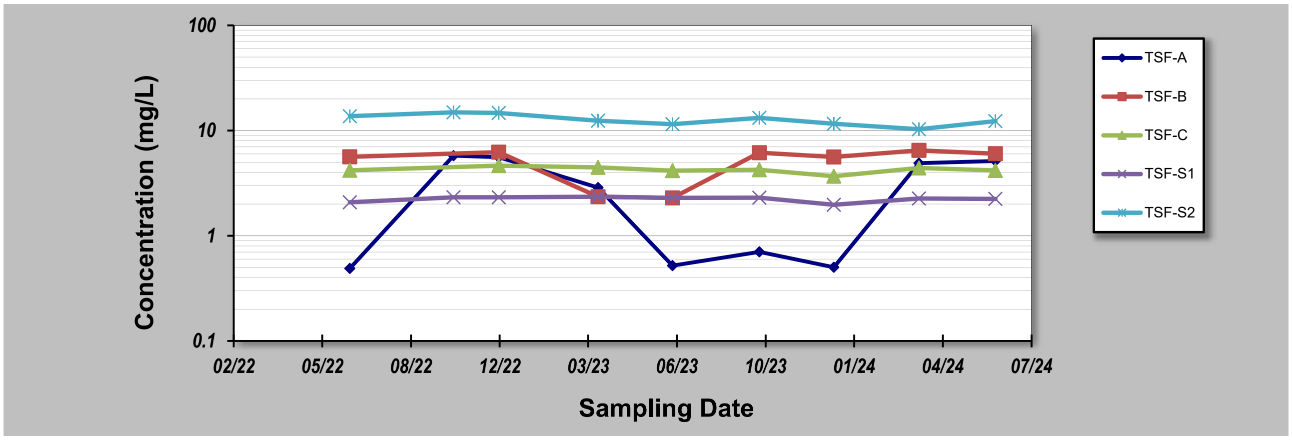
Coefficient of Variation:		0.82	0.34	0.07	0.06	0.12		
Mann-Kendall Statistic (S):		0	4	-8	-11	-20		
Confidence Factor:		46.0%	64.0%	80.1%	84.6%	97.8%		
Concentration Trend:		Stable	No Trend	Stable	Stable	Decreasing		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Tin
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL TIN CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.002	0.001	0.002		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.002		
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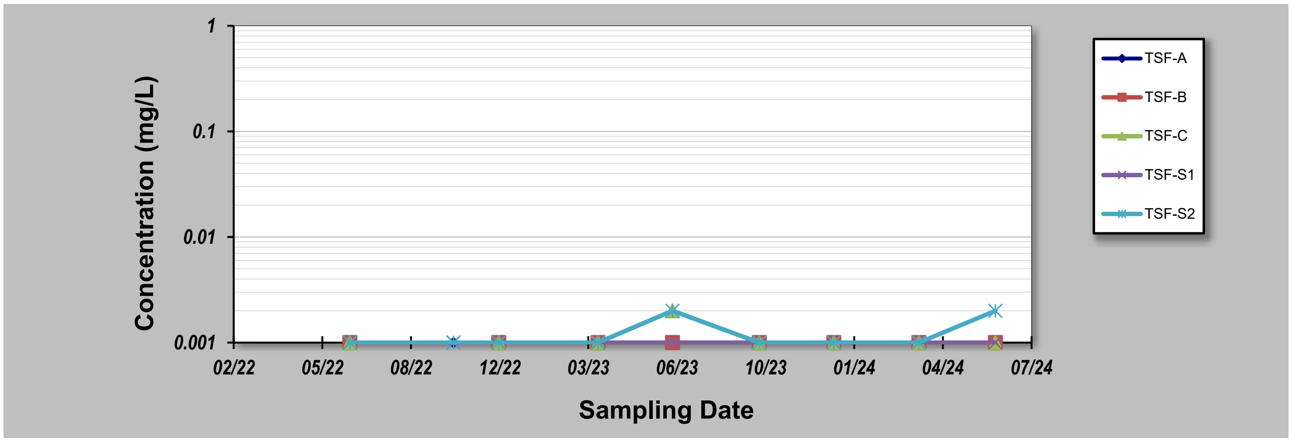
20								
	Coefficient of Variation:	0.00	0.00	0.31	0.00	0.36		
	Mann-Kendall Statistic (S):	0	0	-1	0	8		
	Confidence Factor:	46.0%	45.2%	50.0%	46.0%	76.2%		
	Concentration Trend:	Stable	Stable	Stable	Stable	No Trend		



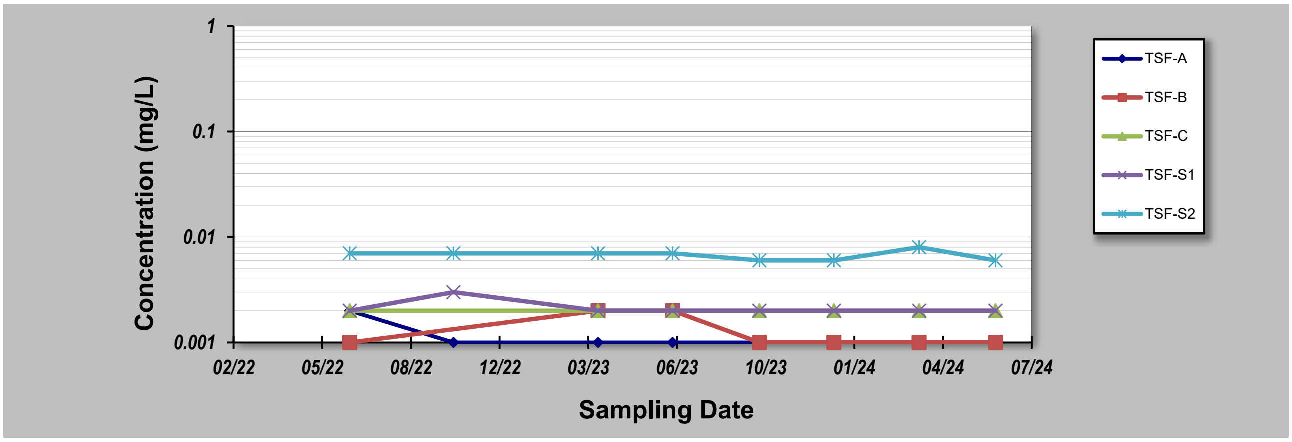
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.001	0.002	0.002	0.007		
2	14-Oct-22	0.001			0.003	0.007		
3	4-Dec-22							
4	26-Mar-23	0.001	0.002	0.002	0.002	0.007		
5	18-Jun-23	0.001	0.002	0.002	0.002	0.007		
6	24-Sep-23	0.001	0.001	0.002	0.002	0.006		
7	17-Dec-23	0.001	0.001	0.002	0.002	0.006		
8	22-Mar-24	0.001	0.001	0.002	0.002	0.008		
9	16-Jun-24	0.001	0.001	0.002	0.002	0.006		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.31	0.38	0.00	0.17	0.10		
	Mann-Kendall Statistic (S):	-7	-6	0	-5	-7		
	Confidence Factor:	76.4%	76.4%	37.9%	68.3%	76.4%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



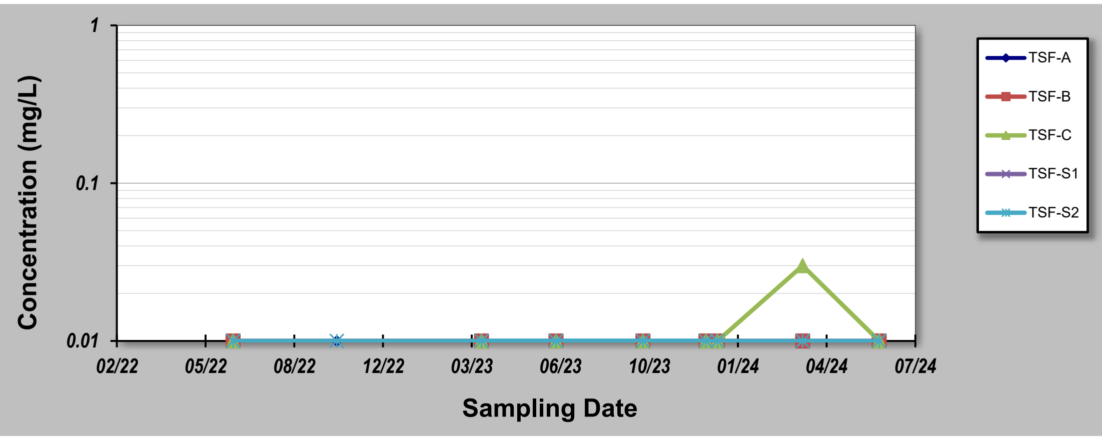
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Vanadium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**TOTAL VANADIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.01	0.01	0.01	0.01	0.01		
2	14-Oct-22	0.01			0.01	0.01		
3	4-Dec-23	0.01	0.01	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.01	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.01	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.01	0.03	0.01	0.01		
9	16-Jun-24	0.01	0.01	0.01	0.01	0.01		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00	0.57	0.00	0.00		
	Mann-Kendall Statistic (S):	0	0	5	0	0		
	Confidence Factor:	46.0%	45.2%	68.3%	46.0%	46.0%		
	Concentration Trend:	Stable	Stable	No Trend	Stable	Stable		



Notes:

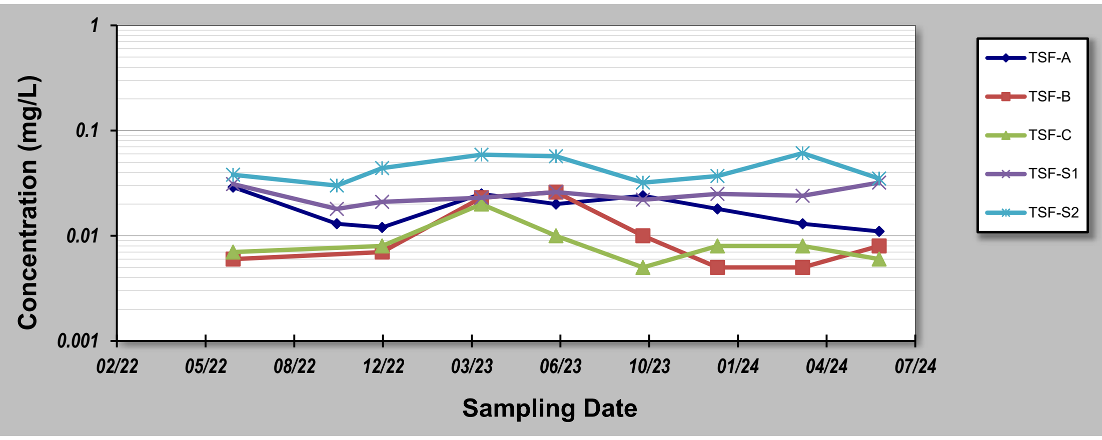
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Zinc
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL ZINC CONCENTRATION (mg/L)						
1	19-Jun-22	0.029	0.006	0.007	0.031	0.038		
2	14-Oct-22	0.013			0.018	0.03		
3	4-Dec-22	0.012	0.007	0.008	0.021	0.044		
4	26-Mar-23	0.025	0.023	0.02	0.023	0.059		
5	18-Jun-23	0.02	0.026	0.01	0.026	0.057		
6	24-Sep-23	0.024	0.010	0.005	0.022	0.032		
7	17-Dec-23	0.018	0.005	0.008	0.025	0.037		
8	22-Mar-24	0.013	0.005	0.008	0.024	0.061		
9	16-Jun-24	0.01	0.008	0.006	0.032	0.035		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.36	0.74	0.52	0.18	0.28		
Mann-Kendall Statistic (S):		-15	-3	-5	12	4		
Confidence Factor:		92.5%	59.4%	68.3%	87.0%	61.9%		
Concentration Trend:		Prob. Decreasing	Stable	Stable	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.

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.2 12/08/2024 2:09:04 PM
User Selected Options	
From File	TSF A.xls
Full Precision	OFF

From File: TSF A.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	6	0	0.00%	N/A	N/A	33833	55766667	7468	0.221
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	33.83	55.77	7.468	0.221
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	6	0	0.00%	N/A	N/A	67.47	2461	49.61	0.735
Chloride (mg/L)	6	15	6	0	0.00%	N/A	N/A	2205	2439142	1562	0.708
Depth to Water (m)	12	9	12	0	0.00%	N/A	N/A	5.258	0.385	0.62	0.118
Dissolved Antimony (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00133	2.6667E-7	5.1640E-4	0.387
Dissolved Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.303	3.35	1.83	0.795
Dissolved Cadmium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	6	0	0.00%	N/A	N/A	269500	3.152E+10	177544	0.659
Dissolved Calcium (mg/L)	6	15	6	0	0.00%	N/A	N/A	269.5	31522	177.5	0.659
Dissolved Chromium (mg/L)	4	17	4	0	0.00%	N/A	N/A	0.00225	2.5000E-7	5.0000E-4	0.222
Dissolved Cobalt (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0025	5.0000E-7	7.0711E-4	0.283
Dissolved Copper (mg/L)	12	9	12	0	0.00%	N/A	N/A	0.0176	2.2045E-4	0.0148	0.844
Dissolved Lead (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	6	15	6	0	0.00%	N/A	N/A	119167	9.298E+9	96427	0.809
Dissolved Magnesium (mg/L)	6	15	6	0	0.00%	N/A	N/A	119.2	9298	96.43	0.809
Dissolved Manganese (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0145	2.4500E-5	0.00495	0.341
Dissolved Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00767	2.6667E-6	0.00163	0.213
Dissolved Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00367	6.2667E-6	0.0025	0.683
Dissolved Potassium (µg/L)	6	15	6	0	0.00%	N/A	N/A	30000	3.980E+8	19950	0.665
Dissolved Potassium (mg/L)	6	15	6	0	0.00%	N/A	N/A	30	398	19.95	0.665
Dissolved Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.0167	3.3333E-5	0.00577	0.346
Dissolved Silver (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	6	15	6	0	0.00%	N/A	N/A	999667	5.534E+11	743931	0.744
Dissolved Sodium (mg/L)	6	15	6	0	0.00%	N/A	N/A	999.7	553433	743.9	0.744
Dissolved Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	3.081	5.312	2.305	0.748
Dissolved Thorium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	3	0	0.00%	N/A	N/A	6.6667E-4	3.3333E-7	5.7735E-4	0.866
Dissolved Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0173	2.3905E-5	0.00489	0.283
Electrical Conductivity @ 25°C (µS/cm)	4	17	4	0	0.00%	N/A	N/A	8833	26263558	5125	0.58
FLS EC	4	17	4	0	0.00%	N/A	N/A	8.446	22.95	4.791	0.567
FLS pH	4	17	4	0	0.00%	N/A	N/A	6.923	0.184	0.429	0.0619
FLS Temp	4	17	4	0	0.00%	N/A	N/A	22.78	27.41	5.235	0.23
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	14	0	0.00%	N/A	N/A	9.716	71.66	8.465	0.871
pH (no unit)	14	7	14	0	0.00%	N/A	N/A	7.309	0.0393	0.198	0.0271
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	6	0	0.00%	N/A	N/A	940833	3.664E+11	605313	0.643
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	6	0	0.00%	N/A	N/A	940.8	366404	605.3	0.643
Total Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	33.17	70.97	8.424	0.254
Total Anions (meq/L)	6	15	6	0	0.00%	N/A	N/A	82.43	3240	56.92	0.691
Total Antimony (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00167	2.6667E-7	5.1640E-4	0.31
Total Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.322	3.245	1.801	0.776
Total Cadmium (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	5	0	0.00%	N/A	N/A	0.002	5.0000E-7	7.0711E-4	0.354
Total Cobalt (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.003	2.0000E-6	0.00141	0.471
Total Copper (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0305	1.9430E-4	0.0139	0.457
Total Dissolved Solids @180°C-Total (µg/L)	6	15	6	0	0.00%	N/A	N/A	6248333	3.134E+13	5598555	0.896
Total Dissolved Solids @180°C-Total (mg/L)	6	15	6	0	0.00%	N/A	N/A	6248	31343817	5599	0.896
Total Lead (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.001	0	0	N/A
Total Manganese (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00817	5.4967E-5	0.00741	0.908
Total Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0107	1.0667E-5	0.00327	0.306
Total Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.004	6.0000E-6	0.00245	0.612
Total Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.0167	3.3333E-5	0.00577	0.346
Total Silver (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	3.208	5.548	2.355	0.734
Total Thorium (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	5	0	0.00%	N/A	N/A	0.0012	7.0000E-7	8.3666E-4	0.697
Total Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0156	2.8619E-5	0.00535	0.344

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	23000	41000	33833	37000	55766667	7468	4448	-0.838	0.221
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	23	41	33.83	37	55.77	7.468	4.448	-0.838	0.221
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	9.79	120	67.47	74.35	2461	49.61	63.97	-0.249	0.735
Chloride (mg/L)	6	15	266	3650	2205	2765	2439142	1562	1208	-0.664	0.708
Depth to Water (m)	12	9	4.45	6.28	5.258	5.26	0.385	0.62	0.623	0.131	0.118
Dissolved Antimony (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	0.001	0.002	0.00133	0.001	2.6667E-7	5.1640E-4	0	0.968	0.387
Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	0.18	4.29	2.303	2.5	3.35	1.83	2.543	-0.216	0.795
Dissolved Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	64000	463000	269500	294500	3.152E+10	177544	226093	-0.232	0.659
Dissolved Calcium (mg/L)	6	15	64	463	269.5	294.5	31522	177.5	226.1	-0.232	0.659
Dissolved Chromium (mg/L)	4	17	0.002	0.003	0.00225	0.002	2.5000E-7	5.0000E-4	0	2	0.222
Dissolved Cobalt (mg/L)	2	19	0.002	0.003	0.0025	0.0025	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.283
Dissolved Copper (mg/L)	12	9	0.002	0.044	0.0176	0.011	2.2045E-4	0.0148	0.0119	0.901	0.844
Dissolved Lead (mg/L)	1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Magnesium (µg/L)	6	15	8000	221000	119167	130500	9.298E+9	96427	128984	-0.211	0.809
Dissolved Magnesium (mg/L)	6	15	8	221	119.2	130.5	9298	96.43	129	-0.211	0.809
Dissolved Manganese (mg/L)	2	19	0.011	0.018	0.0145	0.0145	2.4500E-5	0.00495	0.00519	N/A	0.341
Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	0.006	0.01	0.00767	0.0075	2.6667E-6	0.00163	0.00222	0.383	0.213
Dissolved Nickel (mg/L)	6	15	0.001	0.008	0.00367	0.003	6.2667E-6	0.0025	0.00222	1.139	0.683
Dissolved Potassium (µg/L)	6	15	6000	52000	30000	31500	3.980E+8	19950	28910	-0.153	0.665
Dissolved Potassium (mg/L)	6	15	6	52	30	31.5	398	19.95	28.91	-0.153	0.665
Dissolved Selenium (mg/L)	3	18	0.01	0.02	0.0167	0.02	3.3333E-5	0.00577	0	-1.732	0.346
Dissolved Silver (mg/L)	1	20	0.004	0.004	0.004	0.004	N/A	N/A	0	N/A	N/A
Dissolved Sodium (µg/L)	6	15	133000	1780000	999667	1105500	5.534E+11	743931	955523	-0.26	0.744
Dissolved Sodium (mg/L)	6	15	133	1780	999.7	1106	553433	743.9	955.5	-0.26	0.744
Dissolved Strontium (mg/L)	6	15	0.431	6.03	3.081	3.31	5.312	2.305	3.18	-0.0779	0.748
Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	0	0.001	6.6667E-4	0.001	3.3333E-7	5.7735E-4	0	-1.732	0.866
Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	0.01	0.024	0.0173	0.016	2.3905E-5	0.00489	0.00741	-0.0621	0.283
Electrical Conductivity @ 25°C (µS/cm)	4	17	1230	12400	8833	10850	26263558	5125	1334	-1.866	0.58
FLS EC	4	17	1.635	12.81	8.446	9.67	22.95	4.791	2.669	-1.38	0.567
FLS pH	4	17	6.54	7.51	6.923	6.82	0.184	0.429	0.311	1.121	0.0619
FLS Temp	4	17	18.2	27.7	22.78	22.6	27.41	5.235	6.449	0.0199	0.23
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	1.15	35.2	9.716	8.6	71.66	8.465	4.581	2.249	0.871
pH (no unit)	14	7	6.8	7.66	7.309	7.34	0.0393	0.198	0.104	-1.127	0.0271
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	185000	1530000	940833	1160000	3.664E+11	605313	467013	-0.681	0.643
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	185	1530	940.8	1160	366404	605.3	467	-0.681	0.643
Total Alkalinity as CaCO3 (mg/L)	6	15	22	41	33.17	37	70.97	8.424	4.448	-0.817	0.254
Total Anions (meq/L)	6	15	11.7	136	82.43	103	3240	56.92	43.74	-0.67	0.691
Total Antimony (mg/L)	1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Total Arsenic (mg/L)	6	15	0.001	0.002	0.00167	0.002	2.6667E-7	5.1640E-4	0	-0.968	0.31
Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	0.24	4.32	2.322	2.54	3.245	1.801	2.439	-0.234	0.776
Total Cadmium (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	0.001	0.003	0.002	0.002	5.0000E-7	7.0711E-4	0	0	0.354
Total Cobalt (mg/L)	2	19	0.002	0.004	0.003	0.003	2.0000E-6	0.00141	0.00148	N/A	0.471
Total Copper (mg/L)	6	15	0.016	0.051	0.0305	0.026	1.9430E-4	0.0139	0.0119	0.729	0.457
Total Dissolved Solids @180°C-Total (µg/L)	6	15	700000	16000000	6248333	6000000	3.134E+13	5598555	5003706	1.054	0.896
Total Dissolved Solids @180°C-Total (mg/L)	6	15	700	16000	6248	6000	31343817	5599	5004	1.054	0.896
Total Lead (mg/L)	3	18	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
Total Manganese (mg/L)	6	15	0.003	0.022	0.00817	0.005	5.4967E-5	0.00741	0.00297	1.702	0.908
Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	0.007	0.015	0.0107	0.011	1.0667E-5	0.00327	0.00445	-0.0211	0.306
Total Nickel (mg/L)	6	15	0.002	0.008	0.004	0.003	6.0000E-6	0.00245	0.00148	1.102	0.612
Total Selenium (mg/L)	3	18	0.01	0.02	0.0167	0.02	3.3333E-5	0.00577	0	-1.732	0.346
Total Silver (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	0.466	5.77	3.208	3.455	5.548	2.355	3.291	-0.214	0.734
Total Thorium (mg/L)	1	20	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
Total Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	0	0.002	0.0012	0.001	7.0000E-7	8.3666E-4	0.00148	-0.512	0.697
Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	0.011	0.025	0.0156	0.013	2.8619E-5	0.00535	0.00297	1.028	0.344

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	24500	26000	28500	37000	38750	39000	40000	40500	40900
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	24.5	26	28.5	37	38.75	39	40	40.5	40.9
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	10.55	11.3	22.35	74.35	109.6	115	117.5	118.8	119.8
Chloride (mg/L)	6	15	269	272	801.5	2765	3418	3510	3580	3615	3643
Depth to Water (m)	12	9	4.492	4.59	4.81	5.26	5.645	5.722	6.02	6.154	6.255
Dissolved Antimony (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.001	0.00175	0.002	0.002	0.002	0.002
Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	0.195	0.21	0.663	2.5	3.85	4.14	4.215	4.253	4.283
Dissolved Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	67000	70000	107750	294500	415250	431000	447000	455000	461400
Dissolved Calcium (mg/L)	6	15	67	70	107.8	294.5	415.3	431	447	455	461.4
Dissolved Chromium (mg/L)	4	17	0.002	0.002	0.002	0.002	0.00225	0.0024	0.0027	0.00285	0.00297
Dissolved Cobalt (mg/L)	2	19	0.0021	0.0022	0.00225	0.0025	0.00275	0.0028	0.0029	0.00295	0.00299
Dissolved Copper (mg/L)	12	9	0.0042	0.0062	0.00675	0.011	0.0258	0.0296	0.0418	0.0435	0.0439
Dissolved Lead (mg/L)	1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved Magnesium (µg/L)	6	15	9500	11000	31500	130500	202500	214000	217500	219250	220650
Dissolved Magnesium (mg/L)	6	15	9.5	11	31.5	130.5	202.5	214	217.5	219.3	220.7
Dissolved Manganese (mg/L)	2	19	0.0117	0.0124	0.0128	0.0145	0.0163	0.0166	0.0173	0.0177	0.0179
Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	0.006	0.006	0.00625	0.0075	0.00875	0.009	0.0095	0.00975	0.00995
Dissolved Nickel (mg/L)	6	15	0.0015	0.002	0.00225	0.003	0.0045	0.005	0.0065	0.00725	0.00785
Dissolved Potassium (µg/L)	6	15	7500	9000	13000	31500	47000	50000	51000	51500	51900
Dissolved Potassium (mg/L)	6	15	7.5	9	13	31.5	47	50	51	51.5	51.9
Dissolved Selenium (mg/L)	3	18	0.012	0.014	0.015	0.02	0.02	0.02	0.02	0.02	0.02
Dissolved Silver (mg/L)	1	20	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Dissolved Sodium (µg/L)	6	15	143500	154000	323250	1105500	1635000	1720000	1750000	1765000	1777000
Dissolved Sodium (mg/L)	6	15	143.5	154	323.3	1106	1635	1720	1750	1765	1777
Dissolved Strontium (mg/L)	6	15	0.477	0.522	1.047	3.31	4.66	4.88	5.455	5.743	5.973
Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	2.0000E-4	4.0000E-4	5.0000E-4	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	0.0124	0.0142	0.0145	0.016	0.021	0.021	0.0222	0.0231	0.0238
Electrical Conductivity @ 25°C (µS/cm)	4	17	4041	6852	8258	10850	11425	11620	12010	12205	12361
FLS EC	4	17	3.908	6.18	7.316	9.67	10.8	11.2	12.01	12.41	12.73
FLS pH	4	17	6.582	6.624	6.645	6.82	7.098	7.18	7.345	7.428	7.494
FLS Temp	4	17	18.23	18.26	18.28	22.6	27.1	27.22	27.46	27.58	27.68
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	2.182	3.542	4.62	8.6	9.69	11.76	15.12	22.27	32.61
pH (no unit)	14	7	7.111	7.242	7.26	7.34	7.408	7.41	7.445	7.53	7.634
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	187500	190000	405000	1160000	1382500	1420000	1475000	1502500	1524500
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	187.5	190	405	1160	1383	1420	1475	1503	1525
Total Alkalinity as CaCO3 (mg/L)	6	15	22.5	23	26.25	37	38.75	39	40	40.5	40.9
Total Anions (meq/L)	6	15	11.8	11.9	31.43	103	125.8	129	132.5	134.3	135.7
Total Antimony (mg/L)	1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Arsenic (mg/L)	6	15	0.001	0.001	0.00125	0.002	0.002	0.002	0.002	0.002	0.002
Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	0.24	0.24	0.693	2.54	3.795	4.05	4.185	4.253	4.307
Total Cadmium (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	0.0014	0.0018	0.002	0.002	0.002	0.0022	0.0026	0.0028	0.00296
Total Cobalt (mg/L)	2	19	0.0022	0.0024	0.0025	0.003	0.0035	0.0036	0.0038	0.0039	0.00398
Total Copper (mg/L)	6	15	0.018	0.02	0.021	0.026	0.04	0.044	0.0475	0.0493	0.0507
Total Dissolved Solids @180°C-Total (µg/L)	6	15	860000	1020000	2082500	6000000	7510000	7770000	11885000	13942500	15588500
Total Dissolved Solids @180°C-Total (mg/L)	6	15	860	1020	2083	6000	7510	7770	11885	13943	15589
Total Lead (mg/L)	3	18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Manganese (mg/L)	6	15	0.003	0.003	0.00325	0.005	0.00975	0.011	0.0165	0.0193	0.0215
Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	0.007	0.007	0.00775	0.011	0.0128	0.013	0.014	0.0145	0.0149
Total Nickel (mg/L)	6	15	0.002	0.002	0.00225	0.003	0.00525	0.006	0.007	0.0075	0.0079
Total Selenium (mg/L)	3	18	0.012	0.014	0.015	0.02	0.02	0.02	0.02	0.02	0.02
Total Silver (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	0.493	0.52	1.108	3.455	5.195	5.58	5.675	5.723	5.761
Total Thorium (mg/L)	1	20	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Total Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	4.0000E-4	8.0000E-4	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	0.011	0.0112	0.0115	0.013	0.0185	0.0194	0.022	0.0235	0.0247

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.2 12/08/2024 2:11:10 PM

User Selected Options

From File TSF B.xls

Full Precision OFF

From File: TSF B.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Total Zinc (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0146	8.3300E-5	0.00913	0.625
Bicarbonate Alkalinity as CaCO3 (µg/L)	5	15	5	0	0.00%	N/A	N/A	83600	1.063E+8	10310	0.123
Bicarbonate Alkalinity as CaCO3 (mg/L)	5	15	5	0	0.00%	N/A	N/A	83.6	106.3	10.31	0.123
Carbonate Alkalinity as CaCO3 (µg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	15	5	0	0.00%	N/A	N/A	64.62	602.5	24.55	0.38
Chloride (mg/L)	11	9	11	0	0.00%	N/A	N/A	2021	318109	564	0.279
Depth to Water (m)	11	9	11	0	0.00%	N/A	N/A	5.364	0.0914	0.302	0.0564
Dissolved Antimony (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.001	0	0	N/A
Dissolved Beryllium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	15	5	0	0.00%	N/A	N/A	1.08	0.0247	0.157	0.145
Dissolved Cadmium (mg/L)	2	18	2	0	0.00%	N/A	N/A	2.0000E-4	0	0	N/A
Dissolved Calcium (µg/L)	11	9	11	0	0.00%	N/A	N/A	429364	1.559E+10	124868	0.291
Dissolved Calcium (mg/L)	11	9	11	0	0.00%	N/A	N/A	429.4	15592	124.9	0.291
Dissolved Chromium (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.002	0	0	N/A
Dissolved Cobalt (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	10	10	10	0	0.00%	N/A	N/A	0.0019	5.4444E-7	7.3786E-4	0.388
Dissolved Lead (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	5	15	5	0	0.00%	N/A	N/A	165000	5.609E+9	74890	0.454
Dissolved Magnesium (mg/L)	11	9	11	0	0.00%	N/A	N/A	187.3	2878	53.65	0.286
Dissolved Manganese (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.0025	5.0000E-7	7.0711E-4	0.283
Dissolved Mercury (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0054	8.3000E-6	0.00288	0.534
Dissolved Nickel (mg/L)	4	16	4	0	0.00%	N/A	N/A	0.00275	2.5000E-7	5.0000E-4	0.182
Dissolved Potassium (µg/L)	5	15	5	0	0.00%	N/A	N/A	28200	64700000	8044	0.285
Dissolved Potassium (mg/L)	11	9	11	0	0.00%	N/A	N/A	31.27	38.22	6.182	0.198
Dissolved Selenium (mg/L)	9	11	9	0	0.00%	N/A	N/A	0.0156	2.7778E-5	0.00527	0.339
Dissolved Silver (mg/L)	1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	11	9	11	0	0.00%	N/A	N/A	822455	2.953E+10	171847	0.209
Dissolved Sodium (mg/L)	11	9	11	0	0.00%	N/A	N/A	822.5	29531	171.8	0.209
Dissolved Strontium (mg/L)	11	9	11	0	0.00%	N/A	N/A	4.081	1.386	1.177	0.288
Dissolved Thorium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.001	5.0000E-7	7.0711E-4	0.707
Dissolved Vanadium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	12	8	12	0	0.00%	N/A	N/A	0.0121	4.3902E-5	0.00663	0.548
Electrical Conductivity @ 25°C (µS/cm)	3	17	3	0	0.00%	N/A	N/A	5677	7431433	2726	0.48
FLS EC	4	16	4	0	0.00%	N/A	N/A	6.75	12.61	3.551	0.526
FLS pH	4	16	4	0	0.00%	N/A	N/A	6.743	0.161	0.402	0.0596
FLS Temp	4	16	4	0	0.00%	N/A	N/A	25	6.787	2.605	0.104
Hydroxide Alkalinity as CaCO3 (µg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	16	4	16	0	0.00%	N/A	N/A	3.054	3.422	1.85	0.606
pH (no unit)	16	4	16	0	0.00%	N/A	N/A	7.443	0.047	0.217	0.0291
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	11	9	11	0	0.00%	N/A	N/A	708545	7.270E+10	269631	0.381
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	11	9	11	0	0.00%	N/A	N/A	708.5	72701	269.6	0.381
Total Alkalinity as CaCO3 (mg/L)	6	14	6	0	0.00%	N/A	N/A	74	638	25.26	0.341
Total Anions (meq/L)	6	14	6	0	0.00%	N/A	N/A	56.47	986.3	31.4	0.556
Total Antimony (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
Total Beryllium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	14	6	0	0.00%	N/A	N/A	1.048	0.146	0.382	0.365
Total Cadmium (µg/L)	2	18	2	0	0.00%	N/A	N/A	0.2	0	0	N/A
Total Cadmium (mg/L)	2	18	2	0	0.00%	N/A	N/A	2.0000E-4	0	0	N/A
Total Chromium (mg/L)	4	16	4	0	0.00%	N/A	N/A	0.002	0	0	N/A
Total Cobalt (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00636	7.4855E-5	0.00865	1.36
Total Dissolved Solids @180°C-Total (µg/L)	11	9	11	0	0.00%	N/A	N/A	4572727	1.280E+12	1131416	0.247
Total Dissolved Solids @180°C-Total (mg/L)	11	9	11	0	0.00%	N/A	N/A	4573	1280102	1131	0.247
Total Lead (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
Total Manganese (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0154	3.0480E-4	0.0175	1.134
Total Mercury (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00582	1.3636E-6	0.00117	0.201
Total Nickel (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00309	1.0909E-6	0.00104	0.338
Total Selenium (mg/L)	9	11	9	0	0.00%	N/A	N/A	0.02	0	0	N/A
Total Silver (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
Total Strontium (mg/L)	11	9	11	0	0.00%	N/A	N/A	4.416	1.426	1.194	0.27
Total Thorium (mg/L)	1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.00133	1.3333E-6	0.00115	0.866
Total Vanadium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Total Zinc (mg/L)	5	15	0.007	0.026	0.0146	0.009	8.3300E-5	0.00913	0.00297	0.642	0.625
Bicarbonate Alkalinity as CaCO3 (µg/L)	5	15	70000	96000	83600	83000	1.063E+8	10310	11861	-0.144	0.123
Bicarbonate Alkalinity as CaCO3 (mg/L)	5	15	70	96	83.6	83	106.3	10.31	11.86	-0.144	0.123
Carbonate Alkalinity as CaCO3 (µg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	15	37.7	87.9	64.62	77.3	602.5	24.55	15.72	-0.502	0.38
Chloride (mg/L)	11	9	1030	2660	2021	2050	318109	564	429.9	-0.736	0.279
Depth to Water (m)	11	9	4.93	5.71	5.364	5.43	0.0914	0.302	0.371	-0.238	0.0564
Dissolved Antimony (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	2	18	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
Dissolved Beryllium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	15	0.84	1.25	1.08	1.14	0.0247	0.157	0.163	-0.922	0.145
Dissolved Cadmium (mg/L)	2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	0	0	0	N/A	N/A
Dissolved Calcium (µg/L)	11	9	184000	531000	429364	459000	1.559E+10	124868	62268	-1.612	0.291
Dissolved Calcium (mg/L)	11	9	184	531	429.4	459	15592	124.9	62.27	-1.612	0.291
Dissolved Chromium (mg/L)	3	17	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
Dissolved Cobalt (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	10	10	0.001	0.003	0.0019	0.002	5.4444E-7	7.3786E-4	7.4129E-4	0.166	0.388
Dissolved Lead (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	5	15	85000	250000	165000	196000	5.609E+9	74890	80059	-0.266	0.454
Dissolved Magnesium (mg/L)	11	9	85	250	187.3	196	2878	53.65	16.31	-1.325	0.286
Dissolved Manganese (mg/L)	2	18	0.002	0.003	0.0025	0.0025	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.283
Dissolved Mercury (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	5	15	0.003	0.01	0.0054	0.005	8.3000E-6	0.00288	0.00297	1.217	0.534
Dissolved Nickel (mg/L)	4	16	0.002	0.003	0.00275	0.003	2.5000E-7	5.0000E-4	0	-2	0.182
Dissolved Potassium (µg/L)	5	15	19000	35000	28200	32000	64700000	8044	4448	-0.517	0.285
Dissolved Potassium (mg/L)	11	9	19	38	31.27	34	38.22	6.182	2.965	-1.439	0.198
Dissolved Selenium (mg/L)	9	11	0.01	0.02	0.0156	0.02	2.7778E-5	0.00527	0	-0.271	0.339
Dissolved Silver (mg/L)	1	19	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
Dissolved Sodium (µg/L)	11	9	484000	960000	822455	908000	2.953E+10	171847	71164	-1.611	0.209
Dissolved Sodium (mg/L)	11	9	484	960	822.5	908	29531	171.8	71.16	-1.611	0.209
Dissolved Strontium (mg/L)	11	9	2.22	5.56	4.081	4.5	1.386	1.177	0.771	-0.741	0.288
Dissolved Thorium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Uranium (mg/L)		5	15	0	0.002	0.001	0.001	5.0000E-7	7.0711E-4	0	0	0.707
126	Dissolved Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
127	Dissolved Zinc (mg/L)		12	8	0.006	0.028	0.0121	0.01	4.3902E-5	0.00663	0.00222	1.796	0.548
128	Electrical Conductivity @ 25°C (µS/cm)		3	17	3960	8820	5677	4250	7431433	2726	429.9	1.71	0.48
129	FLS EC		4	16	1.44	8.72	6.75	8.42	12.61	3.551	0.437	-1.965	0.526
130	FLS pH		4	16	6.42	7.33	6.743	6.61	0.161	0.402	0.141	1.692	0.0596
131	FLS Temp		4	16	22.1	27.3	25	25.3	6.787	2.605	2.817	-0.239	0.104
132	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
134	Ionic Balance (Percent)		16	4	0.17	5.94	3.054	3.06	3.422	1.85	2.209	-0.0742	0.606
135	pH (no unit)		16	4	6.78	7.65	7.443	7.495	0.047	0.217	0.0964	-2.183	0.0291
136	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		11	9	193000	980000	708545	832000	7.270E+10	269631	65234	-1.145	0.381
137	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		11	9	193	980	708.5	832	72701	269.6	65.23	-1.145	0.381
138	Total Alkalinity as CaCO3 (mg/L)		6	14	26	96	74	80.5	638	25.26	15.57	-1.756	0.341
139	Total Anions (meq/L)		6	14	12.2	96.8	56.47	57.75	986.3	31.4	27.95	-0.167	0.556
140	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Arsenic (mg/L)		2	18	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
142	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
143	Total Boron (mg/L)		6	14	0.27	1.24	1.048	1.185	0.146	0.382	0.0519	-2.415	0.365
144	Total Cadmium (µg/L)		2	18	0.2	0.2	0.2	0.2	0	0	0	N/A	N/A
145	Total Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	0	0	0	N/A	N/A
146	Total Chromium (mg/L)		4	16	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
147	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
148	Total Copper (mg/L)		11	9	0.002	0.032	0.00636	0.004	7.4855E-5	0.00865	0.00297	3.116	1.36
149	Total Dissolved Solids @180°C-Total (µg/L)		11	9	2280000	5600000	4572727	4940000	1.280E+12	1131416	504077	-1.636	0.247
150	Total Dissolved Solids @180°C-Total (mg/L)		11	9	2280	5600	4573	4940	1280102	1131	504.1	-1.636	0.247
151	Total Lead (mg/L)		2	18	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
152	Total Manganese (mg/L)		5	15	0.002	0.044	0.0154	0.007	3.0480E-4	0.0175	0.00741	1.489	1.134
153	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
154	Total Molybdenum (mg/L)		11	9	0.004	0.008	0.00582	0.006	1.3636E-6	0.00117	0	-0.0381	0.201
155	Total Nickel (mg/L)		11	9	0.001	0.005	0.00309	0.003	1.0909E-6	0.00104	0	-0.213	0.338
156	Total Selenium (mg/L)		9	11	0.02	0.02	0.02	0.02	0	0	0	N/A	N/A
157	Total Silver (mg/L)		3	17	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
158	Total Strontium (mg/L)		11	9	2.29	6.23	4.416	4.52	1.426	1.194	0.697	-0.755	0.27
159	Total Thorium (mg/L)		1	19	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
160	Total Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
162	Total Uranium (mg/L)		3	17	0	0.002	0.00133	0.002	1.3333E-6	0.00115	0	-1.732	0.866
163	Total Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Total Zinc (mg/L)		5	15	0.0074	0.0078	0.008	0.009	0.023	0.0236	0.0248	0.0254	0.0259
169	Bicarbonate Alkalinity as CaCO3 (µg/L)		5	15	73200	76400	78000	83000	91000	92000	94000	95000	95800
170	Bicarbonate Alkalinity as CaCO3 (mg/L)		5	15	73.2	76.4	78	83	91	92	94	95	95.8
171	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
173	Cations Total (meq/L)		5	15	37.98	38.26	38.4	77.3	81.8	83.02	85.46	86.68	87.66
174	Chloride (mg/L)		11	9	1090	1760	1815	2050	2460	2580	2650	2655	2659
175	Depth to Water (m)		11	9	4.97	5.07	5.105	5.43	5.655	5.67	5.68	5.695	5.707
176	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Arsenic (mg/L)		2	18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
178	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
179	Dissolved Boron (mg/L)		5	15	0.912	0.984	1.02	1.14	1.15	1.17	1.21	1.23	1.246
180	Dissolved Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4
181	Dissolved Calcium (µg/L)		11	9	188000	422000	438500	459000	509500	518000	522000	526500	530100
182	Dissolved Calcium (mg/L)		11	9	188	422	438.5	459	509.5	518	522	526.5	530.1
183	Dissolved Chromium (mg/L)		3	17	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
184	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
185	Dissolved Copper (mg/L)		10	10	0.001	0.001	0.00125	0.002	0.002	0.0022	0.003	0.003	0.003
186	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
187	Dissolved Magnesium (µg/L)		5	15	85800	86600	87000	196000	207000	215600	232800	241400	248280
188	Dissolved Magnesium (mg/L)		11	9	87	185	188	196	217.5	228	229	239.5	247.9
189	Dissolved Manganese (mg/L)		2	18	0.0021	0.0022	0.00225	0.0025	0.00275	0.0028	0.0029	0.00295	0.00299
190	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
191	Dissolved Molybdenum (mg/L)		5	15	0.003	0.003	0.003	0.005	0.006	0.0068	0.0084	0.0092	0.00984
192	Dissolved Nickel (mg/L)		4	16	0.0023	0.0026	0.00275	0.003	0.003	0.003	0.003	0.003	0.003
193	Dissolved Potassium (µg/L)		5	15	19400	19800	20000	32000	35000	35000	35000	35000	35000
194	Dissolved Potassium (mg/L)		11	9	20	30	31	34	35	35	35	36.5	37.7
195	Dissolved Selenium (mg/L)		9	11	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
196	Dissolved Silver (mg/L)		1	19	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
197	Dissolved Sodium (µg/L)		11	9	492000	806000	820500	908000	922000	933000	948000	954000	958800
198	Dissolved Sodium (mg/L)		11	9	492	806	820.5	908	922	933	948	954	958.8
199	Dissolved Strontium (mg/L)		11	9	2.4	2.46	3.26	4.5	4.855	5.02	5.11	5.335	5.515
200	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
203	Dissolved Uranium (mg/L)		5	15	4.0000E-4	8.0000E-4	0.001	0.001	0.001	0.0012	0.0016	0.0018	0.00196
204	Dissolved Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
205	Dissolved Zinc (mg/L)		12	8	0.0063	0.009	0.009	0.01	0.012	0.012	0.0219	0.0253	0.0275
206	Electrical Conductivity @ 25°C (µS/cm)		3	17	4018	4076	4105	4250	6535	6992	7906	8363	8729
207	FLS EC		4	16	3.447	5.454	6.458	8.42	8.713	8.714	8.717	8.719	8.72
208	FLS pH		4	16	6.477	6.534	6.563	6.61	6.79	6.898	7.114	7.222	7.308
209	FLS Temp		4	16	22.52	22.94	23.15	25.3	27.15	27.18	27.24	27.27	27.29
210	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
212	Ionic Balance (Percent)		16	4	0.555	1.13	1.715	3.06	4.405	4.84	5.375	5.813	5.915
213	pH (no unit)		16	4	7.23	7.42	7.435	7.495	7.558	7.61	7.625	7.635	7.647
214	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		11	9	353000	358000	577000	832000	869000	876000	905000	942500	972500
215	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		11	9	353	358	577	832	869	876	905	942.5	972.5
216	Total Alkalinity as CaCO3 (mg/L)		6	14	48	70	72	80.5	89	91	93.5	94.75	95.75
217	Total Anions (meq/L)		6	14	25.25	38.3	38.73	57.75	75.88	76	86.4	91.6	95.76
218	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Arsenic (mg/L)		2	18	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
220	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
221	Total Boron (mg/L)		6	14	0.72	1.17	1.173	1.185	1.228	1.24	1.24	1.24	1.24
222	Total Cadmium (µg/L)		2	18	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
223	Total Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4
224	Total Chromium (mg/L)		4	16	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
225	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
226	Total Copper (mg/L)		11	9	0.002	0.002	0.0025	0.004	0.005	0.006	0.007	0.0195	0.0295
227	Total Dissolved Solids @180°C-Total (µg/L)		11	9	2440000	4600000	4715000	4940000	5175000	5290000	5440000	5520000	5584000
228	Total Dissolved Solids @180°C-Total (mg/L)		11	9	2440	4600	4715	4940	5175	5290	5440	5520	5584
229	Total Lead (mg/L)		2	18	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
230	Total Manganese (mg/L)		5	15	0.0028	0.0036	0.004	0.007	0.02	0.0248	0.0344	0.0392	0.043
231	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
232	Total Molybdenum (mg/L)		11	9	0.004	0.005	0.0055	0.006	0.006	0.006	0.007	0.0075	0.0079
233	Total Nickel (mg/L)		11	9	0.002	0.003	0.003	0.003	0.0035	0.004	0.004	0.0045	0.0049
234	Total Selenium (mg/L)		9	11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
235	Total Silver (mg/L)		3	17	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
236	Total Strontium (mg/L)		11	9	2.35	4.18	4.26	4.52	5.02	5.05	5.56	5.895	6.163
237	Total Thorium (mg/L)		1	19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
238	Total Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
240	Total Uranium (mg/L)		3	17	4.0000E-4	8.0000E-4	0.001	0.002	0.002	0.002	0.002	0.002	0.002
241	Total Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2	Date/Time of Computation			ProUCL 5.2 12/08/2024 2:16:54 PM									
3	User Selected Options												
4	From File			TSF C.xls									
5	Full Precision			OFF									
6													
7	From File: TSF C.xls												
8													
9	General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method												
10													
11	Variable		NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	6	0	0.00%	N/A	N/A	71833	8966667	2994	0.0417
13	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	6	0	0.00%	N/A	N/A	71.83	8.967	2.994	0.0417
14	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)		12	8	12	0	0.00%	N/A	N/A	69.66	26.28	5.126	0.0736
17	Chloride (mg/L)		12	8	12	0	0.00%	N/A	N/A	1844	15917	126.2	0.0684
18	Depth to Water (m)		12	8	12	0	0.00%	N/A	N/A	12.5	0.125	0.353	0.0283
19	Dissolved Antimony (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
20	Dissolved Arsenic (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
21	Dissolved Beryllium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)		6	14	6	0	0.00%	N/A	N/A	1.495	0.0145	0.12	0.0806
23	Dissolved Cadmium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
24	Dissolved Calcium (µg/L)		6	14	6	0	0.00%	N/A	N/A	362167	2.002E+8	14148	0.0391
25	Dissolved Calcium (mg/L)		6	14	6	0	0.00%	N/A	N/A	362.2	200.2	14.15	0.0391
26	Dissolved Chromium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00417	1.6667E-7	4.0825E-4	0.098
27	Dissolved Cobalt (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)		4	16	4	0	0.00%	N/A	N/A	0.0015	3.3333E-7	5.7735E-4	0.385
29	Dissolved Lead (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
30	Dissolved Magnesium (µg/L)		12	8	12	0	0.00%	N/A	N/A	158000	1.724E+8	13129	0.0831
31	Dissolved Magnesium (mg/L)		6	14	6	0	0.00%	N/A	N/A	159.3	37.47	6.121	0.0384
32	Dissolved Manganese (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
33	Dissolved Mercury (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.003	1.2000E-6	0.0011	0.365
35	Dissolved Nickel (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
36	Dissolved Potassium (µg/L)		12	8	12	0	0.00%	N/A	N/A	32000	4181818	2045	0.0639
37	Dissolved Potassium (mg/L)		12	8	12	0	0.00%	N/A	N/A	32	4.182	2.045	0.0639
38	Dissolved Selenium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
39	Dissolved Silver (mg/L)		1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
40	Dissolved Sodium (µg/L)		6	14	6	0	0.00%	N/A	N/A	865333	3.119E+8	17660	0.0204
41	Dissolved Sodium (mg/L)		12	8	12	0	0.00%	N/A	N/A	867.5	3963	62.95	0.0726
42	Dissolved Strontium (mg/L)		12	8	12	0	0.00%	N/A	N/A	3.791	0.414	0.643	0.17
43	Dissolved Thorium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00133	6.6667E-7	8.1650E-4	0.612
47	Dissolved Vanadium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
48	Dissolved Zinc (mg/L)		12	8	12	0	0.00%	N/A	N/A	0.00958	1.2447E-5	0.00353	0.368
49	Electrical Conductivity @ 25°C (µS/cm)		4	16	4	0	0.00%	N/A	N/A	7185	576433	759.2	0.106
50	FLS EC		4	16	4	0	0.00%	N/A	N/A	6.265	0.62	0.788	0.126
51	FLS pH		4	16	4	0	0.00%	N/A	N/A	6.935	0.0294	0.172	0.0247
52	FLS Temp		4	16	4	0	0.00%	N/A	N/A	26.13	9.109	3.018	0.116
53	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)		17	3	17	0	0.00%	N/A	N/A	2.672	2.602	1.613	0.604
56	pH (no unit)		17	3	17	0	0.00%	N/A	N/A	7.576	0.0296	0.172	0.0227
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	6	0	0.00%	N/A	N/A	745333	1.560E+9	39495	0.053
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	6	0	0.00%	N/A	N/A	745.3	1560	39.5	0.053
59	Total Alkalinity as CaCO3 (mg/L)		6	14	6	0	0.00%	N/A	N/A	71.83	8.967	2.994	0.0417
60	Total Anions (meq/L)		6	14	6	0	0.00%	N/A	N/A	68.25	5.027	2.242	0.0329
61	Total Antimony (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
62	Total Arsenic (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00183	1.6667E-7	4.0825E-4	0.223
63	Total Beryllium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)		6	14	6	0	0.00%	N/A	N/A	1.602	0.00218	0.0467	0.0291
65	Total Cadmium (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
66	Total Cadmium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
67	Total Chromium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00417	1.6667E-7	4.0825E-4	0.098
68	Total Cobalt (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00233	6.6667E-7	8.1650E-4	0.35
70	Total Dissolved Solids @180°C-Total (µg/L)		5	15	5	0	0.00%	N/A	N/A	4406000	3.040E+11	551344	0.125
71	Total Dissolved Solids @180°C-Total (mg/L)		5	15	5	0	0.00%	N/A	N/A	4406	303980	551.3	0.125
72	Total Lead (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
73	Total Manganese (mg/L)		9	11	9	0	0.00%	N/A	N/A	0.002	2.5000E-7	5.0000E-4	0.25
74	Total Mercury (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0035	3.0000E-7	5.4772E-4	0.156
76	Total Nickel (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
77	Total Selenium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0117	1.6667E-5	0.00408	0.35
78	Total Silver (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
79	Total Strontium (mg/L)		6	14	6	0	0.00%	N/A	N/A	4.03	0.214	0.462	0.115
80	Total Thorium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
81	Total Tin (mg/L)		1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
82	Total Titanium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0015	7.0000E-7	8.3666E-4	0.558
84	Total Vanadium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
85	Total Zinc (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0095	2.9500E-5	0.00543	0.572
86													
87				General Statistics for Raw Data Sets using Detected Data Only									
88													
89	Variable		NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	68000	76000	71833	71500	8966667	2994	2965	0.173	0.0417
91	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	68	76	71.83	71.5	8.967	2.994	2.965	0.173	0.0417
92	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)		12	8	58.2	80.2	69.66	70.15	26.28	5.126	2.891	-0.274	0.0736
95	Chloride (mg/L)		12	8	1620	2060	1844	1820	15917	126.2	103.8	0.0948	0.0684
96	Depth to Water (m)		12	8	11.92	12.87	12.5	12.6	0.125	0.353	0.341	-0.489	0.0283
97	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
98	Dissolved Arsenic (mg/L)		6	14	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
99	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)		6	14	1.32	1.63	1.495	1.5	0.0145	0.12	0.148	-0.334	0.0806
101	Dissolved Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
102	Dissolved Calcium (µg/L)		6	14	342000	378000	362167	364000	2.002E+8	14148	17050	-0.377	0.0391
103	Dissolved Calcium (mg/L)		6	14	342	378	362.2	364	200.2	14.15	17.05	-0.377	0.0391
104	Dissolved Chromium (mg/L)		6	14	0.004	0.005	0.00417	0.004	1.6667E-7	4.0825E-4	0	2.449	0.098
105	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)		4	16	0.001	0.002	0.0015	0.0015	3.3333E-7	5.7735E-4	7.4129E-4	0	0.385
107	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
108	Dissolved Magnesium (µg/L)		12	8	128000	183000	158000	159500	1.724E+8	13129	10378	-0.485	0.0831
109	Dissolved Magnesium (mg/L)		6	14	152	170	159.3	159.5	37.47	6.121	3.706	0.966	0.0384
110	Dissolved Manganese (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
111	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)		6	14	0.002	0.005	0.003	0.003	1.2000E-6	0.0011	7.4129E-4	1.369	0.365
113	Dissolved Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
114	Dissolved Potassium (µg/L)		12	8	28000	36000	32000	32000	4181818	2045	1483	0	0.0639
115	Dissolved Potassium (mg/L)		12	8	28	36	32	32	4.182	2.045	1.483	0	0.0639
116	Dissolved Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
117	Dissolved Silver (mg/L)		1	19	0.004	0.004	0.004	0.004	N/A	N/A	0	N/A	N/A
118	Dissolved Sodium (µg/L)		6	14	838000	884000	865333	869000	3.119E+8	17660	18532	-0.657	0.0204
119	Dissolved Sodium (mg/L)		12	8	727	998	867.5	869	3963	62.95	34.84	-0.236	0.0726
120	Dissolved Strontium (mg/L)		12	8	1.89	4.45	3.791	3.85	0.414	0.643	0.193	-2.617	0.17
121	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)		6	14	0	0.002	0.00133	0.0015	6.6667E-7	8.1650E-4	7.4129E-4	-0.857	0.612

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
126	Dissolved Zinc (mg/L)		12	8	0.006	0.019	0.00958	0.0085	1.2447E-5	0.00353	0.00222	1.95	0.368
127	Electrical Conductivity @ 25°C (µS/cm)		4	16	6410	8230	7185	7050	576433	759.2	481.8	1.022	0.106
128	FLS EC		4	16	5.1	6.81	6.265	6.575	0.62	0.788	0.237	-1.837	0.126
129	FLS pH		4	16	6.72	7.14	6.935	6.94	0.0294	0.172	0.148	-0.175	0.0247
130	FLS Temp		4	16	21.7	28.5	26.13	27.15	9.109	3.018	1.038	-1.724	0.116
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		17	3	0.24	6.16	2.672	2.19	2.602	1.613	1.557	0.698	0.604
134	pH (no unit)		17	3	7.19	7.75	7.576	7.63	0.0296	0.172	0.0741	-1.489	0.0227
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	693000	792000	745333	747000	1.560E+9	39495	42254	-0.145	0.053
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	693	792	745.3	747	1560	39.5	42.25	-0.145	0.053
137	Total Alkalinity as CaCO3 (mg/L)		6	14	68	76	71.83	71.5	8.967	2.994	2.965	0.173	0.0417
138	Total Anions (meq/L)		6	14	66.3	72	68.25	67.35	5.027	2.242	1.26	1.107	0.0329
139	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		6	14	0.001	0.002	0.00183	0.002	1.6667E-7	4.0825E-4	0	-2.449	0.223
141	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		6	14	1.56	1.66	1.602	1.585	0.00218	0.0467	0.0371	0.711	0.0291
143	Total Cadmium (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
144	Total Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
145	Total Chromium (mg/L)		6	14	0.004	0.005	0.00417	0.004	1.6667E-7	4.0825E-4	0	2.449	0.098
146	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		6	14	0.001	0.003	0.00233	0.0025	6.6667E-7	8.1650E-4	7.4129E-4	-0.857	0.35
148	Total Dissolved Solids @180°C-Total (µg/L)		5	15	3740000	5260000	4406000	4340000	3.040E+11	551344	192735	0.798	0.125
149	Total Dissolved Solids @180°C-Total (mg/L)		5	15	3740	5260	4406	4340	303980	551.3	192.7	0.798	0.125
150	Total Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
151	Total Manganese (mg/L)		9	11	0.001	0.003	0.002	0.002	2.5000E-7	5.0000E-4	0	0	0.25
152	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		6	14	0.003	0.004	0.0035	0.0035	3.0000E-7	5.4772E-4	7.4129E-4	3.681E-15	0.156
154	Total Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
155	Total Selenium (mg/L)		6	14	0.01	0.02	0.0117	0.01	1.6667E-5	0.00408	0	2.449	0.35
156	Total Silver (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		6	14	3.52	4.64	4.03	3.935	0.214	0.462	0.497	0.323	0.115
158	Total Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
159	Total Tin (mg/L)		1	19	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		6	14	0	0.002	0.0015	0.002	7.0000E-7	8.3666E-4	0	-1.537	0.558
162	Total Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
163	Total Zinc (mg/L)		6	14	0.005	0.02	0.0095	0.008	2.9500E-5	0.00543	0.00297	1.904	0.572
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	69000	70000	70000	71500	73750	74000	75000	75500	75900
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	69	70	70	71.5	73.75	74	75	75.5	75.9
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		12	8	66.11	67.32	67.93	70.15	71.5	71.94	73.09	76.35	79.43
173	Chloride (mg/L)		12	8	1717	1780	1780	1820	1933	1960	1997	2027	2053
174	Depth to Water (m)		12	8	12.07	12.1	12.14	12.6	12.83	12.83	12.83	12.85	12.87
175	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		6	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
177	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		6	14	1.365	1.41	1.423	1.5	1.593	1.61	1.62	1.625	1.629
179	Dissolved Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		6	14	346500	351000	352750	364000	373000	374000	376000	377000	377800
181	Dissolved Calcium (mg/L)		6	14	346.5	351	352.8	364	373	374	376	377	377.8
182	Dissolved Chromium (mg/L)		6	14	0.004	0.004	0.004	0.004	0.004	0.004	0.0045	0.00475	0.00495
183	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		4	16	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
185	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	Dissolved Magnesium (µg/L)		12	8	150200	152000	152000	159500	162250	165000	169600	175850	181570
187	Dissolved Magnesium (mg/L)		6	14	153.5	155	156	159.5	160	160	165	167.5	169.5
188	Dissolved Manganese (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
189	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		6	14	0.002	0.002	0.00225	0.003	0.003	0.003	0.004	0.0045	0.0049
191	Dissolved Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
192	Dissolved Potassium (µg/L)		12	8	30100	31000	31000	32000	33000	33000	33900	34900	35780
193	Dissolved Potassium (mg/L)		12	8	30.1	31	31	32	33	33	33.9	34.9	35.78
194	Dissolved Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
195	Dissolved Silver (mg/L)		1	19	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
196	Dissolved Sodium (µg/L)		6	14	845500	853000	855250	869000	878250	879000	881500	882750	883750
197	Dissolved Sodium (mg/L)		12	8	824.5	841	849.3	869	889.5	901.6	907.8	948.5	988.1
198	Dissolved Strontium (mg/L)		12	8	3.696	3.756	3.773	3.85	4.11	4.198	4.239	4.335	4.427
199	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		6	14	5.0000E-4	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
203	Dissolved Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
204	Dissolved Zinc (mg/L)		12	8	0.007	0.0072	0.00775	0.0085	0.0103	0.0108	0.0128	0.0157	0.0183
205	Electrical Conductivity @ 25°C (µS/cm)		4	16	6599	6788	6883	7050	7353	7528	7879	8055	8195
206	FLS EC		4	16	5.517	5.934	6.143	6.575	6.698	6.72	6.765	6.788	6.806
207	FLS pH		4	16	6.786	6.852	6.885	6.94	6.99	7.02	7.08	7.11	7.134
208	FLS Temp		4	16	23.32	24.94	25.75	27.15	27.53	27.72	28.11	28.31	28.46
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		17	3	1.056	1.506	1.57	2.19	3.4	4.104	4.7	5.448	6.018
212	pH (no unit)		17	3	7.266	7.558	7.59	7.63	7.68	7.688	7.716	7.742	7.748
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	705500	718000	719000	747000	774250	775000	783500	787750	791150
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	705.5	718	719	747	774.3	775	783.5	787.8	791.2
215	Total Alkalinity as CaCO3 (mg/L)		6	14	69	70	70	71.5	73.75	74	75	75.5	75.9
216	Total Anions (meq/L)		6	14	66.5	66.7	66.7	67.35	69.35	69.8	70.9	71.45	71.89
217	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		6	14	0.0015	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
219	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		6	14	1.56	1.56	1.565	1.585	1.643	1.66	1.66	1.66	1.66
221	Total Cadmium (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
222	Total Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
223	Total Chromium (mg/L)		6	14	0.004	0.004	0.004	0.004	0.004	0.004	0.0045	0.00475	0.00495
224	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		6	14	0.0015	0.002	0.002	0.0025	0.003	0.003	0.003	0.003	0.003
226	Total Dissolved Solids @180°C-Total (µg/L)		5	15	3932000	4124000	4220000	4340000	4470000	4628000	4944000	5102000	5228400
227	Total Dissolved Solids @180°C-Total (mg/L)		5	15	3932	4124	4220	4340	4470	4628	4944	5102	5228
228	Total Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229	Total Manganese (mg/L)		9	11	0.0018	0.002	0.002	0.002	0.002	0.002	0.0022	0.0026	0.00292
230	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		6	14	0.003	0.003	0.003	0.0035	0.004	0.004	0.004	0.004	0.004
232	Total Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
233	Total Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.015	0.0175	0.0195
234	Total Silver (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		6	14	3.6	3.68	3.688	3.935	4.393	4.47	4.555	4.598	4.632
236	Total Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
237	Total Tin (mg/L)		1	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
238	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		6	14	5.0000E-4	0.001	0.00125	0.002	0.002	0.002	0.002	0.002	0.002
240	Total Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
241	Total Zinc (mg/L)		6	14	0.0055	0.006	0.0065	0.008	0.0095	0.01	0.015	0.0175	0.0195

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.2 12/08/2024 2:18:58 PM
User Selected Options	
From File	TSF D.xls
Full Precision	OFF

From File: TSF D.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
kalinity as CaCO3 (µg/L)	5	10	5	0	0.00%	N/A	N/A	226600	9.173E+8	30287	0.134
alinity as CaCO3 (mg/L)	5	10	5	0	0.00%	N/A	N/A	226.6	917.3	30.29	0.134
kalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	10	5	0	0.00%	N/A	N/A	92.88	28.27	5.317	0.0572
Chloride (mg/L)	5	10	5	0	0.00%	N/A	N/A	2884	19430	139.4	0.0483
Depth to Water (m)	3	12	3	0	0.00%	N/A	N/A	90.42	0.00173	0.0416	4.6046E-4
ssolved Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
ssolved Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.568	0.118	0.343	0.0961
ssolved Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	5	10	5	0	0.00%	N/A	N/A	270400	2.508E+8	15837	0.0586
issolved Calcium (mg/L)	5	10	5	0	0.00%	N/A	N/A	270.4	250.8	15.84	0.0586
solved Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
Dissolved Lead (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
olved Magnesium (µg/L)	5	10	5	0	0.00%	N/A	N/A	167600	74300000	8620	0.0514
olved Magnesium (mg/L)	5	10	5	0	0.00%	N/A	N/A	167.6	74.3	8.62	0.0514
olved Manganese (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.452	7.0070E-4	0.0265	0.0585
issolved Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
ved Molybdenum (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.002	6.6667E-7	8.1650E-4	0.408
Dissolved Nickel (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0026	1.8000E-6	0.00134	0.516
solved Potassium (µg/L)	5	10	5	0	0.00%	N/A	N/A	55000	4000000	2000	0.0364
solved Potassium (mg/L)	5	10	5	0	0.00%	N/A	N/A	55	4	2	0.0364
ssolved Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	5	10	5	0	0.00%	N/A	N/A	1476000	8.230E+9	90719	0.0615
Dissolved Sodium (mg/L)	5	10	5	0	0.00%	N/A	N/A	1476	8230	90.72	0.0615
ssolved Strontium (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.394	0.0311	0.176	0.052
ssolved Thorium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Uranium (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.001	2.0000E-6	0.00141	1.414
solved Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	6	9	6	0	0.00%	N/A	N/A	0.0135	1.7100E-5	0.00414	0.306
uctivity @ 25°C (µS/cm)	3	12	3	0	0.00%	N/A	N/A	10477	720633	848.9	0.081
FLS EC	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
FLS pH	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
FLS Temp	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
kalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	13	2	13	0	0.00%	N/A	N/A	7.041	14.94	3.865	0.549
pH (no unit)	14	1	14	0	0.00%	N/A	N/A	7.771	0.0329	0.181	0.0233
dimetric-Dissolved (µg/L)	5	10	5	0	0.00%	N/A	N/A	1036000	1.080E+9	32863	0.0317
imetric-Dissolved (mg/L)	5	10	5	0	0.00%	N/A	N/A	1036	1080	32.86	0.0317
alinity as CaCO3 (mg/L)	5	10	5	0	0.00%	N/A	N/A	226.6	917.3	30.29	0.134
Total Anions (meq/L)	5	10	5	0	0.00%	N/A	N/A	107.4	26.3	5.128	0.0478
Total Antimony (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	5	10	5	0	0.00%	N/A	N/A	4.052	0.164	0.405	0.1
Total Cadmium (µg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
Total Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0056	2.7800E-5	0.00527	0.942
ids @180°C-Total (µg/L)	5	10	5	0	0.00%	N/A	N/A	6048000	2.416E+11	491498	0.0813
ds @180°C-Total (mg/L)	5	10	5	0	0.00%	N/A	N/A	6048	241570	491.5	0.0813
Total Lead (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Manganese (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.494	3.6920E-4	0.0192	0.0389
Total Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
otal Molybdenum (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0028	5.7000E-6	0.00239	0.853
Total Nickel (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.003	2.0000E-6	0.00141	0.471
Total Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.446	0.0681	0.261	0.0757
Total Thorium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	6	9	6	0	0.00%	N/A	N/A	0.0182	6.2567E-5	0.00791	0.435

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
kalinity as CaCO3 (µg/L)	5	10	175000	254000	226600	232000	9.173E+8	30287	13343	-1.704	0.134
alinity as CaCO3 (mg/L)	5	10	175	254	226.6	232	917.3	30.29	13.34	-1.704	0.134
kalinity as CaCO3 (µg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	10	85.7	98.9	92.88	92.2	28.27	5.317	7.413	-0.241	0.0572
Chloride (mg/L)	5	10	2730	3080	2884	2820	19430	139.4	133.4	0.614	0.0483
Depth to Water (m)	3	12	90.37	90.45	90.42	90.43	0.00173	0.0416	0.0297	-1.293	4.6046E-4
ssolved Antimony (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ssolved Beryllium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	10	3.16	4.07	3.568	3.59	0.118	0.343	0.341	0.52	0.0961
ssolved Cadmium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	5	10	245000	283000	270400	278000	2.508E+8	15837	7413	-1.355	0.0586
issolved Calcium (mg/L)	5	10	245	283	270.4	278	250.8	15.84	7.413	-1.355	0.0586
solved Chromium (mg/L)	1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
Dissolved Lead (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
olved Magnesium (µg/L)	5	10	158000	177000	167600	166000	74300000	8620	11861	0.161	0.0514
olved Magnesium (mg/L)	5	10	158	177	167.6	166	74.3	8.62	11.86	0.161	0.0514
olved Manganese (mg/L)	5	10	0.418	0.482	0.452	0.457	7.0070E-4	0.0265	0.0356	-0.311	0.0585
issolved Mercury (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ved Molybdenum (mg/L)	4	11	0.001	0.003	0.002	0.002	6.6667E-7	8.1650E-4	7.4129E-4	0	0.408
Dissolved Nickel (mg/L)	5	10	0.001	0.004	0.0026	0.002	1.8000E-6	0.00134	0.00148	0.166	0.516
solved Potassium (µg/L)	5	10	53000	58000	55000	54000	4000000	2000	1483	0.938	0.0364
solved Potassium (mg/L)	5	10	53	58	55	54	4	2	1.483	0.938	0.0364
ssolved Selenium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	5	10	1360000	1580000	1476000	1470000	8.230E+9	90719	118606	-0.115	0.0615
Dissolved Sodium (mg/L)	5	10	1360	1580	1476	1470	8230	90.72	118.6	-0.115	0.0615
ssolved Strontium (mg/L)	5	10	3.18	3.64	3.394	3.35	0.0311	0.176	0.208	0.402	0.052
ssolved Thorium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Titanium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Uranium (mg/L)	2	13	0	0.002	0.001	0.001	2.0000E-6	0.00141	0.00148	N/A	1.414

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	solved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		6	9	0.009	0.02	0.0135	0.012	1.7100E-5	0.00414	0.00297	0.865	0.306
127	luctivity @ 25°C (µS/cm)		3	12	9730	11400	10477	10300	720633	848.9	845.1	0.896	0.081
128	FLS EC		1	14	7.18	7.18	7.18	7.18	N/A	N/A	0	N/A	N/A
129	FLS pH		1	14	6.82	6.82	6.82	6.82	N/A	N/A	0	N/A	N/A
130	FLS Temp		1	14	32.1	32.1	32.1	32.1	N/A	N/A	0	N/A	N/A
131	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		13	2	0.18	13.1	7.041	8.32	14.94	3.865	2.372	-0.511	0.549
134	pH (no unit)		14	1	7.46	8.09	7.771	7.79	0.0329	0.181	0.163	-0.316	0.0233
135	dimetric-Dissolved (µg/L)		5	10	1000000	1070000	1036000	1030000	1.080E+9	32863	44477	0.166	0.0317
136	imetric-Dissolved (mg/L)		5	10	1000	1070	1036	1030	1080	32.86	44.48	0.166	0.0317
137	alinity as CaCO3 (mg/L)		5	10	175	254	226.6	232	917.3	30.29	13.34	-1.704	0.134
138	Total Anions (meq/L)		5	10	101	114	107.4	106	26.3	5.128	7.413	0.171	0.0478
139	Total Antimony (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
140	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		5	10	3.58	4.61	4.052	3.94	0.164	0.405	0.534	0.447	0.1
143	Total Cadmium (µg/L)		1	14	0.5	0.5	0.5	0.5	N/A	N/A	0	N/A	N/A
144	Total Cadmium (mg/L)		1	14	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	N/A	N/A	0	N/A	N/A
145	Total Chromium (mg/L)		2	13	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
146	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		5	10	0.003	0.015	0.0056	0.003	2.7800E-5	0.00527	0	2.2	0.942
148	ids @180°C-Total (µg/L)		5	10	5680000	6770000	6048000	5760000	2.416E+11	491498	118606	0.984	0.0813
149	ds @180°C-Total (mg/L)		5	10	5680	6770	6048	5760	241570	491.5	118.6	0.984	0.0813
150	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
151	Total Manganese (mg/L)		5	10	0.472	0.516	0.494	0.502	3.6920E-4	0.0192	0.0208	-0.286	0.0389
152	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	otal Molybdenum (mg/L)		5	10	0.001	0.007	0.0028	0.002	5.7000E-6	0.00239	0	2.043	0.853
154	Total Nickel (mg/L)		5	10	0.002	0.005	0.003	0.002	2.0000E-6	0.00141	0	0.884	0.471
155	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		5	10	3.06	3.73	3.446	3.48	0.0681	0.261	0.208	-0.715	0.0757
158	Total Thorium (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		1	14	0.01	0.01	0.01	0.01	N/A	N/A	0	N/A	N/A
161	Total Uranium (mg/L)		1	14	0	0	0	0	N/A	N/A	0	N/A	N/A
162	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		6	9	0.012	0.033	0.0182	0.015	6.2567E-5	0.00791	0.00371	1.728	0.435
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	kalinity as CaCO3 (µg/L)		5	10	197400	219800	231000	232000	241000	243600	248800	251400	253480
169	alinity as CaCO3 (mg/L)		5	10	197.4	219.8	231	232	241	243.6	248.8	251.4	253.5
170	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		5	10	87.58	89.46	90.4	92.2	97.2	97.54	98.22	98.56	98.83
173	Chloride (mg/L)		5	10	2766	2802	2820	2820	2970	2992	3036	3058	3076
174	Depth to Water (m)		3	12	90.38	90.39	90.4	90.43	90.44	90.44	90.45	90.45	90.45
175	ssolved Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	ssolved Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		5	10	3.24	3.32	3.36	3.59	3.66	3.742	3.906	3.988	4.054
179	ssolved Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		5	10	253000	261000	265000	278000	281000	281400	282200	282600	282920
181	issolved Calcium (mg/L)		5	10	253	261	265	278	281	281.4	282.2	282.6	282.9
182	solved Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
183	Dissolved Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		2	13	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
185	Dissolved Lead (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	olved Magnesium (µg/L)		5	10	159200	160400	161000	166000	176000	176200	176600	176800	176960
187	olved Magnesium (mg/L)		5	10	159.2	160.4	161	166	176	176.2	176.6	176.8	177
188	olved Manganese (mg/L)		5	10	0.424	0.43	0.433	0.457	0.471	0.473	0.478	0.48	0.482
189	issolved Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	ved Molybdenum (mg/L)		4	11	0.0013	0.0016	0.00175	0.002	0.00225	0.0024	0.0027	0.00285	0.00297
191	Dissolved Nickel (mg/L)		5	10	0.0014	0.0018	0.002	0.002	0.004	0.004	0.004	0.004	0.004
192	solved Potassium (µg/L)		5	10	53400	53800	54000	54000	56000	56400	57200	57600	57920
193	solved Potassium (mg/L)		5	10	53.4	53.8	54	54	56	56.4	57.2	57.6	57.92
194	ssolved Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
196	Dissolved Sodium (µg/L)		5	10	1384000	1408000	1420000	1470000	1550000	1556000	1568000	1574000	1578800
197	Dissolved Sodium (mg/L)		5	10	1384	1408	1420	1470	1550	1556	1568	1574	1579
198	ssolved Strontium (mg/L)		5	10	3.232	3.284	3.31	3.35	3.49	3.52	3.58	3.61	3.634
199	ssolved Thorium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	issolved Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	issolved Uranium (mg/L)		2	13	2.0000E-4	4.0000E-4	5.0000E-4	0.001	0.0015	0.0016	0.0018	0.0019	0.00198
203	solved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		6	9	0.01	0.011	0.0113	0.012	0.0158	0.017	0.0185	0.0193	0.0199
205	luctivity @ 25°C (µS/cm)		3	12	9844	9958	10015	10300	10850	10960	11180	11290	11378
206	FLS EC		1	14	7.18	7.18	7.18	7.18	7.18	7.18	7.18	7.18	7.18
207	FLS pH		1	14	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82
208	FLS Temp		1	14	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
209	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		13	2	1.788	2.972	4.04	8.32	9.67	9.82	10.06	11.3	12.74
212	pH (no unit)		14	1	7.506	7.644	7.683	7.79	7.9	7.904	7.917	7.98	8.068
213	dimetric-Dissolved (µg/L)		5	10	1004000	1008000	1010000	1030000	1070000	1070000	1070000	1070000	1070000
214	imetric-Dissolved (mg/L)		5	10	1004	1008	1010	1030	1070	1070	1070	1070	1070
215	alinity as CaCO3 (mg/L)		5	10	197.4	219.8	231	232	241	243.6	248.8	251.4	253.5
216	Total Anions (meq/L)		5	10	102.6	104.2	105	106	111	111.6	112.8	113.4	113.9
217	Total Antimony (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
218	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		5	10	3.68	3.78	3.83	3.94	4.3	4.362	4.486	4.548	4.598
221	Total Cadmium (µg/L)		1	14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
222	Total Cadmium (mg/L)		1	14	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4
223	Total Chromium (mg/L)		2	13	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
224	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		5	10	0.003	0.003	0.003	0.003	0.004	0.0062	0.0106	0.0128	0.0146
226	ids @180°C-Total (µg/L)		5	10	5680000	5680000	5680000	5760000	6350000	6434000	6602000	6686000	6753200
227	ds @180°C-Total (mg/L)		5	10	5680	5680	5680	5760	6350	6434	6602	6686	6753
228	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
229	Total Manganese (mg/L)		5	10	0.474	0.475	0.476	0.502	0.505	0.507	0.512	0.514	0.516
230	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	otal Molybdenum (mg/L)		5	10	0.0014	0.0018	0.002	0.002	0.002	0.003	0.005	0.006	0.0068
232	Total Nickel (mg/L)		5	10	0.002	0.002	0.002	0.002	0.004	0.0042	0.0046	0.0048	0.00496
233	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		5	10	3.172	3.284	3.34	3.48	3.62	3.642	3.686	3.708	3.726
236	Total Thorium (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
237	Total Tin (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
238	Total Titanium (mg/L)		1	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
239	Total Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
240	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		6	9	0.0125	0.013	0.0135	0.015	0.0195	0.021	0.027	0.03	0.0324

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.2 12/08/2024 2:21:01 PM
User Selected Options	
From File	TSF E.xls
Full Precision	OFF

From File: TSF E.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	4	11	4	0	0.00%	N/A	N/A	267750	2.449E+8	15650	0.0584
Bicarbonate Alkalinity as CaCO3 (mg/L)	4	11	4	0	0.00%	N/A	N/A	267.8	244.9	15.65	0.0584
Carbonate Alkalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	4	11	4	0	0.00%	N/A	N/A	121.5	7	2.646	0.0218
Chloride (mg/L)	4	11	4	0	0.00%	N/A	N/A	3465	7500	86.6	0.025
Depth to Water (m)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	4	11	4	0	0.00%	N/A	N/A	4	0.173	0.416	0.104
Dissolved Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	4	11	4	0	0.00%	N/A	N/A	308500	91000000	9539	0.0309
Dissolved Calcium (mg/L)	4	11	4	0	0.00%	N/A	N/A	308.5	91	9.539	0.0309
Dissolved Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.001	0	0	N/A
Dissolved Lead (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	4	11	4	0	0.00%	N/A	N/A	223500	1.297E+8	11387	0.0509
Dissolved Magnesium (mg/L)	4	11	4	0	0.00%	N/A	N/A	223.5	129.7	11.39	0.0509
Dissolved Manganese (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.351	9.1158E-4	0.0302	0.0861
Dissolved Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	3	12	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
Dissolved Nickel (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.01	3.3333E-6	0.00183	0.183
Dissolved Potassium (µg/L)	4	11	4	0	0.00%	N/A	N/A	67250	4916667	2217	0.033
Dissolved Potassium (mg/L)	4	11	4	0	0.00%	N/A	N/A	67.25	4.917	2.217	0.033
Dissolved Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	4	11	4	0	0.00%	N/A	N/A	1977500	1.892E+9	43493	0.022
Dissolved Sodium (mg/L)	4	11	4	0	0.00%	N/A	N/A	1978	1892	43.49	0.022
Dissolved Strontium (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.323	0.0819	0.286	0.0662
Dissolved Thorium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.014	2.0000E-6	0.00141	0.101
Electrical Conductivity @ 25°C (µS/cm)	2	13	2	0	0.00%	N/A	N/A	12150	245000	495	0.0407
FLS EC	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
FLS pH	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
FLS Temp	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	12	3	12	0	0.00%	N/A	N/A	6.065	4.506	2.123	0.35
pH (no unit)	13	2	13	0	0.00%	N/A	N/A	7.798	0.0415	0.204	0.0261
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	4	11	4	0	0.00%	N/A	N/A	1485000	1.633E+9	40415	0.0272
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	4	11	4	0	0.00%	N/A	N/A	1485	1633	40.41	0.0272
Total Alkalinity as CaCO3 (mg/L)	4	11	4	0	0.00%	N/A	N/A	267.8	244.9	15.65	0.0584
Total Anions (meq/L)	4	11	4	0	0.00%	N/A	N/A	133.8	10.92	3.304	0.0247
Total Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.235	0.0214	0.146	0.0345
Total Cadmium (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.00475	4.2500E-6	0.00206	0.434
Total Dissolved Solids @180°C-Total (µg/L)	4	11	4	0	0.00%	N/A	N/A	7507500	1.548E+11	393393	0.0524
Total Dissolved Solids @180°C-Total (mg/L)	4	11	4	0	0.00%	N/A	N/A	7508	154758	393.4	0.0524
Total Lead (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Manganese (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.361	0.00162	0.0403	0.112
Total Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.002	0	0	N/A
Total Nickel (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.011	4.6667E-6	0.00216	0.196
Total Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.245	0.227	0.477	0.112
Total Thorium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0198	5.3200E-5	0.00729	0.368

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	4	11	254000	285000	267750	266000	2.449E+8	15650	17050	0.218	0.0584
Bicarbonate Alkalinity as CaCO3 (mg/L)	4	11	254	285	267.8	266	244.9	15.65	17.05	0.218	0.0584
Carbonate Alkalinity as CaCO3 (µg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	4	11	118	124	121.5	122	7	2.646	2.224	-0.864	0.0218
Chloride (mg/L)	4	11	3360	3550	3465	3475	7500	86.6	88.95	-0.431	0.025
Depth to Water (m)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Antimony (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Beryllium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	4	11	3.54	4.4	4	4.03	0.173	0.416	0.474	-0.187	0.104
Dissolved Cadmium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	4	11	298000	321000	308500	307500	91000000	9539	8154	0.599	0.0309
Dissolved Calcium (mg/L)	4	11	298	321	308.5	307.5	91	9.539	8.154	0.599	0.0309
Dissolved Chromium (mg/L)	1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
Dissolved Lead (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	4	11	215000	240000	223500	219500	1.297E+8	11387	5189	1.625	0.0509
Dissolved Magnesium (mg/L)	4	11	215	240	223.5	219.5	129.7	11.39	5.189	1.625	0.0509
Dissolved Manganese (mg/L)	4	11	0.328	0.393	0.351	0.341	9.1158E-4	0.0302	0.0178	1.325	0.0861
Dissolved Mercury (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	3	12	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
Dissolved Nickel (mg/L)	4	11	0.008	0.012	0.01	0.01	3.3333E-6	0.00183	0.00222	-5.44E-16	0.183
Dissolved Potassium (µg/L)	4	11	65000	70000	67250	67000	4916667	2217	2224	0.482	0.033
Dissolved Potassium (mg/L)	4	11	65	70	67.25	67	4.917	2.217	2.224	0.482	0.033
Dissolved Selenium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	4	11	1920000	2020000	1977500	1985000	1.892E+9	43493	37064	-0.83	0.022
Dissolved Sodium (mg/L)	4	11	1920	2020	1978	1985	1892	43.49	37.06	-0.83	0.022
Dissolved Strontium (mg/L)	4	11	3.96	4.66	4.323	4.335	0.0819	0.286	0.245	-0.261	0.0662
Dissolved Thorium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	1	14	0	0	0	0	N/A	N/A	0	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		5	10	0.012	0.015	0.014	0.015	2.0000E-6	0.00141	0	-0.884	0.101
127	Electrical Conductivity @ 25°C (µS/cm)		2	13	11800	12500	12150	12150	245000	495	518.9	N/A	0.0407
128	FLS EC		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
129	FLS pH		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
130	FLS Temp		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		12	3	2.46	10.5	6.065	5.57	4.506	2.123	1.809	0.516	0.35
134	pH (no unit)		13	2	7.44	8.1	7.798	7.75	0.0415	0.204	0.208	-0.0723	0.0261
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		4	11	1450000	1540000	1485000	1475000	1.633E+9	40415	29652	1.091	0.0272
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		4	11	1450	1540	1485	1475	1633	40.41	29.65	1.091	0.0272
137	Total Alkalinity as CaCO3 (mg/L)		4	11	254	285	267.8	266	244.9	15.65	17.05	0.218	0.0584
138	Total Anions (meq/L)		4	11	130	137	133.8	134	10.92	3.304	3.706	-0.229	0.0247
139	Total Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		4	11	4.07	4.42	4.235	4.225	0.0214	0.146	0.141	0.377	0.0345
143	Total Cadmium (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
144	Total Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
145	Total Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
146	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		4	11	0.003	0.007	0.00475	0.0045	4.2500E-6	0.00206	0.00222	0.2	0.434
148	Total Dissolved Solids @180°C-Total (µg/L)		4	11	7180000	8060000	7507500	7395000	1.548E+11	393393	244626	1.333	0.0524
149	Total Dissolved Solids @180°C-Total (mg/L)		4	11	7180	8060	7508	7395	154758	393.4	244.6	1.333	0.0524
150	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
151	Total Manganese (mg/L)		4	11	0.311	0.406	0.361	0.363	0.00162	0.0403	0.0415	-0.287	0.112
152	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		4	11	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
154	Total Nickel (mg/L)		4	11	0.008	0.013	0.011	0.0115	4.6667E-6	0.00216	0.00148	-1.19	0.196
155	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		4	11	3.72	4.85	4.245	4.205	0.227	0.477	0.46	0.445	0.112
158	Total Thorium (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
160	Total Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		1	14	0	0	0	0	N/A	N/A	0	N/A	N/A
162	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		5	10	0.013	0.032	0.0198	0.018	5.3200E-5	0.00729	0.00297	1.547	0.368
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		4	11	254300	254600	254750	266000	279000	280200	282600	283800	284760
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		4	11	254.3	254.6	254.8	266	279	280.2	282.6	283.8	284.8
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		4	11	118.9	119.8	120.3	122	123.3	123.4	123.7	123.9	124
173	Chloride (mg/L)		4	11	3381	3402	3413	3475	3528	3532	3541	3546	3549
174	Depth to Water (m)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
175	Dissolved Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		4	11	3.606	3.672	3.705	4.03	4.325	4.34	4.37	4.385	4.397
179	Dissolved Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		4	11	300400	302800	304000	307500	312000	313800	317400	319200	320640
181	Dissolved Calcium (mg/L)		4	11	300.4	302.8	304	307.5	312	313.8	317.4	319.2	320.6
182	Dissolved Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
183	Dissolved Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		2	13	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
185	Dissolved Lead (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	Dissolved Magnesium (µg/L)		4	11	215600	216200	216500	219500	226500	229200	234600	237300	239460
187	Dissolved Magnesium (mg/L)		4	11	215.6	216.2	216.5	219.5	226.5	229.2	234.6	237.3	239.5
188	Dissolved Manganese (mg/L)		4	11	0.329	0.329	0.33	0.341	0.362	0.368	0.381	0.387	0.392
189	Dissolved Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		3	12	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
191	Dissolved Nickel (mg/L)		4	11	0.0083	0.0086	0.00875	0.01	0.0113	0.0114	0.0117	0.0119	0.012
192	Dissolved Potassium (µg/L)		4	11	65300	65600	65750	67000	68500	68800	69400	69700	69940
193	Dissolved Potassium (mg/L)		4	11	65.3	65.6	65.75	67	68.5	68.8	69.4	69.7	69.94
194	Dissolved Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
196	Dissolved Sodium (µg/L)		4	11	1935000	1950000	1957500	1985000	2005000	2008000	2014000	2017000	2019400
197	Dissolved Sodium (mg/L)		4	11	1935	1950	1958	1985	2005	2008	2014	2017	2019
198	Dissolved Strontium (mg/L)		4	11	4.071	4.182	4.238	4.335	4.42	4.468	4.564	4.612	4.65
199	Dissolved Thorium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
203	Dissolved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		5	10	0.0124	0.0128	0.013	0.015	0.015	0.015	0.015	0.015	0.015
205	Electrical Conductivity @ 25°C (µS/cm)		2	13	11870	11940	11975	12150	12325	12360	12430	12465	12493
206	FLS EC		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
207	FLS pH		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
208	FLS Temp		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		12	3	3.951	5.048	5.07	5.57	6.938	7.13	8.469	9.461	10.29
212	pH (no unit)		13	2	7.546	7.698	7.71	7.75	7.94	7.994	8.07	8.088	8.098
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		4	11	1453000	1456000	1457500	1475000	1502500	1510000	1525000	1532500	1538500
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		4	11	1453	1456	1458	1475	1503	1510	1525	1533	1539
215	Total Alkalinity as CaCO3 (mg/L)		4	11	254.3	254.6	254.8	266	279	280.2	282.6	283.8	284.8
216	Total Anions (meq/L)		4	11	130.6	131.2	131.5	134	136.3	136.4	136.7	136.9	137
217	Total Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		4	11	4.106	4.142	4.16	4.225	4.3	4.324	4.372	4.396	4.415
221	Total Cadmium (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
222	Total Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
223	Total Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
224	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		4	11	0.003	0.003	0.003	0.0045	0.00625	0.0064	0.0067	0.00685	0.00697
226	Total Dissolved Solids @180°C-Total (µg/L)		4	11	7210000	7240000	7255000	7395000	7647500	7730000	7895000	7977500	8043500
227	Total Dissolved Solids @180°C-Total (mg/L)		4	11	7210	7240	7255	7395	7648	7730	7895	7978	8044
228	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
229	Total Manganese (mg/L)		4	11	0.323	0.334	0.34	0.363	0.384	0.388	0.397	0.402	0.405
230	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		4	11	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
232	Total Nickel (mg/L)		4	11	0.0089	0.0098	0.0103	0.0115	0.0123	0.0124	0.0127	0.0129	0.013
233	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		4	11	3.825	3.93	3.983	4.205	4.468	4.544	4.697	4.774	4.835
236	Total Thorium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
237	Total Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
238	Total Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
240	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		5	10	0.0142	0.0154	0.016	0.018	0.02	0.0224	0.0272	0.0296	0.0315

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2	Date/Time of Computation			ProUCL 5.2 12/08/2024 2:23:17 PM									
3	User Selected Options												
4	From File			TSF S1.xls									
5	Full Precision			OFF									
6													
7	From File: TSF S1.xls												
8													
9	General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method												
10													
11	Variable		NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	6	0	0.00%	N/A	N/A	97167	16566667	4070	0.0419
13	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	97.17	16.57	4.07	0.0419
14	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)		6	15	6	0	0.00%	N/A	N/A	36.7	2.516	1.586	0.0432
17	Chloride (mg/L)		6	15	6	0	0.00%	N/A	N/A	1047	1742	41.74	0.0399
18	Depth to Water (m)		12	9	12	0	0.00%	N/A	N/A	25.6	9.6061E-4	0.031	0.00121
19	Dissolved Antimony (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
20	Dissolved Arsenic (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
21	Dissolved Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	1.075	0.038	0.195	0.181
23	Dissolved Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.3333E-4	2.6667E-9	5.1640E-5	0.221
24	Dissolved Calcium (µg/L)		6	15	6	0	0.00%	N/A	N/A	177167	64966667	8060	0.0455
25	Dissolved Calcium (mg/L)		6	15	6	0	0.00%	N/A	N/A	177.2	64.97	8.06	0.0455
26	Dissolved Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
27	Dissolved Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)		5	16	5	0	0.00%	N/A	N/A	0.0024	2.8000E-6	0.00167	0.697
29	Dissolved Lead (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
30	Dissolved Magnesium (µg/L)		6	15	6	0	0.00%	N/A	N/A	83000	32400000	5692	0.0686
31	Dissolved Magnesium (mg/L)		6	15	6	0	0.00%	N/A	N/A	83	32.4	5.692	0.0686
32	Dissolved Manganese (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.00433	1.0333E-5	0.00321	0.742
33	Dissolved Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0163	5.4787E-4	0.0234	1.433
35	Dissolved Nickel (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
36	Dissolved Potassium (µg/L)		6	15	6	0	0.00%	N/A	N/A	18833	566667	752.8	0.04
37	Dissolved Potassium (mg/L)		6	15	6	0	0.00%	N/A	N/A	18.83	0.567	0.753	0.04
38	Dissolved Selenium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
39	Dissolved Silver (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
40	Dissolved Sodium (µg/L)		6	15	6	0	0.00%	N/A	N/A	472500	3.691E+8	19212	0.0407
41	Dissolved Sodium (mg/L)		6	15	6	0	0.00%	N/A	N/A	472.5	369.1	19.21	0.0407
42	Dissolved Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.11	0.099	0.315	0.149
43	Dissolved Thorium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00317	1.0967E-5	0.00331	1.046
47	Dissolved Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
48	Dissolved Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0231	8.8095E-6	0.00297	0.128
49	Electrical Conductivity @ 25°C (µS/cm)		4	17	4	0	0.00%	N/A	N/A	3973	47025	216.9	0.0546
50	FLS EC		4	17	4	0	0.00%	N/A	N/A	4.108	0.0456	0.214	0.052
51	FLS pH		4	17	4	0	0.00%	N/A	N/A	6.79	0.0525	0.229	0.0338
52	FLS Temp		4	17	4	0	0.00%	N/A	N/A	23.9	12.34	3.513	0.147
53	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)		17	4	17	0	0.00%	N/A	N/A	3.473	6.652	2.579	0.743
56	pH (no unit)		17	4	17	0	0.00%	N/A	N/A	7.645	0.0244	0.156	0.0204
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	6	0	0.00%	N/A	N/A	348333	4.619E+8	21491	0.0617
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	6	0	0.00%	N/A	N/A	348.3	461.9	21.49	0.0617
59	Total Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	97.17	16.57	4.07	0.0419
60	Total Anions (meq/L)		6	15	6	0	0.00%	N/A	N/A	38.72	2.262	1.504	0.0388
61	Total Antimony (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
62	Total Arsenic (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
63	Total Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	1.175	0.0147	0.121	0.103
65	Total Cadmium (µg/L)		6	15	6	0	0.00%	N/A	N/A	0.233	0.00267	0.0516	0.221
66	Total Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.3333E-4	2.6667E-9	5.1640E-5	0.221
67	Total Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
68	Total Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00417	6.1667E-6	0.00248	0.596
70	Total Dissolved Solids @180°C-Total (µg/L)		7	14	7	0	0.00%	N/A	N/A	2462857	2.156E+10	146824	0.0596
71	Total Dissolved Solids @180°C-Total (mg/L)		12	9	12	0	0.00%	N/A	N/A	2436	16736	129.4	0.0531
72	Total Lead (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
73	Total Manganese (mg/L)		5	16	5	0	0.00%	N/A	N/A	0.0084	5.3300E-5	0.0073	0.869
74	Total Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0163	8.2787E-4	0.0288	1.762
76	Total Nickel (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
77	Total Selenium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
78	Total Silver (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
79	Total Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.183	0.0453	0.213	0.0975
80	Total Thorium (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
81	Total Tin (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
82	Total Titanium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00333	1.5067E-5	0.00388	1.164
84	Total Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
85	Total Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0237	1.9238E-5	0.00439	0.185
86													
87	General Statistics for Raw Data Sets using Detected Data Only												
88													
89	Variable		NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	91000	103000	97167	96500	16566667	4070	2965	-0.0732	0.0419
91	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	91	103	97.17	96.5	16.57	4.07	2.965	-0.0732	0.0419
92	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)		6	15	34.7	38.4	36.7	37.15	2.516	1.586	1.483	-0.465	0.0432
95	Chloride (mg/L)		6	15	992	1100	1047	1040	1742	41.74	50.41	0.154	0.0399
96	Depth to Water (m)		12	9	25.56	25.66	25.6	25.6	9.6061E-4	0.031	0.0371	0.78	0.00121
97	Dissolved Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
98	Dissolved Arsenic (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
99	Dissolved Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)		6	15	0.84	1.39	1.075	1.09	0.038	0.195	0.178	0.535	0.181
101	Dissolved Cadmium (mg/L)		6	15	2.0000E-4	3.0000E-4	2.3333E-4	2.0000E-4	2.6667E-9	5.1640E-5	0	0.968	0.221
102	Dissolved Calcium (µg/L)		6	15	168000	188000	177167	176500	64966667	8060	10378	0.231	0.0455
103	Dissolved Calcium (mg/L)		6	15	168	188	177.2	176.5	64.97	8.06	10.38	0.231	0.0455
104	Dissolved Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
105	Dissolved Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)		5	16	0.001	0.005	0.0024	0.002	2.8000E-6	0.00167	0.00148	1.089	0.697
107	Dissolved Lead (mg/L)		2	19	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
108	Dissolved Magnesium (µg/L)		6	15	76000	91000	83000	83000	32400000	5692	6672	0.176	0.0686
109	Dissolved Magnesium (mg/L)		6	15	76	91	83	83	32.4	5.692	6.672	0.176	0.0686
110	Dissolved Manganese (mg/L)		3	18	0.002	0.008	0.00433	0.003	1.0333E-5	0.00321	0.00148	1.545	0.742
111	Dissolved Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)		6	15	0.003	0.061	0.0163	0.0035	5.4787E-4	0.0234	7.4129E-4	1.885	1.433
113	Dissolved Nickel (mg/L)		1	20	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
114	Dissolved Potassium (µg/L)		6	15	18000	20000	18833	19000	566667	752.8	741.3	0.313	0.04
115	Dissolved Potassium (mg/L)		6	15	18	20	18.83	19	0.567	0.753	0.741	0.313	0.04
116	Dissolved Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
117	Dissolved Silver (mg/L)		1	20	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
118	Dissolved Sodium (µg/L)		6	15	449000	492000	472500	477500	3.691E+8	19212	19274	-0.463	0.0407
119	Dissolved Sodium (mg/L)		6	15	449	492	472.5	477.5	369.1	19.21	19.27	-0.463	0.0407
120	Dissolved Strontium (mg/L)		6	15	1.66	2.46	2.11	2.15	0.099	0.315	0.415	-0.407	0.149
121	Dissolved Thorium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)		6	15	0	0.009	0.00317	0.002	1.0967E-5	0.00331	0.00222	1.318	1.046

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		7	14	0.02	0.028	0.0231	0.023	8.8095E-6	0.00297	0.00445	0.663	0.128
127	Electrical Conductivity @ 25°C (µS/cm)		4	17	3720	4250	3973	3960	47025	216.9	177.9	0.344	0.0546
128	FLS EC		4	17	3.91	4.33	4.108	4.095	0.0456	0.214	0.252	0.103	0.052
129	FLS pH		4	17	6.57	7.11	6.79	6.74	0.0525	0.229	0.148	1.196	0.0338
130	FLS Temp		4	17	20.9	27.9	23.9	23.4	12.34	3.513	3.632	0.299	0.147
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		17	4	0.17	9.2	3.473	3.06	6.652	2.579	2.165	1.108	0.743
134	pH (no unit)		17	4	7.28	7.88	7.645	7.67	0.0244	0.156	0.089	-1.255	0.0204
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	318000	372000	348333	355500	4.619E+8	21491	17791	-0.654	0.0617
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	318	372	348.3	355.5	461.9	21.49	17.79	-0.654	0.0617
137	Total Alkalinity as CaCO3 (mg/L)		6	15	91	103	97.17	96.5	16.57	4.07	2.965	-0.0732	0.0419
138	Total Anions (meq/L)		6	15	36.8	40.7	38.72	38.7	2.262	1.504	1.927	0.0508	0.0388
139	Total Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
141	Total Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		6	15	1.02	1.39	1.175	1.17	0.0147	0.121	0.0445	1.021	0.103
143	Total Cadmium (µg/L)		6	15	0.2	0.3	0.233	0.2	0.00267	0.0516	0	0.968	0.221
144	Total Cadmium (mg/L)		6	15	2.0000E-4	3.0000E-4	2.3333E-4	2.0000E-4	2.6667E-9	5.1640E-5	0	0.968	0.221
145	Total Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
146	Total Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		6	15	0.001	0.008	0.00417	0.0035	6.1667E-6	0.00248	0.00222	0.54	0.596
148	Total Dissolved Solids @180°C-Total (µg/L)		7	14	2280000	2730000	2462857	2470000	2.156E+10	146824	74129	0.753	0.0596
149	Total Dissolved Solids @180°C-Total (mg/L)		12	9	2280	2730	2436	2440	16736	129.4	133.4	0.881	0.0531
150	Total Lead (mg/L)		3	18	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
151	Total Manganese (mg/L)		5	16	0.001	0.02	0.0084	0.007	5.3300E-5	0.0073	0.00445	1.148	0.869
152	Total Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		6	15	0.003	0.075	0.0163	0.0045	8.2787E-4	0.0288	0.00148	2.437	1.762
154	Total Nickel (mg/L)		2	19	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
155	Total Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		2	19	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
157	Total Strontium (mg/L)		6	15	1.89	2.35	2.183	2.305	0.0453	0.213	0.0445	-0.949	0.0975
158	Total Thorium (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		6	15	0	0.011	0.00333	0.002	1.5067E-5	0.00388	7.4129E-4	2.085	1.164
162	Total Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		7	14	0.018	0.032	0.0237	0.023	1.9238E-5	0.00439	0.00297	1.032	0.185
164													
165							Percentiles using all Detects (Ds) and Non-Detects (NDs)						
166													
167	**Variable**		**NumObs**	**# Missing**	**10%ile**	**20%ile**	**25%ile(Q1)**	**50%ile(Q2)**	**75%ile(Q3)**	**80%ile**	**90%ile**	**95%ile**	**99%ile**
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	93500	96000	96000	96500	99250	100000	101500	102250	102850
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	93.5	96	96	96.5	99.25	100	101.5	102.3	102.9
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		6	15	34.8	34.9	35.33	37.15	37.85	37.9	38.15	38.28	38.38
173	Chloride (mg/L)		6	15	1006	1020	1023	1040	1080	1090	1095	1098	1100
174	Depth to Water (m)		12	9	25.57	25.57	25.57	25.6	25.61	25.62	25.64	25.65	25.66
175	Dissolved Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		6	15	0.87	0.9	0.945	1.09	1.13	1.14	1.265	1.328	1.378
179	Dissolved Cadmium (mg/L)		6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.0000E-4	3.0000E-4	3.0000E-4
180	Dissolved Calcium (µg/L)		6	15	169000	170000	170750	176500	183000	184000	186000	187000	187800
181	Dissolved Calcium (mg/L)		6	15	169	170	170.8	176.5	183	184	186	187	187.8
182	Dissolved Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
183	Dissolved Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		5	16	0.001	0.001	0.001	0.002	0.003	0.0034	0.0042	0.0046	0.00492
185	Dissolved Lead (mg/L)		2	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
186	Dissolved Magnesium (µg/L)		6	15	77000	78000	78750	83000	86500	87000	89000	90000	90800
187	Dissolved Magnesium (mg/L)		6	15	77	78	78.75	83	86.5	87	89	90	90.8
188	Dissolved Manganese (mg/L)		3	18	0.0022	0.0024	0.0025	0.003	0.0055	0.006	0.007	0.0075	0.0079
189	Dissolved Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		6	15	0.003	0.003	0.003	0.0035	0.019	0.024	0.0425	0.0518	0.0592
191	Dissolved Nickel (mg/L)		1	20	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
192	Dissolved Potassium (µg/L)		6	15	18000	18000	18250	19000	19000	19000	19500	19750	19950
193	Dissolved Potassium (mg/L)		6	15	18	18	18.25	19	19	19	19.5	19.75	19.95
194	Dissolved Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		1	20	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
196	Dissolved Sodium (µg/L)		6	15	449500	450000	455250	477500	487750	489000	490500	491250	491850
197	Dissolved Sodium (mg/L)		6	15	449.5	450	455.3	477.5	487.8	489	490.5	491.3	491.9
198	Dissolved Strontium (mg/L)		6	15	1.75	1.84	1.9	2.15	2.355	2.4	2.43	2.445	2.457
199	Dissolved Thorium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		6	15	5.0000E-4	0.001	0.00125	0.002	0.00425	0.005	0.007	0.008	0.0088
203	Dissolved Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		7	14	0.02	0.0204	0.021	0.023	0.0245	0.0254	0.0268	0.0274	0.0279
205	Electrical Conductivity @ 25°C (µS/cm)		4	17	3792	3864	3900	3960	4033	4076	4163	4207	4241
206	FLS EC		4	17	3.919	3.928	3.933	4.095	4.27	4.282	4.306	4.318	4.328
207	FLS pH		4	17	6.612	6.654	6.675	6.74	6.855	6.906	7.008	7.059	7.1
208	FLS Temp		4	17	20.93	20.96	20.98	23.4	26.33	26.64	27.27	27.59	27.84
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		17	4	0.642	1.584	1.6	3.06	3.85	4.866	6.782	9.056	9.171
212	pH (no unit)		17	4	7.436	7.602	7.61	7.67	7.73	7.754	7.784	7.808	7.866
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	322000	326000	332750	355500	361750	363000	367500	369750	371550
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	322	326	332.8	355.5	361.8	363	367.5	369.8	371.6
215	Total Alkalinity as CaCO3 (mg/L)		6	15	93.5	96	96	96.5	99.25	100	101.5	102.3	102.9
216	Total Anions (meq/L)		6	15	37.1	37.4	37.63	38.7	39.78	40	40.35	40.53	40.67
217	Total Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
219	Total Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		6	15	1.07	1.12	1.133	1.17	1.178	1.18	1.285	1.338	1.38
221	Total Cadmium (µg/L)		6	15	0.2	0.2	0.2	0.2	0.275	0.3	0.3	0.3	0.3
222	Total Cadmium (mg/L)		6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.0000E-4	3.0000E-4	3.0000E-4
223	Total Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
224	Total Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		6	15	0.002	0.003	0.003	0.0035	0.0055	0.006	0.007	0.0075	0.0079
226	Total Dissolved Solids @180°C-Total (µg/L)		7	14	2304000	2344000	2380000	2470000	2500000	2512000	2604000	2667000	2717400
227	Total Dissolved Solids @180°C-Total (mg/L)		12	9	2284	2324	2335	2440	2490	2512	2547	2631	2710
228	Total Lead (mg/L)		3	18	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
229	Total Manganese (mg/L)		5	16	0.0022	0.0034	0.004	0.007	0.01	0.012	0.016	0.018	0.0196
230	Total Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		6	15	0.0035	0.004	0.004	0.0045	0.0065	0.007	0.041	0.058	0.0716
232	Total Nickel (mg/L)		2	19	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
233	Total Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		2	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
235	Total Strontium (mg/L)		6	15	1.91	1.93	2.02	2.305	2.32	2.32	2.335	2.343	2.349
236	Total Thorium (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
237	Total Tin (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
238	Total Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		6	15	0.001	0.002	0.002	0.002	0.00275	0.003	0.007	0.009	0.0106
240	Total Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		7	14	0.0198	0.0214	0.022	0.023	0.0245	0.0254	0.0284	0.0302	0.0316

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2		Date/Time of Computation		ProUCL 5.2 12/08/2024 2:25:37 PM									
3		User Selected Options											
4		From File		TSF S2.xls									
5		Full Precision		OFF									
6													
7	From File: TSF S2.xls												
8													
9				General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method									
10													

11	Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	6	0	0.00%	N/A	N/A	80333	38666667	6218	0.0774
13	Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	80.33	38.67	6.218	0.0774
14	Carbonate Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)	6	15	6	0	0.00%	N/A	N/A	259.2	714.2	26.72	0.103
17	Chloride (mg/L)	6	15	6	0	0.00%	N/A	N/A	7962	505337	710.9	0.0893
18	Depth to Water (m)	4	17	4	0	0.00%	N/A	N/A	21.01	1.216	1.103	0.0525
19	Dissolved Antimony (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0163	1.5187E-4	0.0123	0.754
20	Dissolved Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.001	0	0	N/A
21	Dissolved Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.125	0.036	0.19	0.0892
23	Dissolved Cadmium (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.5000E-4	7.0000E-9	8.3666E-5	0.335
24	Dissolved Calcium (µg/L)	6	15	6	0	0.00%	N/A	N/A	1200833	1.678E+10	129554	0.108
25	Dissolved Calcium (mg/L)	6	15	6	0	0.00%	N/A	N/A	1201	16784	129.6	0.108
26	Dissolved Chromium (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00217	1.6667E-7	4.0825E-4	0.188
27	Dissolved Cobalt (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0115	2.4700E-5	0.00497	0.432
29	Dissolved Lead (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
30	Dissolved Magnesium (µg/L)	6	15	6	0	0.00%	N/A	N/A	494500	3.139E+9	56024	0.113
31	Dissolved Magnesium (mg/L)	6	15	6	0	0.00%	N/A	N/A	494.5	3139	56.02	0.113
32	Dissolved Manganese (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00217	1.3667E-6	0.00117	0.54
33	Dissolved Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00767	4.2667E-5	0.00653	0.852
35	Dissolved Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0155	6.4300E-5	0.00802	0.517
36	Dissolved Potassium (µg/L)	6	15	6	0	0.00%	N/A	N/A	76000	50800000	7127	0.0938
37	Dissolved Potassium (mg/L)	6	15	6	0	0.00%	N/A	N/A	76	50.8	7.127	0.0938
38	Dissolved Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.01	0	0	N/A
39	Dissolved Silver (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.004	2.7000E-5	0.0052	1.299
40	Dissolved Sodium (µg/L)	6	15	6	0	0.00%	N/A	N/A	3603333	1.369E+11	370063	0.103
41	Dissolved Sodium (mg/L)	6	15	6	0	0.00%	N/A	N/A	3603	136947	370.1	0.103
42	Dissolved Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	13.77	2.615	1.617	0.117
43	Dissolved Thorium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0055	9.5000E-6	0.00308	0.56
47	Dissolved Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
48	Dissolved Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0436	9.5286E-5	0.00976	0.224
49	Electrical Conductivity @ 25°C (µS/cm)	4	17	4	0	0.00%	N/A	N/A	23375	2375833	1541	0.0659
50	FLS EC	4	17	4	0	0.00%	N/A	N/A	18.39	42.14	6.492	0.353
51	FLS pH	4	17	4	0	0.00%	N/A	N/A	6.593	0.0191	0.138	0.021
52	FLS Temp	4	17	4	0	0.00%	N/A	N/A	25	24.42	4.942	0.198
53	Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)	17	4	17	0	0.00%	N/A	N/A	3.789	6.7	2.588	0.683
56	pH (no unit)	17	4	17	0	0.00%	N/A	N/A	7.407	0.0534	0.231	0.0312
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	6	0	0.00%	N/A	N/A	2176667	5.167E+10	227303	0.104
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	6	0	0.00%	N/A	N/A	2177	51667	227.3	0.104
59	Total Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	80.33	38.67	6.218	0.0774
60	Total Anions (meq/L)	6	15	6	0	0.00%	N/A	N/A	271.5	607.1	24.64	0.0908
61	Total Antimony (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0232	2.0577E-4	0.0143	0.619
62	Total Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0015	3.0000E-7	5.4772E-4	0.365
63	Total Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.297	0.00519	0.072	0.0314
65	Total Cadmium (µg/L)	6	15	6	0	0.00%	N/A	N/A	0.267	0.00667	0.0816	0.306
66	Total Cadmium (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.6667E-4	6.6667E-9	8.1650E-5	0.306
67	Total Chromium (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00283	5.6667E-7	7.5277E-4	0.266
68	Total Cobalt (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0678	0.00582	0.0763	1.124
70	Total Dissolved Solids @180°C-Total (µg/L)	7	14	7	0	0.00%	N/A	N/A	15742857	2.362E+11	485994	0.0309
71	Total Dissolved Solids @180°C-Total (mg/L)	7	14	7	0	0.00%	N/A	N/A	15743	236190	486	0.0309
72	Total Lead (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0075	3.9000E-6	0.00197	0.263
73	Total Manganese (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0175	4.4300E-5	0.00666	0.38
74	Total Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.009	5.1600E-5	0.00718	0.798
76	Total Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.019	1.1680E-4	0.0108	0.569
77	Total Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.01	0	0	N/A
78	Total Silver (mg/L)	5	16	5	0	0.00%	N/A	N/A	0.0056	1.7300E-5	0.00416	0.743
79	Total Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	13.93	2.579	1.606	0.115
80	Total Thorium (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0025	4.5000E-6	0.00212	0.849
81	Total Tin (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
82	Total Titanium (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00633	1.0267E-5	0.0032	0.506
84	Total Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
85	Total Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0467	1.2490E-4	0.0112	0.239

86

87 General Statistics for Raw Data Sets using Detected Data Only

88

89	Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	73000	88000	80333	81000	38666667	6218	8154	-0.0743	0.0774
91	Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	73	88	80.33	81	38.67	6.218	8.154	-0.0743	0.0774
92	Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)	6	15	210	280	259.2	269	714.2	26.72	15.57	-1.592	0.103
95	Chloride (mg/L)	6	15	7060	8570	7962	8240	505337	710.9	481.8	-0.682	0.0893
96	Depth to Water (m)	4	17	19.7	22.34	21.01	21	1.216	1.103	1.171	0.0619	0.0525
97	Dissolved Antimony (mg/L)	6	15	0.009	0.041	0.0163	0.011	1.5187E-4	0.0123	0.00222	2.253	0.754
98	Dissolved Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
99	Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)	6	15	1.84	2.35	2.125	2.185	0.036	0.19	0.156	-0.626	0.0892
101	Dissolved Cadmium (mg/L)	6	15	2.0000E-4	4.0000E-4	2.5000E-4	2.0000E-4	7.0000E-9	8.3666E-5	0	1.537	0.335
102	Dissolved Calcium (µg/L)	6	15	995000	1340000	1200833	1200000	1.678E+10	129554	140845	-0.566	0.108
103	Dissolved Calcium (mg/L)	6	15	995	1340	1201	1200	16784	129.6	140.8	-0.566	0.108
104	Dissolved Chromium (mg/L)	6	15	0.002	0.003	0.00217	0.002	1.6667E-7	4.0825E-4	0	2.449	0.188
105	Dissolved Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)	6	15	0.006	0.019	0.0115	0.01	2.4700E-5	0.00497	0.00445	0.726	0.432
107	Dissolved Lead (mg/L)	1	20	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
108	Dissolved Magnesium (µg/L)	6	15	398000	542000	494500	515500	3.139E+9	56024	34099	-1.218	0.113
109	Dissolved Magnesium (mg/L)	6	15	398	542	494.5	515.5	3139	56.02	34.1	-1.218	0.113
110	Dissolved Manganese (mg/L)	6	15	0.001	0.004	0.00217	0.002	1.3667E-6	0.00117	0.00148	0.668	0.54
111	Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)	6	15	0.003	0.02	0.00767	0.0045	4.2667E-5	0.00653	0.00148	1.797	0.852
113	Dissolved Nickel (mg/L)	6	15	0.008	0.03	0.0155	0.014	6.4300E-5	0.00802	0.00519	1.382	0.517
114	Dissolved Potassium (µg/L)	6	15	64000	82000	76000	78500	50800000	7127	5189	-1.148	0.0938
115	Dissolved Potassium (mg/L)	6	15	64	82	76	78.5	50.8	7.127	5.189	-1.148	0.0938
116	Dissolved Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
117	Dissolved Silver (mg/L)	3	18	0.001	0.01	0.004	0.001	2.7000E-5	0.0052	0	1.732	1.299
118	Dissolved Sodium (µg/L)	6	15	2900000	3850000	3603333	3775000	1.369E+11	370063	96368	-1.832	0.103
119	Dissolved Sodium (mg/L)	6	15	2900	3850	3603	3775	136947	370.1	96.37	-1.832	0.103
120	Dissolved Strontium (mg/L)	6	15	11.5	15.5	13.77	13.95	2.615	1.617	2.224	-0.369	0.117
121	Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)	6	15	0	0.009	0.0055	0.006	9.5000E-6	0.00308	0.00148	-1.199	0.56

	A	B	C	D	E	F	G	H	I	J	K	L	M
125		Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126		Dissolved Zinc (mg/L)	7	14	0.031	0.056	0.0436	0.048	9.5286E-5	0.00976	0.0119	-0.152	0.224
127		Electrical Conductivity @ 25°C (µS/cm)	4	17	21400	24600	23375	23750	2375833	1541	1260	-0.753	0.0659
128		FLS EC	4	17	9.21	23.29	18.39	20.53	42.14	6.492	3.625	-1.408	0.353
129		FLS pH	4	17	6.46	6.77	6.593	6.57	0.0191	0.138	0.126	0.697	0.021
130		FLS Temp	4	17	18.2	28.9	25	26.45	24.42	4.942	3.262	-1.193	0.198
131		Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132		Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133		Ionic Balance (Percent)	17	4	0.62	10.6	3.789	3.68	6.7	2.588	2.52	1.065	0.683
134		pH (no unit)	17	4	6.69	7.63	7.407	7.49	0.0534	0.231	0.104	-2.124	0.0312
135		Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	1890000	2460000	2176667	2230000	5.167E+10	227303	244626	-0.35	0.104
136		Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	1890	2460	2177	2230	51667	227.3	244.6	-0.35	0.104
137		Total Alkalinity as CaCO3 (mg/L)	6	15	73	88	80.33	81	38.67	6.218	8.154	-0.0743	0.0774
138		Total Anions (meq/L)	6	15	240	294	271.5	280.5	607.1	24.64	18.53	-0.665	0.0908
139		Total Antimony (mg/L)	6	15	0.009	0.043	0.0232	0.02	2.0577E-4	0.0143	0.0156	0.486	0.619
140		Total Arsenic (mg/L)	6	15	0.001	0.002	0.0015	0.0015	3.0000E-7	5.4772E-4	7.4129E-4	-1.60E-15	0.365
141		Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142		Total Boron (mg/L)	6	15	2.2	2.4	2.297	2.31	0.00519	0.072	0.0741	-0.0437	0.0314
143		Total Cadmium (µg/L)	6	15	0.2	0.4	0.267	0.25	0.00667	0.0816	0.0741	0.857	0.306
144		Total Cadmium (mg/L)	6	15	2.0000E-4	4.0000E-4	2.6667E-4	2.5000E-4	6.6667E-9	8.1650E-5	7.4129E-5	0.857	0.306
145		Total Chromium (mg/L)	6	15	0.002	0.004	0.00283	0.003	5.6667E-7	7.5277E-4	7.4129E-4	0.313	0.266
146		Total Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147		Total Copper (mg/L)	6	15	0.014	0.216	0.0678	0.0395	0.00582	0.0763	0.0341	1.98	1.124
148		Total Dissolved Solids @180°C-Total (µg/L)	7	14	14900000	16200000	15742857	16000000	2.362E+11	485994	296516	-0.914	0.0309
149		Total Dissolved Solids @180°C-Total (mg/L)	7	14	14900	16200	15743	16000	236190	486	296.5	-0.914	0.0309
150		Total Lead (mg/L)	6	15	0.004	0.01	0.0075	0.008	3.9000E-6	0.00197	7.4129E-4	-1.052	0.263
151		Total Manganese (mg/L)	6	15	0.011	0.03	0.0175	0.0155	4.4300E-5	0.00666	0.00371	1.648	0.38
152		Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153		Total Molybdenum (mg/L)	6	15	0.003	0.023	0.009	0.007	5.1600E-5	0.00718	0.00297	1.972	0.798
154		Total Nickel (mg/L)	6	15	0.008	0.034	0.019	0.0165	1.1680E-4	0.0108	0.0119	0.549	0.569
155		Total Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
156		Total Silver (mg/L)	5	16	0.001	0.011	0.0056	0.006	1.7300E-5	0.00416	0.00593	0.158	0.743
157		Total Strontium (mg/L)	6	15	11.5	15.6	13.93	14.6	2.579	1.606	0.964	-0.858	0.115
158		Total Thorium (mg/L)	2	19	0.001	0.004	0.0025	0.0025	4.5000E-6	0.00212	0.00222	N/A	0.849
159		Total Tin (mg/L)	2	19	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
160		Total Titanium (mg/L)	1	20	0.01	0.01	0.01	0.01	N/A	N/A	0	N/A	N/A
161		Total Uranium (mg/L)	6	15	0	0.009	0.00633	0.007	1.0267E-5	0.0032	7.4129E-4	-2.093	0.506
162		Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163		Total Zinc (mg/L)	7	14	0.03	0.059	0.0467	0.047	1.2490E-4	0.0112	0.0148	-0.466	0.239
164													
165						Percentiles using all Detects (Ds) and Non-Detects (NDs)							
166													
167		Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168		Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	73500	74000	75000	81000	84750	85000	86500	87250	87850
169		Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	73.5	74	75	81	84.75	85	86.5	87.25	87.85
170		Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171		Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172		Cations Total (meq/L)	6	15	229	248	252.8	269	277	279	279.5	279.8	280
173		Chloride (mg/L)	6	15	7080	7100	7333	8240	8533	8560	8565	8568	8570
174		Depth to Water (m)	4	17	20	20.31	20.46	21	21.55	21.7	22.02	22.18	22.31
175		Dissolved Antimony (mg/L)	6	15	0.0095	0.01	0.0103	0.011	0.0148	0.016	0.0285	0.0348	0.0398
176		Dissolved Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
177		Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178		Dissolved Boron (mg/L)	6	15	1.9	1.96	2.008	2.185	2.228	2.23	2.29	2.32	2.344
179		Dissolved Cadmium (mg/L)	6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.5000E-4	3.7500E-4	3.9500E-4
180		Dissolved Calcium (µg/L)	6	15	1067500	1140000	1147500	1200000	1305000	1330000	1335000	1337500	1339500
181		Dissolved Calcium (mg/L)	6	15	1068	1140	1148	1200	1305	1330	1335	1338	1340
182		Dissolved Chromium (mg/L)	6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.0025	0.00275	0.00295
183		Dissolved Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184		Dissolved Copper (mg/L)	6	15	0.007	0.008	0.0085	0.01	0.0145	0.016	0.0175	0.0183	0.0189
185		Dissolved Lead (mg/L)	1	20	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
186		Dissolved Magnesium (µg/L)	6	15	429500	461000	470750	515500	534000	535000	538500	540250	541650
187		Dissolved Magnesium (mg/L)	6	15	429.5	461	470.8	515.5	534	535	538.5	540.3	541.7
188		Dissolved Manganese (mg/L)	6	15	0.001	0.001	0.00125	0.002	0.00275	0.003	0.0035	0.00375	0.00395
189		Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190		Dissolved Molybdenum (mg/L)	6	15	0.0035	0.004	0.004	0.0045	0.00875	0.01	0.015	0.0175	0.0195
191		Dissolved Nickel (mg/L)	6	15	0.009	0.01	0.0103	0.014	0.017	0.017	0.0235	0.0268	0.0294
192		Dissolved Potassium (µg/L)	6	15	67500	71000	72750	78500	81250	82000	82000	82000	82000
193		Dissolved Potassium (mg/L)	6	15	67.5	71	72.75	78.5	81.25	82	82	82	82
194		Dissolved Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
195		Dissolved Silver (mg/L)	3	18	0.001	0.001	0.001	0.001	0.0055	0.0064	0.0082	0.0091	0.00982
196		Dissolved Sodium (µg/L)	6	15	3195000	3490000	3547500	3775000	3830000	3830000	3840000	3845000	3849000
197		Dissolved Sodium (mg/L)	6	15	3195	3490	3548	3775	3830	3830	3840	3845	3849
198		Dissolved Strontium (mg/L)	6	15	11.9	12.3	12.68	13.95	15.08	15.4	15.45	15.48	15.5
199		Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200		Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201		Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202		Dissolved Uranium (mg/L)	6	15	0.0025	0.005	0.005	0.006	0.007	0.007	0.008	0.0085	0.0089
203		Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204		Dissolved Zinc (mg/L)	7	14	0.0328	0.0344	0.035	0.048	0.05	0.0512	0.0536	0.0548	0.0558
205		Electrical Conductivity @ 25°C (µS/cm)	4	17	21850	22300	22525	23750	24600	24600	24600	24600	24600
206		FLS EC	4	17	11.97	14.72	16.1	20.53	22.81	22.91	23.1	23.19	23.27
207		FLS pH	4	17	6.475	6.49	6.498	6.57	6.665	6.686	6.728	6.749	6.766
208		FLS Temp	4	17	20.09	21.98	22.93	26.45	28.53	28.6	28.75	28.83	28.89
209		Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210		Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211		Ionic Balance (Percent)	17	4	1.27	1.57	1.65	3.68	5.06	5.196	6.02	7.704	10.02
212		pH (no unit)	17	4	7.18	7.284	7.34	7.49	7.55	7.558	7.56	7.574	7.619
213		Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	1905000	1920000	1992500	2230000	2310000	2330000	2395000	2427500	2453500
214		Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	1905	1920	1993	2230	2310	2330	2395	2428	2454
215		Total Alkalinity as CaCO3 (mg/L)	6	15	73.5	74	75	81	84.75	85	86.5	87.25	87.85
216		Total Anions (meq/L)	6	15	241	242	250	280.5	290.8	292	293	293.5	293.9
217		Total Antimony (mg/L)	6	15	0.0095	0.01	0.0113	0.02	0.034	0.037	0.04	0.0415	0.0427
218		Total Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
219		Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220		Total Boron (mg/L)	6	15	2.215	2.23	2.25	2.31	2.325	2.33	2.365	2.383	2.397
221		Total Cadmium (µg/L)	6	15	0.2	0.2	0.2	0.25	0.3	0.3	0.35	0.375	0.395
222		Total Cadmium (mg/L)	6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.5000E-4	3.0000E-4	3.0000E-4	3.5000E-4	3.7500E-4	3.9500E-4
223		Total Chromium (mg/L)	6	15	0.002	0.002	0.00225	0.003	0.003	0.003	0.0035	0.00375	0.00395
224		Total Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225		Total Copper (mg/L)	6	15	0.0165	0.019	0.0223	0.0395	0.071	0.079	0.148	0.182	0.209
226		Total Dissolved Solids @180°C-Total (µg/L)	7	14	15200000	15420000	15450000	16000000	16100000	16100000	16140000	16170000	16194000
227		Total Dissolved Solids @180°C-Total (mg/L)	7	14	15200	15420	15450	16000	16100	16100	16140	16170	16194
228		Total Lead (mg/L)	6	15	0.0055	0.007	0.00725	0.008	0.008	0.008	0.009	0.0095	0.0099
229		Total Manganese (mg/L)	6	15	0.0125	0.014	0.0143	0.0155	0.0183	0.019	0.0245	0.0273	0.0295
230		Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231		Total Molybdenum (mg/L)	6	15	0.004	0.005	0.00525	0.007	0.00875	0.009	0.016	0.0195	0.0223
232		Total Nickel (mg/L)	6	15	0.0085	0.009	0.0105	0.0165	0.027	0.03	0.032	0.033	0.0338
233		Total Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
234		Total Silver (mg/L)	5	16	0.0014	0.0018	0.002	0.006	0.008	0.0086	0.0098	0.0104	0.0109
235		Total Strontium (mg/L)	6	15	11.95	12.4	12.93	14.6	14.85	14.9	15.25	15.43	15.57
236		Total Thorium (mg/L)	2	19	0.0013	0.0016	0.00175	0.0025	0.00325	0.0034	0.0037	0.00385	0.00397
237		Total Tin (mg/L)	2	19	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
238		Total Titanium (mg/L)	1	20	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
239		Total Uranium (mg/L)	6	15	0.0035	0.007	0.007	0.007	0.00775	0.008	0.0085	0.00875	0.00895
240		Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241		Total Zinc (mg/L)	7	14	0.033	0.0368	0.0395	0.047	0.056	0.0566	0.0578	0.0584	0.0589

TSF A - SUMMARY

				TSF-A			
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	Sep-23	Dec-23	Mar-24	Jun-24
			TSF A				
Bicarbonate Alkalinity as CaCO3 (mg/L)	June 2024 is slightly outside percentiles	45.2	40.5	27	29	43	46
Chloride (mg/L)	June 2024 is slightly outside percentiles	3638	3615	368	266	3320	3660
Dissolved Chromium (mg/L)	June 2024 is outside percentiles	0.002	0.00285	<0.001	<0.001	0.002	0.004
Dissolved Nickel (mg/L)	March and June within percentiles	No Data	0.00725	0.01	0.008	0.004	0.003
Dissolved Zinc (mg/L)	March and June within percentiles	0.0272	0.0231	0.025	0.018	0.013	0.015
Electrical Conductivity @ 25°C (µS/cm)	Within previous percentiles	12320	12205	1540	1370	11600	12300
FLS EC	June 2024 is slightly outside percentiles	No Data	12.41	1.453	1.414	1.482	12.86
FLS Temp		No Data	27.58	25.3	28.2	25.3	24.7
Total Alkalinity as CaCO3 (mg/L)	June 2024 is slightly outside percentiles	No Data	40.5	27	29	43	46
Total Chromium (mg/L)	March and June outside percentiles	0.002	0.0028	0.003	<0.001	0.004	0.005
Total Nickel (mg/L)	March and June within percentiles	No Data	0.0075	0.01	0.008	0.005	0.003
Total Zinc (mg/L)	March and June within percentiles	0.0278	0.0235	0.024	0.018	0.013	0.011

TSF B

				TSF-B			
Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF B				
Dissolved Calcium (mg/L)	Outside percentiles	532	526.5	585	539	561	563
Dissolved Magnesium (mg/L)	Outside percentiles	No Data	239.5	258	241	245	257
Dissolved Potassium (mg/L)	Within percentiles	37	36.5	37	37	35	35
Dissolved Sodium (mg/L)	Outside percentiles	No Data	954	978	933	954	963
Dissolved Strontium (mg/L)	Outside percentiles	6.16	5.335	5.85	5.98	6.26	6.27
Electrical Conductivity @ 25°C (µS/cm)	Outside percentiles	9386	8363	8260	10600	9030	9230
FLS EC		No Data	8.719	6.84	6.53	9.24	9.12
FLS Temp		No Data	27.27	26.9	28.3	26.4	24.5
pH (no unit)		7.64	7.635	7.56	7.65	7.3	7.22
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	Outside percentiles	965	942.5	958	982	988	954
Total Arsenic (mg/L)	Last three are within percentiles	0.001	0.00195	0.002	<0.001	0.001	0.001
Total Boron (mg/L)	Within percentiles	1.24	1.24	1.08	1.27	1.14	1.2
Total Dissolved Solids @180°C-Total (mg/L)	Within percentiles	6427	5520	4270	6210	6520	5340
Total Molybdenum (mg/L)	Outside percentiles	0.008	0.0075	0.009	0.008	0.008	0.009
Total Strontium (mg/L)	June 2024 within previous	6.059	5.895	6.16	5.61	6.48	6.03

TSF C

				TSF-C			
Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	24-Sep-23	19-Dec-23	22-Mar-24	16-Jun-24
			TSF C				
Dissolved Calcium (mg/L)	June within percentiles	385	377	383	342	366	361
Dissolved Magnesium (mg/L)	June within percentiles	No Data	167.5	168	155	157	166
Electrical Conductivity @ 25°C (µS/cm)	June within percentiles	7651	8055	6640	8230	7140	7160
FLS EC			6.788	5.24	5.1	7.18	7.29
FLS pH			7.11	6.79	7.14	7.11	7.28
FLS Temp			28.31	26.6	28.5	24.9	23.6
Total Chromium (mg/L)	June within percentiles	0.004	0.00475	0.004	0.004	0.013	0.004
Total Copper (mg/L)	June within percentiles	0.003	0.003	0.003	0.003	0.008	0.002
Total Manganese (mg/L)	June within percentiles	0.0027	0.0026	0.002	0.002	0.472	0.001
Total Vanadium (mg/L)	June within percentiles	0.01	0.01	0.01	0.01	0.03	0.01

TSF D

Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	TSF-D	
				19-Dec-23	16-Jun-24
			TSF D		
Dissolved Zinc (mg/L)	June within percentiles	No Data	0.0193	0.02	0.011
Electrical Conductivity @ 25°C (µS/cm)	June within percentiles	No Data	11290	11400	8340
FLS EC	Within previous percentiles	10.13	7.18	7.18	8.7
FLS pH		6.85	6.82	6.82	7.14
Total Nickel (mg/L)	June within percentiles	No Data	0.0048	0.005	<0.001

TSF E

Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	TSF-E	
				17-Dec-23	16-Jun-24
			TSF E		
Dissolved Boron (mg/L)	Outside percentile	No Data	4.385	3.63	4.45
Dissolved Copper (mg/L)	Outside percentile	No Data	0.001	0.002	0.002
Dissolved Zinc (mg/L)	June within percentile	No Data	0.015	0.017	0.015
Electrical Conductivity @ 25°C (µS/cm)	Within previous percentile	13620	12465	13300	12200
Total Boron (mg/L)	June within percentile	No Data	4.396	4.41	3.96
Total Molybdenum (mg/L)	June within percentile	No Data	0.002	0.003	0.002
Total Thorium (mg/L)	Outside percentile	No Data	0.001	<0.001	0.002

TSF S1

				TSF-S1 (TSF-MW01)			
Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF S1				
Chloride (mg/L)	Within previous percentile	1136	1098	1040.00	1060.00	1080.00	1100.00
Dissolved Calcium (mg/L)	Within previous percentile	192.8	187	195	178	192	182
Dissolved Potassium (mg/L)	Within previous percentile	20	19.75	20	20	19	20
Dissolved Sodium (mg/L)	Outside percentiles	No Data	491.3	526	497	508	502
Dissolved Zinc (mg/L)	Outside percentiles	0.0268	0.0274	0.024	0.03	0.027	0.03
FLS pH		7.778	7.059	6.65	6.82	7.04	7.1
pH (no unit)			7.808	7.81	7.14	7.5	7.37
Total Chromium (mg/L)	Within previous percentile	0.003	0.002	0.003	0.003	0.003	0.002
Total Nickel (mg/L)		No Data	0.00195	<0.001	0.001	0.002	0.002
Total Zinc (mg/L)	Marginal on June 2024	0.0294	0.0302	0.022	0.025	0.024	0.03

TSF S2

				TSF-S2 (TSF-MW02)			
Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF S2				
Dissolved Antimony (mg/L)	June within percentiles	0.032	0.0348	0.011	0.013	0.057	0.012
Dissolved Arsenic (mg/L)	June outside percentiles	0.001	0.001	0.001	0.001	0.001	0.002
Dissolved Boron (mg/L)	June outside percentiles	2.46	2.32	2.38	1.79	1.92	2.49
Dissolved Cadmium (mg/L)	June within percentiles	0.0004	3.7500E-4	0.0002	0.0003	0.0004	0.0002
Dissolved Copper (mg/L)	June within percentiles	0.017	0.0183	0.007	0.007	0.024	0.007
Dissolved Manganese (mg/L)	June within percentiles	0.003	0.00375	0.001	0.001	0.004	0.001
Dissolved Nickel (mg/L)	June within percentiles	No Data	0.0268	0.011	0.013	0.048	0.014
Dissolved Zinc (mg/L)	June within percentiles	No Data	0.0548	0.033	0.04	0.058	0.036
Electrical Conductivity @ 25°C (µS/cm)		26240	24600	22700	27000	22000	24300
FLS EC	June outside percentiles	No Data	23.19	13.04	10.17	24.8	25.7
FLS pH		No Data	6.749	6.54	6.66	6.95	6.75
FLS Temp	June within percentiles	No Data	28.83	26.6	29	27.7	24
pH (no unit)		7.6	7.574	7.6	7.6	7.34	7.24
Total Antimony (mg/L)	June within percentiles	0.041	0.0415	0.013	0.014	0.06	0.016
Total Boron (mg/L)	June within percentiles	2.65	2.383	2.38	2.6	1.91	2.3
Total Dissolved Solids @180°C-Total (mg/L)	Within previous percentiles	18040	16170	15000	16000	16300	16800
Total Lead (mg/L)	June outside percentiles	No Data	0.0095	0.007	0.001	0.002	0.01
Total Nickel (mg/L)	June within percentiles	No Data	0.033	0.011	0.014	0.048	0.014
Total Tin (mg/L)	Within previous percentiles	0.002	0.00195	<0.001	<0.001	<0.001	0.002
Total Titanium (mg/L)	June outside percentiles	No Data	0.01	<0.01	<0.01	<0.01	0.02
Total Zinc (mg/L)	June within percentiles	0.058	0.0584	0.032	0.037	0.061	0.035

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

								TSF-A									TSF-B							
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	Jun-22	Oct-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24	Jun-24	19-Jun-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken dipped x 2	clear colourless odourless	hydrasleeved lab samples taken triplicate lab samples taken dipped x 3 EC risen creamy brown mud on hydralseeve weight	hydrasleeved clear sample dipped x 3	hydrasleeved EC dropped significant clear "fresh" organic odour 1440uS	hydrasleeved	hydrasleeved surface water adjacent well EC reading was 1414uS	EC 1482uS. Unusual initial EC result of 11.88mS. Dipped twice duplicated sample.	hydrasleeved noted EC rise from March 2024 quarter is this well returning to historic EC readings or sample error?	hydrasleeved lab samples taken	hydrasleeved lab samples taken dipped x 3	hydrasleeved slight hint of h2s odour	hydrasleeved	hydrasleeved EC lowered duplicate sample taken	hydrasleeved		hydrasleeved
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	22000	39000	41000	36000	26000	27000	29000	43000	46000	72000	70000	91000	96000	68000	73000	71000	71000.00
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	22	39	41	36	26	27	29	43	46	72	70	91	96	68	73	71	71
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	9.88	120	115	55.5	11.3	15.4	10.7	98.4	113	82	87.9	37.7	38.4	93.9	88.3	90.6	92
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	264	3510	3650	3140	272	368	266	3320	3660	2520	2660	1090	1030	2620	2620	2770	2810.00
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	5.39	5.61	4.95	5.58	5.45	5.56	5.09	5.33	5.86	5.19	5.07	4.93	4.97	4.9	4.92	4.99	5.04
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	<0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	0.35	4.29	4.14	2.02	0.21	0.4	0.25	3.51	4.22	1.38	1.15	1.14	0.84	1.16	1.15	1.12	1.18
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	61000	463000	431000	221000	70000	85000	65000	363000	423000	484000	518000	184000	188000	585000	539000	561000	563000.00
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	61	463	431	221	70	85	65	363	423	484	518	184	188	585	539	561	563
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	0.002	0.004	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	0.013	0.008	0.007	0.01	0.012	0.013	0.014	0.008	0.007	0.001	0.003	0.003	0.001	0.002	0.002	0.001	0.002
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	9000	221000	214000	93000	11000	19000	10000	180000	207000	217000	250000	85000	87000	258000	241000	245000	257000.00
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	9	221	214	93	11	19	10	180	207	217	250	85	87	258	241	245	257
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.003	0.002	<0.001	<0.001	<0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.008	0.008	0.007	0.006	0.009	0.009	0.009	0.004	0.005	0.006	0.006	0.003	0.003	0.006	0.007	0.006	0.007
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	0.006	0.003	0.003	0.005	0.008	0.01	0.008	0.004	0.003	0.002	0.003	<0.001	0.002	0.003	0.002	0.002	0.002
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	7000	52000	50000	25000	9000	10000	9000	41000	46000	31000	35000	19000	20000	37000	37000	35000	35000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	7	52	50	25	9	10	9	41	46	31	35	19	20	37	37	35	35
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	0.02
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	136000	1780000	1720000	831000	154000	215000	148000	1480000	1690000	901000	933000	484000	492000	978000	933000	954000	963000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	136	1780	1720	831	154	215	148	1480	1690	901	933	484	492	978	933	954	963
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	0.51	6.03	4.88	2.62	0.522	0.679	0.499	4.96	5.52	6.13	5.56	2.22	2.4	5.85	5.98	6.26	6.27
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.002	0.001	0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0	0.002	0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.025	0.014	0.016	0.021	0.021	0.025	0.018	0.013	0.015	0.009	0.01	0.028	0.023	0.012	0.007	0.009	0.01
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	1220	11100	12400	10600	1230	1540	1370	11600	12300	7940	8820	4250	3960	8260	10600	9030	9230
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	1.635	1.635	9.21	12.81	10.13	1.453	1.414	1.482	12.86	7.31	8.72	8.71	8.13	6.84	6.53	9.24	9.12
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	7.51	7.51	6.96	6.68	6.54	7.21	7.33	7.4	6.97	6.72	6.61	6.42	6.61	6.52	6.61	6.86	6.74
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	18.3	18.3	18.2	27.7	26.9	25.3	28.2	25.3	24.7	18.9	27.3	27.1	23.5	26.9	28.3	26.4	24.5
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	8.6	8.6	3.73	8.14	35.2	1.02	6.07	10.9	9.09	5.77	4.84	2.96	0.17	0.69	4.1	5.02	4.42
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.34	7.34	7.41	7.23	7.06	7.01	7.06	7.2	7.15	7.49	7.46	7.61	7.31	7.56	7.65	7.3	7.22
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	185000	185000	1420000	1530000	1270000	231000	194000	1340000	1500000	937000	980000	358000	353000	958000	982000	988000	954000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	185	185	1420	1530	1270	231	194	1340	1500	937	980	358	353	958	982	988	954
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	22	22	39	41	36	27	29	43	46	72	70	91	96	68	73	71	71
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	11.7	11.7	129	136	116	15.7	12.1	122	135	92	96.8	40	38.3	95.2	95.8	100	100
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.002	0.001	0.001	0.002	0.002	<0.001	0.001	0.002	0.001	<0.001	<0.001	0.001	0.002	<0.001	0.001	0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	0.24	0.24	4.32	4.05	2.05	0.36	0.26	3.28	4.03	1.22	1.24	1.17	1.18	1.08	1.27	1.14	1.2
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.001	0.001	0.002	0.002	0.002	0.003	<0.001	0.004	0.005	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.028	0.028	0.02	0.016	0.024	0.031	0.04	0.022	0.017	0.003	0.004	0.004	0.006	0.006	0.002	0.002	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	700000	700000	16000000	7770000	6730000	1300000	775000	7480000	6560000	5930000	5600000	2440000	2280000	4270000	6210000	6520000	5340000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	700	700	16000	7770	6730	1300	775	7480	6560	5930	5600	2440	2280	4270	6210	6520	5340
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.004	0.003	0.003	0.004	0.006	0.005	0.005	0.006	0.004	0.005	0.004	0.007	0.02	0.009	0.002	0.002	0.004
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.008	0.007	0.007	0.01	0.012	0.012	0.012	0.007	0.006	0.006	0.008	0.004	0.004	0.009	0.008	0.008	0.009
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	0.008	0.003	0.003	0.006	0.008	0.01	0.008	0.005	0.003	0.003	0.003	0.001	0.002	0.003	0.002	0.002	0.002
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	0.02
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	0.489	5.77	5.58	2.87	0.52	0.703	0.502	4.9	5.14	5.63	6.23	2.35	2.29	6.16	5.61	6.48	6.03
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.002	0.001	0	<0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	0	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.029	0.013	0.012	0.025	0.02	0.024	0.018	0.013	0.011	0.006	0.007	0.023	0.026	0.01	<0.005	<0.005	0.008

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-C								TSF-D				
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	19-Jun-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	19-Dec-23	22-Mar-24	16-Jun-24	19-Jun-22	04-Dec-22	18-Jun-23	19-Dec-23	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken	hydrasleeved lab samples taken	hydrasleeved slight h2s odour	hydrasleeved	hydrasleeved			hydrasleeved	hydrasleeved grey mud on weight strong h2s odour nil lab sample taken	hydrasleeved lab samples taken very strong h2s odour grey mud on weight	hydrasleeved h2s odour duplicate sample taken	hydrasleeved strong h2s odour	hydrasleeved strong h2s odour
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	72000	70000	68000	70000	68000	74000	71000	71000		231000	232000	175000	217000
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	72	70	68	70	68	74	71	71		231	232	175	217
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	65	69.8	70.5	70.8	72.3	67.1	69.5	70.4		90.4	92.2	85.7	74.9
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	1770	1920	1790	1790	1820	1850	1940	1940		2970	2820	2730	2350
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	12.31	12.15	12.09	12.07	11.96	11.92	11.96	11.96	90.53	90.43	90.45	90.37	90.36
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002		<0.001	<0.001	<0.001	<0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	1.8	1.54	1.61	1.41	1.49	1.46	1.51	1.56		3.66	3.36	3.16	3.06
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	323000	351000	370000	374000	383000	342000	366000	361000		281000	265000	245000	235000
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	323	351	370	374	383	342	366	361		281	265	245	235
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004		<0.001	<0.001	<0.001	<0.001
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	<0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.001		0.001	0.002	<0.001	<0.001
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	146000	170000	160000	159000	168000	155000	157000	166000		161000	166000	158000	146000
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	146	170	160	159	168	155	157	166		161	166	158	146
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.433	0.457	0.418	0.295
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.008	0.003	0.002	0.002	0.002	0.003	0.002	0.003		0.002	<0.001	0.001	0.001
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.004	0.001	0.004	<0.001
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	28000	32000	31000	32000	33000	33000	30000	32000		54000	54000	53000	45000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	28	32	31	32	33	33	30	32		54	54	53	45
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	832000	862000	876000	879000	885000	838000	864000	871000		1420000	1470000	1360000	1150000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	832	862	876	879	885	838	864	871		1420	1470	1360	1150
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	4.35	4.07	4.24	4.45	4.08	4.23	4.26	4.31		3.35	3.64	3.31	3.03
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.002	0	0.001	0.001	0.001	0.002	0.001	0.002		0	<0.001	<0.001	<0.001
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.008	0.009	0.019	0.009	0.008	0.011	0.007	0.007		0.017	0.012	0.02	0.011
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	6630	6410	7040	7060	6640	8230	7140	7160		10300	9730	11400	8340
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	6.37	6.66	6.81	6.49	5.24	5.1	7.18	7.29	8.55	9.74	8.8	7.18	8.7
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	7.03	6.94	6.72	6.94	6.79	7.14	7.11	7.28	6.85	6.79	6.87	6.82	7.14
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	19.1	27.1	27.2	21.7	26.6	28.5	24.9	23.6	22.7	29.3	24.2	32.1	25.1
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	1.49	1.57	3.1	2.04	2.62	1.96	1.79	1.1		10.1	6.78	8.33	9.05
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.65	7.55	7.59	7.19	7.67	7.74	7.44	7.37		7.91	7.47	7.9	7.62
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	751000	792000	693000	772000	763000	775000	765000	759000		1070000	1030000	1000000	922000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	751	792	693	772	763	775	765	759		1070	1030	1000	922
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	72	70	68	70	68	74	71	71		231	232	175	217
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	67	72	66.3	68	68.6	69.8	72.1	71.9		111	106	101	89.8
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.002
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.002		<0.001	<0.001	<0.001	<0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	1.7	1.66	1.56	1.56	1.43	1.66	1.5	1.55		3.58	3.94	3.83	2.8
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.5	<0.1
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	0.0005	<0.0001
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.004	0.004	0.004	0.004	0.004	0.004	0.013	0.004		<0.001	0.001	<0.001	<0.001
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001		<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.002	0.002	0.003	0.003	0.003	0.003	0.008	0.002		0.003	0.015	0.004	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	4270000	4340000	4470000	5260000	4420000	3740000	4820000	3850000		5760000	6770000	6350000	4640000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	4270	4340	4470	5260	4420	3740	4820	3850		5760	6770	6350	4640
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.001	<0.001	<0.001
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.002	0.002	0.002	0.002	0.002	0.002	0.472	0.001		0.476	0.502	0.472	0.311
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004		0.002	0.002	0.001	0.002
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	<0.001		0.004	0.002	0.005	<0.001
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	4.19	4.64	4.47	4.16	4.24	3.68	4.41	4.18		3.73	3.48	3.06	2.93
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.002
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.002	0	0.002	0.002	0.002	0.002	0.002	0.002		0	<0.001	<0.001	<0.001
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01		<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.007	0.008	0.02	0.01	<0.005	0.008	0.008	0.006		0.015	0.033	0.021	0.013

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-E					TSF-S1 (TSF-MW01)								
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	19-Jun-22	04-Dec-22	18-Jun-23	17-Dec-23	16-Jun-24	19-Jun-22	14-Oct-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved strong h2s odour nil lab sample taken	hydrasleeved lab samples taken strong h2s odour small amount of grey mud on weight	hydrasleeved strong h2s odour trplicate sample taken	hydrasleeved	hydrasleeved h2s odour	hydrasleeved lab samples taken	clear colourless odourless	hydrasleeved lab sample taken	hydrasleeved h2s odour	hydrasleeved	hydrasleeved	hydrasleeved		hydrasleeved trplicate sample taken
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250		254000	255000	200000	255000	99000	97000	96000	91000	96000	93000.00	92000.00	97000.00	96000.00
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25		254	255	200	255	99	97	96	91	96	93	92	97	96
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8		123	121	117	118	35	36.6	37.9	37.7	38.4	40.4	38.2	39.4	38.8
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568		3550	3360	3320	3390	1000	1100	1050	1090	1030	1040.00	1060.00	1080.00	1100.00
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	95.62	95.57	95.64	95.56	95.65	25.61	25.6	25.59	25.57	25.56	25.57	25.57	25.57	25.62
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32		4.4	3.54	3.63	4.45	1.36	1.08	1.1	1.14	0.84	1.13	0.98	1.12	1.05
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4		<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500		298000	309000	290000	288000	165000	180000	173000	184000	188000	195000.00	178000.00	192000.00	182000.00
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338		298	309	290	288	165	180	173	184	188	195	178	192	182
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275		<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183		0.001	0.001	0.002	0.002	0.002	<0.001	0.002	0.003	0.001	0.002	0.002	<0.001	0.001
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250		240000	217000	212000	219000	78000	81000	91000	85000	87000	89000.00	87000.00	88000.00	90000.00
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3		240	217	212	219	78	81	91	85	87	89	87	88	90
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375		0.352	0.33	0.262	0.325	<0.001	<0.001	<0.001	0.002	0.003	0.001	0.002	0.002	0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175		0.001	<0.001	0.001	0.001	0.002	0.024	0.004	0.003	0.003	0.003	0.002	0.003	0.003
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268		0.009	0.008	0.009	0.008	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.002	0.002	0.002
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000		68000	66000	67000	65000	18000	19000	19000	19000	20000	20000.00	20000.00	19000.00	20000.00
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82		68	66	67	65	18	19	19	19	20	20	20	19	20
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000		2000000	1970000	1910000	1920000	458000	471000	489000	484000	492000	526000.00	497000.00	508000.00	502000.00
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845		2000	1970	1910	1920	458	471	489	484	492	526	497	508	502
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48		4.33	4.66	4.27	4.36	2.2	2.46	2.08	2.22	2.4	2.11	2.26	2.23	2.3
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085		0	<0.001	<0.001	<0.001	0.002	0.005	0	0.002	0.001	0.002	0.001	0.002	0.002
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548		0.015	0.012	0.017	0.015	0.023	0.02	0.022	0.028	0.023	0.024	0.03	0.027	0.03
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600		12500	11800	13300	12200	3840	3960	3720	4250	3960	3990.00	4180.00	4030.00	4050.00
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	9.47	11.85	10.87	8.09	11.99	4.41	3.94	3.91	4.33	4.25	3.9	3.84	4.22	4.25
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	6.94	6.78	6.93	6.81	7.06	6.89	7.11	6.71	6.57	6.77	6.65	6.82	7.04	7.1
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	22.8	30.7	23.4	30.4	27.4	18.2	20.9	27.9	25.8	21	25.1	25.8	24.4	22.6
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704		5.34	3.83	4.55	4.73	3.34	5.29	1.58	2.96	0.17	2.43	1.48	0.78	1.92
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574		7.94	7.44	7.97	7.6	7.73	7.76	7.67	7.61	7.31	7.81	7.14	7.5	7.37
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500		1540000	1460000	1450000	1370000	349000	372000	363000	358000	353000	352000.00	364000.00	366000.00	356000.00
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428		1540	1460	1450	1370	349	372	363	358	353	352	364	366	356
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25		254	255	200	255	99	97	96	91	96	93	92	97	96
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5		137	130	128	129	37.4	40.7	39.1	40	38.3	38.5	39.3	40	40.4
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415		<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002		<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383		4.19	4.42	4.41	3.96	1.16	1.02	1.17	1.17	1.18	1.16	1.12	1.08	1.14
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375		<0.1	<0.1	0.5	<0.1	0.4	0.3	0.2	0.2	0.2	0.2	<0.1	0.3	0.3
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4		<0.0001	<0.0001	0.0005	<0.0001	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	<0.0001	0.0003	0.0003
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375		<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.002
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182		0.003	0.006	0.006	0.004	0.003	0.003	0.003	0.004	0.006	0.003	0.004	0.006	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000		7510000	8060000	7460000	7110000	2500000	2320000	2480000	2440000	2280000	2070000.00	2180000.00	2380000.00	2070000.00
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170		7510	8060	7460	7110	2500	2320	2480	2440	2280	2070.00	2180.00	2380.00	2070.00
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095		<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.001	0.002	0.002	0.002	0.002	0.002
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273		0.376	0.311	0.332	0.386	0.004	0.001	0.004	0.007	0.02	0.004	0.01	0.008	0.008
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195		0.002	0.002	0.003	0.002	0.003	0.007	0.003	0.004	0.004	0.004	0.004	0.005	0.004
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033		0.008	0.011	0.01	0.008	<0.001	<0.001	<0.001	0.001	0.002	<0.001	0.001	0.002	0.002
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104		<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	0.002	<0.001	<0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43		4.85	4.34	3.92	4.17	2.08	2.32	2.32	2.35	2.29	2.3	1.97	2.26	2.24
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385		<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875		0	<0.001	<0.001	<0.001	0.002	0.003	0	0.002	0.002	0.002	0.002	0.002	0.002
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584		0.016	0.02	0.019	0.013	0.031	0.018	0.021	0.023	0.026	0.022	0.025	0.024	0.03

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-S2 (TSF-MW02)								
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	19-Jun-22	14-Oct-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken	slight yellow filtered odourless	hydrasleeved lab sample taken dipped x 3 turbid cloudy brownish/yellowish	hydrasleeved turbid/cloudy sample brownish/yellowish dipped x 3 duplicate taken TSFDUP1 at this site	hydrasleeved dipped x 2 turbid/cloudy	hydrasleeved turbid cloudy could hear "material" falling into well when retrieving hydrasleeve	hydrasleeved dipped x 2 turbid/cloudy	Sample field chemisty collected twice	hydrasleeved cloudy sample
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	84000	84000	78000	73000	74000	79000	84000	77000	84000
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	84	84	78	73	74	79	84	77	84
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	240	271	267	210	248	260	252	180	245
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	7850	8570	8030	7100	7060	7850	7790	7260	8110
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	21.09	22.34	19.7	20.71	21.28	21.7	22.13	21.45	21.99
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	0.01	0.011	0.016	0.041	0.009	0.011	0.013	0.057	0.012
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	1.79	2.35	2.23	2.22	1.96	2.38	1.79	1.92	2.49
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	0.0002	0.0002	0.0004	0.0002	0.0002	0.0003	0.0004	0.0002
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	1070000	1230000	1170000	995000	1140000	1190000	1090000	830000	1070000
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	1070	1230	1170	995	1140	1190	1090	830	1070
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	0.007	0.006	0.01	0.019	0.008	0.007	0.007	0.024	0.007
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	452000	500000	542000	398000	461000	491000	469000	346000	468000
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	452	500	542	398	461	491	469	346	468
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	0.002	0.001	0.002	0.003	0.001	0.001	0.001	0.004	0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.003	0.01	0.004	0.005	0.003	0.004	0.003	0.008	0.004
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	0.009	0.01	0.017	0.03	0.011	0.011	0.013	0.048	0.014
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	66000	82000	78000	64000	71000	73000	77000	57000	69000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	66	82	78	64	71	73	77	57	69
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	0.003	<0.001	<0.001	0.01	<0.001	0.002	0.001	0.002	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	3400000	3830000	3720000	2900000	3490000	3630000	3620000	2510000	3470000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	3400	3830	3720	2900	3490	3630	3620	2510	3470
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	14.7	15.5	12.3	11.5	13.8	12.3	12.7	10.4	13
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.009	0.007	0	0.005	0.005	0.005	0.002	0.007	0.006
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.034	0.031	0.048	0.048	0.034	0.033	0.04	0.058	0.036
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	22800	24600	24600	22900	21400	22700	27000	22000	24300
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	14.5	9.21	23.29	22.65	18.4	13.04	10.17	24.8	25.7
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	6.75	6.77	6.51	6.46	6.63	6.54	6.66	6.95	6.75
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	20.8	18.2	28.9	28.4	24.5	26.6	29	27.7	24
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	5.38	3.68	1.35	6.98	1.73	1.25	2.77	15.3	5.66
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.54	7.56	7.53	7.56	7.22	7.6	7.6	7.34	7.24
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	2130000	2330000	2210000	1920000	1890000	2070000	2180000	1900000	2090000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	2130	2330	2210	1920	1890	2070	2180	1900	2090
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	84	84	78	73	74	79	84	77	84
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	267	292	274	242	240	266	267	246	274
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	0.012	0.009	0.025	0.043	0.037	0.013	0.014	0.06	0.016
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.001	0.002	0.002	0.002	0.002	<0.001	0.002	0.002
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	2.05	2.31	2.4	2.33	2.23	2.38	2.6	1.91	2.3
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	0.3	0.2	0.2	0.4	0.3	0.2	0.2	0.3	0.2
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	0.0003	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.004	0.002	0.003	0.003	0.003	0.003	0.002	0.002	0.003
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.034	0.019	0.047	0.079	0.216	0.035	0.025	0.055	0.017
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	17,500,000	16,100,000	15,500,000	14,900,000	16,100,000	15,000,000	16,000,000	16,300,000	16,800,000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	17500	16100	15500	14900	16100	15000	16000	16300	16800
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	0.006	0.01	0.008	0.007	0.008	0.007	0.001	0.002	0.01
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.011	0.016	0.015	0.019	0.03	0.015	0.008	0.011	0.022
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.003	0.006	0.003	0.009	0.008	0.005	0.004	0.012	0.005
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	0.01	0.009	0.015	0.034	0.03	0.011	0.014	0.048	0.014
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	0.002	<0.001	0.008	0.011	0.006	0.006	0.002	0.003	0.007
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	13.7	14.9	14.7	12.4	11.5	13.2	11.6	10.3	12.3
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	0.004	<0.001	0.001	0.001	<0.001	<0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.002
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.007	0.007	0	0.007	0.007	0.006	0.006	0.008	0.006
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.038	0.03	0.044	0.059	0.057	0.032	0.037	0.061	0.035

Appendix G. TSF Groundwater Quality Report 2024 (Land Water Consulting 2024)

LWC
Land and Water Consulting

Groundwater Quality Assessment

Prominent Hill Mine, South Australia

BGP Group Limited

August 2024

Document Status

Version	Doc type	Reviewed by	Approved by	Date issued
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1 INTRODUCTION

1.1 OVERVIEW

Land & Water Consulting (LWC) was engaged by BHP Group Limited (BHP) to review groundwater chemistry data associated with groundwater samples collected by BHP for the Tailings Storage Facility (TSF) groundwater wells at BHP's Prominent Hill Mine, South Australia (the Site).

It is understood that the statistical analysis of concentrations of chemical substances in groundwater sampled from TSF groundwater wells is required as part of the outcome measurement criteria for the Program for Environment Protection and Rehabilitation (PEPR) compliance report, which is due to be submitted to the Department for Energy and Mining (DEM) on 30 September 2024.

1.2 BACKGROUND

The Site is located approximately 650 kilometres north-northwest of Adelaide, around halfway between Roxby Downs and Coober Pedy. Production at BHP's Prominent Hill Mine includes underground (and previously open pit) mining and processing of the Prominent Hill copper-gold orebody.

BHP commenced construction of the project in September 2006, with the first concentrate produced in February 2009. The underground operation commenced construction in late 2010, with the underground operations scheduled to continue through 2029. The open pit operation closed in March 2018. The current expected mine life is another 9 to 15 years.

Tailings and Waste Rock are placed in an integrated waste (tailing and waste rock) landform to the north and south of the pit (refer to Figure 1):

- The Northern Waste Rock Dump (WRD);
- The Tailings Storage Facility (TSF); and
- The Southern WRD (this is also part of the integrated landform with the TSF).

To monitor potential impacts to the groundwater system beneath the mine site surrounding the TSF (i.e. changes in concentrations/ levels of chemical substances and/ or parameters in the groundwater, defined as an 'impact event' (refer Table 1-1)), BHP installed a number of groundwater monitoring wells. BHP undertake a quarterly water monitoring program that currently comprises sampling and monitoring of process water sites as well as monitoring wells screening the Bulldog Shale and the non-artesian Eromanga Aquifer.

The groundwater and surface water monitoring network surrounding the TSF comprises the following:

- Shallow monitoring wells screened within the Bulldog Shale (TSF-A, TSF-B, TSF-C, TSF-S1 and TSF-S2);
- Deep monitoring wells screened within the non-artesian Eromanga Aquifer (TSF-D and TSF-E); and
- Process water sites (Environmental Pond, Pit Water, Raw Water Dam and TSF-Finger).

A number of groundwater related environmental outcomes are defined in the PEPR. This report addresses the outcomes and measurement criteria for Impact No. 17.2 as per the latest version of the PEPR (2022) and as summarised in Table 1-1. This report details the assessment as prescribed in Table 1-1.

Table 1-1 Summary of PEPR (2022) Assessment Condition – Impact No. 17.2

Impact Event	Deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Environmental Outcome	No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Outcome Measurement Criteria Summary	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are: • Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Measurement Criteria Details	
What will be measured and form (method) of measurement	Deep TSF wells - half yearly monitoring for field parameters (EC, pH, water table). If field parameters monitored at deep TSF wells show statistical change then laboratory sampling (consistent with the shallow wells) would be conducted. Shallow wells and process water monitoring sites - quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-}, pH, TDS, EC).
Locations	Deep TSF wells (TSF-D, TSF-E) Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Outcome achievement	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use).
Frequency	Deep wells - annually Shallow wells – half yearly
Control or baseline data	Rolling two-year statistical analysis using 95 percentile approach to generate a rolling window of assessment for all samples. This method is supported by the TSF Water Quality

	Assessment (ELA, 2017). Historical information can be found in ELA (2017), LWC (2018), ELA (2019), LWC (2020) and LWC (2021).
Leading Indicator Criteria	Review of records undertaken annually while Waste Rock Dumps (WRDs) operational confirming that Non Acid Forming (NAF) thicknesses of 10 m minimum surrounding Potential Acid Forming (PAF) material has been maintained during operation. Annual external third-party audit of operational TSF that includes but is not limited to: • Visual inspection of structural integrity i.e. no seepage or cracks in perimeter; and • Review of operational surveillance records and piezometer monitoring data.

1.3 PREVIOUS REPORT

In September 2023, LWC undertook a water quality assessment of the process water points and groundwater as sampled from monitoring wells surrounding the TSF (installed into the Bulldog Shale and Eromanga Aquifer). This assessment included data from June 2022 to June 2024 (~24 months). The data was utilised to:

- Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location; and
- Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators.

The assessment indicated that there had been no significant changes to the concentrations of chemical substances or measured parameters in the groundwater since the previous annual monitoring period. It was recommended that the quarterly monitoring schedule be maintained, however, the analytical suite for the deeper wells could be reduced.

1.4 OBJECTIVE

The objective of this assessment was to undertake a statistical review of groundwater chemistry associated with water sampled from the TSF groundwater monitoring locations for use in the 2024 PEPR compliance reporting.

1.5 SCOPE OF WORKS

The following scope of works was adopted utilising the data collected during the most recent 24-month period i.e. from June 2022 to June 2024 monitoring events:

1. Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location;
2. Undertake trend investigation for those locations/ analytes that reported to be statistically increasing during step 1;
3. Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators; and
4. Provide report with supporting information including relevant graphical interpretation.

Where necessary, data collected prior to 2023/24 was also utilised for the assessment of the potential significance of any identified trends.

2 APPROACH AND METHODOLOGY

2.1 OVERVIEW

The following subsections detail the approach adopted to undertake the scope of works. The following flow chart summarises the approach to this assessment.

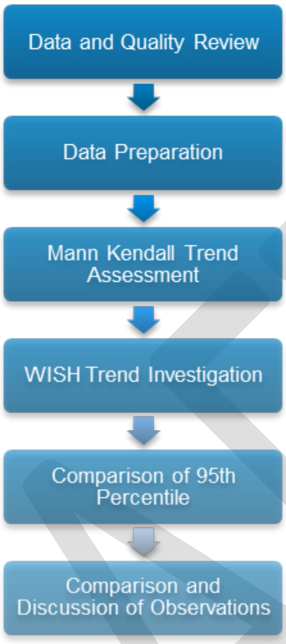

Figure 2-1 Summary of Approach to Trend Assessment

2.2 DATA AND QUALITY REVIEW

2.2.1 Analysis

The data assessed in this report was collected and submitted for laboratory analysis by BHP. It is noted that a data quality assessment was not undertaken as part of the works reported here. As per the PEPR, the following data was required to be collected:

- Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite including the following:
    - Total and dissolved metals: Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U)
    - Major ions: Ca, K, Cl, HCO3-, SO4, pH, TDS, EC
- Deep TSF wells (TSF-D and TSF-E) half yearly monitoring for field parameters including:
    - EC, pH and water table.
- A summary of the data received from BHP is presented in Table 2-1 and Table 1 (at rear). Note that BHP has collected more than the required amount of data to meet its obligations

under the PEPR. The broad screen analysis undertaken on water sampled from the shallow wells was not required for water sampled from the deeper wells. However, such analysis appears to have been undertaken for the deeper wells on a quarterly basis until March 2022.

- With regards to the samples collected from the deep monitoring wells (TSF-D and TSF-E) the collected field parameters included water level, pH, temperature, and EC.

Table 2-1 Summary of 24 Month Dataset

Location	Sample Type	Target Feature	Month	Year	Analysis
TSF-A	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			September	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			October	2022	General
			June	2022	General
TSF-B	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-C	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-D	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-E	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-S1 (TSF-MW01)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
TSF-S2 (TSF-	Shallow well	Bulldog Shale	June	2024	General

Location	Sample Type	Target Feature	Month	Year	Analysis
MW02)			March	2024	General
			December	2023	General
			October	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
Environmental Pond	Surface Grab Sample	Captures water from in and around the Site (including processing plant water)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Pit Water	Surface Grab Sample	From inflows from the southern wall collected in truck tray sump	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Raw Water Dam	Surface Grab Sample	Groundwater sourced from the production wells of the Aries Borefield (Boorthanna Formation)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
TSF Finger	Well through the centre of the TSF	Water from the TSF	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS

Note: General analysis includes analysis of total and dissolved metals (Ag, As, B, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Th, Ti, Vn, Zn, U), major ions (Ca, Mg, Na, K, Cl, HCO_3-, SO_4), pH, TDS and EC

2.2.2 Accuracy of Chemical Analysis

In general, two types of errors are discerned in chemical analyses:

- Precision – or statistical errors which reflect random fluctuations in the analytical procedure.
- Accuracy – or systematic errors displaying systematic deviations due to faulty procedures or interferences during analysis.

The precision can be calculated by repeated analysis of the same sample. Systematic errors can be tested only by analysing reference samples and by inter-laboratory comparison of the results. At low concentrations, duplicate analyses may show large variations when the sensitivity of the method is insufficient. Ordinarily, an intra duplicate is used to assess precision, and an inter laboratory duplicate is used to assess accuracy.

The accuracy can be assessed for major ions by estimating the electrical balance since the sum of positive and negative charges in the water should be equal. Appelo and Postma (2005) note that a balance >5% should be assessed, inferring a balance <5% is acceptable / desired.

$$\%\,\text{Difference} = 100\,\frac{\Sigma\text{cations} - \Sigma\text{anions}}{\Sigma\text{cations} + \Sigma\text{anions}}$$

The provided data was reviewed. The average ionic balance was calculated as (-)3.3%. Whilst some values marginally exceeded the 5% threshold, on balance, the data was considered suitable for interpretation,

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
% Difference	-6.1	-2.8	3.3	-7.0	-5.0	-2.9	-2.4

A further test is:

anions (meq/L) = cations (meq/L) = approx. EC/10 (mS/m)

There is good agreement between balance and EC.

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
EC	12205	8363	8055	11290	12465	4207	24600
EC / 100	122.05	83.63	80.55	112.9	124.65	42.07	246

2.3 DATA PREPARATION

The processed field and laboratory analytical results were provided by BHP in compiled spreadsheets for both the groundwater and surface water monitoring locations. Assuming that BHP transcribed the data directly from the certified laboratory analytical reports/ field sheets and that an appropriate level of internal quality checks were undertaken, it was considered that the opportunity for the data (utilised for interpretation) to have become anomalous has been minimised.

Unless the water body is degraded, failure to detect contaminants in samples is common. NWQMS (2000) states that rather than concluding that the particular contaminant does not exist in a water sample, the observation should be that the reported concentration is ‘below detection limit’ (BDL), also referred to as below limit of reporting (LOR). There is no universally accepted method of dealing with BDL data. Some common approaches include:

- treating the observation as ‘missing’;
- treating the observation as zero;
- using the numerical value of the detection limit; and/ or
- using the numerical value of half the detection limit.

When a large portion of the data is below detection limit, NWQMS (2000) notes that the use of any of the above approaches will be problematic because the sample variance will be severely underestimated. Also, when standard statistical techniques are applied to data sets that have constant values in place of the BDL values, the resulting estimates are biased.

NWQMS (2000) notes suggest that routine water quality parameters (means, percentiles, etc.) be computed using the full data set with BDL data replaced by either the detection limit or half the detection limit. The impact of this strategy on computed statistical measures should be clearly understood, and the monitoring team should not proceed with any form of inferential analysis (e.g. confidence intervals or hypothesis testing) when a significant proportion (e.g. >25%) of the data set is BDL and has been substituted by a surrogate value. Advanced statistical skills should be sought when any form of inference is required in these situations.

NWQMS (2000) recommends that if only a small proportion of the data set is BDL and has been replaced by a numerical surrogate, it is best to perform any statistical analysis twice, once using zero and once using the detection limit (or half the detection limit) as the replacement value. If results from the two analyses differ markedly, the monitoring team “should investigate more sophisticated statistical methods of dealing with censored observations” (NWQMS, 2000).

Analytes reported below the laboratory limits of reporting were obvious within laboratory data (identified as ‘<’ the reporting limit) and were then treated accordingly. These were logged in ProUCL and the software managed these non-detects using Kaplan Meier method as required by SA EPA (2024).

Please note the following data reduction and preparation techniques applied:

- **Summary Statistics** - Summary statistics included the number of samples, frequency of detection (FOD), minimum detected concentration, maximum detected concentration, and median.
- **The Interquartile Range (IQR)** - The IQR describes the range of values between the 25th and 75th percentile. A binomial method was used to estimate confidence intervals that assumes no underlying distribution, as discussed in Statistical Methods for Environmental Pollution Monitoring by Richard O. Gilbert. To calculate the percentiles, the data points were ranked by the Pro UCL software.
- **95th percentile** - With respect to BDL, the non-parametric 95th percentile was calculated using ProUCL (USEPA, 2007a). Further detail regarding the calculation and interpretation of this parameter is presented in following sections.

Field results were provided by BHP and were identified by the inclusion of ‘FS’ at the beginning of the analyte name. It is noted that not all required analytes were recorded for all sites at all monitoring events. Missing data were treated as blanks and were not assigned a zero value.

2.4 MANN KENDALL TREND ASSESSMENT

The purpose of this assessment is to determine if the concentrations of indicator analytes are statistically increasing at any of the compliance locations. Consistent with previous groundwater quality reviews, such assessment included only the last 24 months of data. The assessment comprised data collected during (approximately) quarterly monitoring events from June 2021 to June 2023, as summarised in Table 2-1.

The GSI Mann-Kendall Toolkit was used for this purpose. This tool supports the analysis of time-series groundwater monitoring data to quantitatively determine if the measured concentrations of a chemical are increasing, decreasing, or stable over time, based upon use of the Mann-Kendall statistical method. The software can be applied to data from monitoring points for which groundwater sampling and testing have been conducted at multiple episodes over time (i.e., time-series sampling) to evaluate the concentration trend of each chemical at each monitoring location. A benefit of the Mann Kendall approach to statistical assessment is that it is nonparametric, meaning that the calculations do not include assumptions based on the distribution of data.

The GSI-Mann-Kendall Toolkit, a Mann Kendall trend test (including graphical output), was utilised to statistically assess (at the 95% confidence level) the ongoing trend of concentrations for each leading indicator chemical substance at each compliance location as defined in the PEPR (2017).

2.5 95th PERCENTILE ASSESSMENT

NWQMS (2000) outlines a technique to derive and use percentiles of the site data for chemical substances. NWQMS recommends computation of the 80th percentile at the reference site be based on the most recent 24 monthly observations undertaken. ELA (2017) adopted a similar approach for the assessment of water chemistry percentiles and use as triggers, noting the absence of true baseline. ELA (2017) adopted the use of the 95th percentile for comparison, in place of the 80th percentile. For purposes of continuity, the same method has been adopted during previous assessment for the site by LWC and for this event as well.

As above, a statistical change is considered to be occurring where the recent sample (i.e. the latest reported concentration) is outside 2 standard deviations of the previous 2 years' data (i.e. greater than the 95th percentile). For this assessment, the calculation of the 95th percentiles were undertaken using Version 5.2 of Pro UCL software. The following is noted regarding the calculation process:

1. ProUCL has an inbuilt function to account for outliers and, as such, no pre-processing of data for outliers was undertaken.
2. Where results were reported below the laboratory limits of reporting, the limit of reporting was adopted as the concentration.

3 RESULTS

3.1 MANN KENDALL STATISTICAL TREND ASSESSMENT

Mann Kendall statistical assessment was undertaken on the last 24 months of data for each of the data collection points for the leading indicator species. The calculation sheets are presented as Appendix A. A summary of the results is presented in Table 3-1. Note that this assessment was only undertaken for compliance locations and analytes i.e. this was not undertaken for the broad analytical schedule for the deeper wells, only the analytes listed to assess compliance (with reference to Table 1-1).

The assessment of increasing trends is based on trends for which the confidence level is greater than 95%. The confidence level that an analyte is showing a particular trend is as follows:

1. >95% if stated as increasing or decreasing
2. ≥ 90% but ≤95% if stated as probably increasing or probably decreasing,
3. The differentiation between 'stable' and 'no trend' depends on both the standard deviation and variation of the data set (measured as the coefficient of variance).

Table 3-1 Summary of Mann Kendall Statistical Assessment for Compliance Analytes

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	Stable	Stable	**Increasing**	**Stable**
pH	Stable	Stable	Stable	Stable	Stable	**Prob. Decreasing**	No Trend
Depth to Water	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable	No Trend
Total Dissolved Solids	Stable	No Trend	Stable	Stable	Stable	**Decreasing**	No Trend
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Decreasing**	Stable	**Prob. Increasing**	Stable
Dissolved Potassium	No Trend	No Trend	No Trend	Stable	Stable	**Increasing**	Stable
Sulfate as SO_4	No Trend	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	**Decreasing**	Stable	No Trend	Stable
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	Stable	Stable
Dissolved Antimony	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Arsenic	Stable	Stable	No Trend	Stable	Stable	Stable	No Trend
Dissolved Boron	Stable	Stable	Stable	**Decreasing**	No Trend	Stable	No Trend
Dissolved Cadmium	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Dissolved Chromium	No Trend	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Cobalt	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Dissolved Copper	Stable	Stable	Stable	Stable	No Trend	Stable	No Trend
Dissolved Manganese	Stable	Stable	Stable	Stable	Stable	No Trend	Stable
Dissolved Molybdenum	Stable	No Trend	Stable	Stable	Stable	No Trend	Stable
Dissolved Selenium	No Trend	No Trend	Stable	Stable	Stable	Stable	Stable
Dissolved Silver	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Strontium	No Trend	Stable	No Trend	Stable	Stable	No Trend	Stable
Dissolved Tin	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Uranium	Stable	**Prob. Decreasing**	No Trend	Stable	Stable	Stable	Stable
Dissolved Vanadium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Zinc	Stable	Stable	Stable	Stable	No Trend	**Prob. Increasing**	No Trend
Total Antimony	Stable	Stable	Stable	No Trend	No Trend	Stable	No Trend
Total Arsenic	Stable	No Trend	Stable	Stable	No Trend	Stable	No Trend
Total Boron	Stable	Stable	**Prob. Decreasing**	Stable	Stable	Stable	No Trend
Total Cadmium	Stable	Stable	Stable	No Trend	No Trend	Stable	Stable
Total Chromium	**Prob. Increasing**	Stable	No Trend	Stable	Stable	No Trend	Stable
Total Cobalt	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Copper	No Trend	Stable	No Trend	No Trend	No Trend	**Prob. Increasing**	No Trend
Total Manganese	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	**Prob. Increasing**	No Trend
Total Molybdenum	Stable	No Trend	No Trend	Stable	No Trend	No Trend	No Trend
Total Selenium	Stable	No Trend	Stable	Stable	Stable	Stable	Stable
Total Silver	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Total Strontium	Stable	No Trend	Stable	**Decreasing**	Stable	Stable	**Decreasing**
Total Tin	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Total Uranium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Total Vanadium	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Zinc	**Prob. Decreasing**	Stable	Stable	Stable	Stable	No Trend	No Trend

3.2 STATISTICAL TREND INVESTIGATION

An investigation of indicative trends was undertaken for those analytes for which increasing/ probably increasing trends (at or above the 90% confidence level) were identified during the Mann Kendall Trend Assessment (refer to Table 3-2 which summarises the previous section). Note that this was only undertaken for compliance well locations (i.e. excluding deeper groundwater wells and surface water monitoring points).

Table 3-2 Summary of parameters/ analytes selected for investigation

Analyte	TSF-A	TSF-B	TSF-C	TSF-S1
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**
Salinity				
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	**Increasing**
Major Ions				
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Prob. Increasing**
Dissolved Potassium	No Trend	No Trend	No Trend	**Increasing**
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	No Trend
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable
Metals				
Dissolved Zinc	Stable	Stable	Stable	**Prob. Increasing**
Total Chromium	**Prob. Increasing**	Stable	No Trend	No Trend
Total Copper	No Trend	Stable	No Trend	**Prob. Increasing**
Total Manganese	**Prob. Increasing**	Stable	No Trend	**Prob. Increasing**

Increasing trends were identified for the following metals in TSF-A:

- Total chromium
- Total manganese

Increasing trends were identified for the following metals in TSF-S1:

- Dissolved zinc
- Total copper
- Total manganese

Salinity is increasing in TSF-B, TSF-C, and TSF-S1

Chloride is increasing in TSF-A, TSF-B, and TSF-C

3.3 ROLLING 95TH PERCENTILES

Outlier detection in the context of groundwater chemical concentrations using the rolling 95th percentile is a valuable method for identifying unusual or potentially problematic data points.

Outliers are data points that significantly differ from the rest of the dataset. In groundwater analysis, outliers could indicate unusual contamination events, measurement errors, or natural variability.

Identifying outliers is crucial because they can signal emerging environmental issues, such as new sources of pollution or changes in groundwater flow patterns.

The rolling 95th percentile is a dynamic threshold that adapts to changes in the data over time. Unlike a static threshold, it reflects the upper limit of "normal" concentration levels within a moving window of time.

By comparing each chemical concentration value to the rolling 95th percentile, it is possible to determine if it is unusually high relative to recent data.

<u>Steps for outlier detection:</u>

1. Calculate the Rolling 95th Percentile: this creates a moving threshold that changes over time, reflecting the distribution of the data.

2. Identify Exceedances: After calculating the rolling 95th percentile, compare each actual concentration value to this threshold:

3. Exceedance: If the concentration value exceeds the rolling 95th percentile, it is considered an outlier or exceedance.

4. No Exceedance: If the concentration is below or equal to the rolling 95th percentile, it is within the expected range of variability.

ProUCL v 5.2 was used to calculate percentiles for each chemical substance/ parameter in water from each monitoring well using quarterly analytical data gathered September 2022 to June 2024. The ProUCL output is presented as Appendix C.

A comparison of the analytical laboratory data to the calculated 95th percentiles is presented as Appendix D for each monitoring round within the percentile period (September 2023 to June 2024) i.e. time since previous reporting (August 2023).

Exceedances of the 95th percentile calculations were reported for a small number of analytes, and these were then also compared to the previous period percentile to gauge whether there is a potential upward increase in 95th percentile over time – refer Table 3-3.

Table 3-3 Summary and discussion of 95th percentile assessment

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
TSF-A	Bicarbonate and alkalinity Chloride Chromium (total and dissolved) Electrical conductivity (EC) (but not total dissolved solids)	These parameters (except EC) are trending upwards; therefore these are outliers and are also trending upwards. Of interest is the chromium in one month – June 2024.
TSF-B	Calcium Magnesium	None of these are trending upwards but can be counted as outliers.

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
	Sodium Sulfate EC (but not total dissolved solids) Strontium (dissolved but not total)	
TSF-C	None	Not applicable
TSF-D	None	Not applicable
TSF-E	boron (dissolved) copper (dissolved) thorium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (copper and thorium) with marginal value of boron above percentile but likely within laboratory error.
TSF-S1	Sodium zinc	The zinc exceedance could be due to a rounding up of the concentration (0.03 mg/L) relative to the 95th percentile (0.0274 mg/L) though given the percentile for total zinc (0.032 mg/L) the exceedance is relatively trivial.
TSF-S2	arsenic (dissolved) boron (dissolved) EC lead (total) titanium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (arsenic) and marginal value above percentile but likely within laboratory error.

4 DISCUSSION AND CONCLUSIONS

The objective of this assessment was to determine any change in the quality of groundwater surrounding the TSF at the Prominent Hill Mine. Consequently, the reported concentrations/ levels of indicator analytes/ parameters were reviewed on a statistical (and outlier) basis to identify any increasing trend over the past 24 months from date of assessment. This assessment was undertaken utilising the following approach:

1. Mann Kendall Trend Assessment was undertaken for all compliance (groundwater monitoring wells) investigation locations. The data utilised for this assessment included quarterly laboratory data and field data.

2. For those locations/ analytes that reported statistical increasing, further investigation was undertaken. It is noted that these results were considered to only be indicative and were used generally to support, but not contradict, the Mann Kendall Assessment.

3. The time series based 95th percentile for each analyte at each compliance location was calculated. The 2024 results were compared to the two years 95th percentile and the previous period percentile (published 2023) to determine if outliers were/ are potentially present.

This provides a feedback loop to focus on parameters/ chemical substances of key interest – i.e. looking at outliers and then re-looking at the Mann-Kendall trends to determine the significance of potential changes to groundwater composition.

The reported concentrations of chemical substances and parameters recorded for each time step (event) are summarised in Table 1 (at rear). Note that only locations for which increasing trends were identified during Step 1 and Step 3 (Step 2 was only undertaken to explore increasing trends identified during Step 1) above have been included in this table.

Based on these results, the condition of water at each compliance location, comments and suggested future actions are summarised in Table 4-1.

Table 4-1 Summary of Suggested Future Actions

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-A	Predominantly stable (no trends)/ decreasing concentrations. Previous increasing trends for dissolved and total molybdenum and total copper were not confirmed however increasing chromium is flagged as an outlier and trending upwards. Based on the available data, longer term trends for copper and sodium appear to be associated with rainfall infiltration rather than seepage from the TSF.	Continue current monitoring program – report chromium to LWC for assessment following September round of monitoring.
TSF-B	No increasing trends of note other than chloride and calcium.	Continue current monitoring program.

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-C	No increasing trends of note other than chloride and salinity.	Continue current monitoring program.
TSF-D	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-E	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-S1	Zinc, copper and manganese are increasing trend-wise though no outliers of note except zinc which could be attributed to rounding up of reported concentration.	Continue current monitoring program.
TSF-S2	No increasing trends nor outliers of note.	Continue current monitoring program.

Table 4-2 summarises this assessment in the context of the assessing Impact Event No. 17.2 which is the "deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL."

Table 4-2 Summary of Environmental Outcome Achievement

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are:	Following the outcomes of the statistical assessment, based on the available results, concentrations of indicator analytes in groundwater sampled from shallow groundwater wells (targeting the Bulldog Shale which is not used as a regional source of water) were considered to be either stable or decreasing with the exception of a small number of analytes from some shallow groundwater wells which were observed to be potentially increasing. These potentially increasing concentrations were not considered to be reflective of contamination, rather they were considered reflective of changes in groundwater level (from recent above average rainfall) and/ or general background regional conditions, other

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
	• Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.	than chromium which is an outlier in water from TSF-A and the reason for the increase is unclear. A verification round is required and this will occur in September. Concentrations of indicator analytes in groundwater sampled from deep groundwater wells (targeting the non-artesian Eromanga Aquifer which is utilised regionally as a water source outside of the Mine Lease area) were considered to be generally stable and did not exhibit significant increasing trends. Further, the assessment of results for the shallower groundwater wells did not identify the need to expand the monitoring program for the deeper groundwater wells. Based on the outcomes of this assessment, noting the observed stable conditions of the deeper non-artesian Eromanga Aquifer, it is considered that there has been no non-trivial reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from the TSF or acid rock drainage from the IWL.

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FIGURES

LWC
Land and Water Consulting

APPENDIX A – MANN KENDALL TREND ASSESSMENT

APPENDIX B – PRO UCL OUTPUT – 95TH PERCENTILES

APPENDIX C – COMPARISON AGAINST 95TH PERCENTILES

APPENDIX D – STATEMENT OF LIMITATIONS

Groundwater Quality Assessment

Prominent Hill Mine, South Australia

BGP Group Limited

August 2024

Document Status

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1 INTRODUCTION

1.1 OVERVIEW

Land & Water Consulting (LWC) was engaged by BHP Group Limited (BHP) to review groundwater chemistry data associated with groundwater samples collected by BHP for the Tailings Storage Facility (TSF) groundwater wells at BHP's Prominent Hill Mine, South Australia (the Site).

It is understood that the statistical analysis of concentrations of chemical substances in groundwater sampled from TSF groundwater wells is required as part of the outcome measurement criteria for the Program for Environment Protection and Rehabilitation (PEPR) compliance report, which is due to be submitted to the Department for Energy and Mining (DEM) on 30 September 2024.

1.2 BACKGROUND

The Site is located approximately 650 kilometres north-northwest of Adelaide, around halfway between Roxby Downs and Coober Pedy. Production at BHP's Prominent Hill Mine includes underground (and previously open pit) mining and processing of the Prominent Hill copper-gold orebody.

BHP commenced construction of the project in September 2006, with the first concentrate produced in February 2009. The underground operation commenced construction in late 2010, with the underground operations scheduled to continue through 2029. The open pit operation closed in March 2018. The current expected mine life is another 9 to 15 years.

Tailings and Waste Rock are placed in an integrated waste (tailing and waste rock) landform to the north and south of the pit (refer to Figure 1):

- The Northern Waste Rock Dump (WRD);
- The Tailings Storage Facility (TSF); and
- The Southern WRD (this is also part of the integrated landform with the TSF).

To monitor potential impacts to the groundwater system beneath the mine site surrounding the TSF (i.e. changes in concentrations/ levels of chemical substances and/ or parameters in the groundwater, defined as an 'impact event' (refer Table 1-1)), BHP installed a number of groundwater monitoring wells. BHP undertake a quarterly water monitoring program that currently comprises sampling and monitoring of process water sites as well as monitoring wells screening the Bulldog Shale and the non-artesian Eromanga Aquifer.

The groundwater and surface water monitoring network surrounding the TSF comprises the following:

- Shallow monitoring wells screened within the Bulldog Shale (TSF-A, TSF-B, TSF-C, TSF-S1 and TSF-S2);
- Deep monitoring wells screened within the non-artesian Eromanga Aquifer (TSF-D and TSF-E); and
- Process water sites (Environmental Pond, Pit Water, Raw Water Dam and TSF-Finger).

A number of groundwater related environmental outcomes are defined in the PEPR. This report addresses the outcomes and measurement criteria for Impact No. 17.2 as per the latest version of the PEPR (2022) and as summarised in Table 1-1. This report details the assessment as prescribed in Table 1-1.

Table 1-1 Summary of PEPR (2022) Assessment Condition – Impact No. 17.2

Impact Event	Deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Environmental Outcome	No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Outcome Measurement Criteria Summary	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are: • Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Measurement Criteria Details	
What will be measured and form (method) of measurement	Deep TSF wells - half yearly monitoring for field parameters (EC, pH, water table). If field parameters monitored at deep TSF wells show statistical change then laboratory sampling (consistent with the shallow wells) would be conducted. Shallow wells and process water monitoring sites - quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-}, pH, TDS, EC).
Locations	Deep TSF wells (TSF-D, TSF-E) Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Outcome achievement	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use).
Frequency	Deep wells - annually Shallow wells – half yearly
Control or baseline data	Rolling two-year statistical analysis using 95 percentile approach to generate a rolling window of assessment for all samples. This method is supported by the TSF Water Quality

	Assessment (ELA, 2017). Historical information can be found in ELA (2017), LWC (2018), ELA (2019), LWC (2020) and LWC (2021).
Leading Indicator Criteria	Review of records undertaken annually while Waste Rock Dumps (WRDs) operational confirming that Non Acid Forming (NAF) thicknesses of 10 m minimum surrounding Potential Acid Forming (PAF) material has been maintained during operation. Annual external third-party audit of operational TSF that includes but is not limited to: • Visual inspection of structural integrity i.e. no seepage or cracks in perimeter; and • Review of operational surveillance records and piezometer monitoring data.

1.3 PREVIOUS REPORT

In September 2023, LWC undertook a water quality assessment of the process water points and groundwater as sampled from monitoring wells surrounding the TSF (installed into the Bulldog Shale and Eromanga Aquifer). This assessment included data from June 2022 to June 2024 (~24 months). The data was utilised to:

- Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location; and
- Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators.

The assessment indicated that there had been no significant changes to the concentrations of chemical substances or measured parameters in the groundwater since the previous annual monitoring period. It was recommended that the quarterly monitoring schedule be maintained, however, the analytical suite for the deeper wells could be reduced.

1.4 OBJECTIVE

The objective of this assessment was to undertake a statistical review of groundwater chemistry associated with water sampled from the TSF groundwater monitoring locations for use in the 2024 PEPR compliance reporting.

1.5 SCOPE OF WORKS

The following scope of works was adopted utilising the data collected during the most recent 24-month period i.e. from June 2022 to June 2024 monitoring events:

1. Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location;
2. Undertake trend investigation for those locations/ analytes that reported to be statistically increasing during step 1;
3. Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators; and
4. Provide report with supporting information including relevant graphical interpretation.

Where necessary, data collected prior to 2023/24 was also utilised for the assessment of the potential significance of any identified trends.

2 APPROACH AND METHODOLOGY

2.1 OVERVIEW

The following subsections detail the approach adopted to undertake the scope of works. The following flow chart summarises the approach to this assessment.

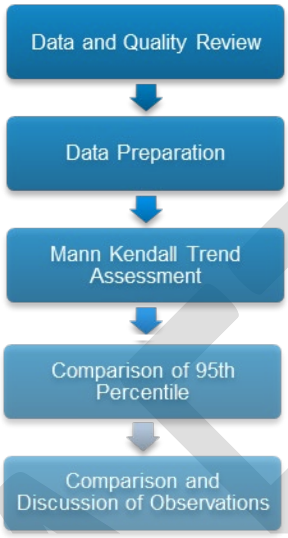

Figure 2-1 Summary of Approach to Trend Assessment

2.2 DATA AND QUALITY REVIEW

2.2.1 Analysis

The data assessed in this report was collected and submitted for laboratory analysis by BHP. It is noted that a data quality assessment was not undertaken as part of the works reported here. As per the PEPR, the following data was required to be collected:

- Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite including the following:
  - Total and dissolved metals: Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U)
  - Major ions: Ca, K, Cl, HCO3-, SO4, pH, TDS, EC
- Deep TSF wells (TSF-D and TSF-E) half yearly monitoring for field parameters including:
  - EC, pH and water table.
- A summary of the data received from BHP is presented in Table 2-1 and Table 1 (at rear). Note that BHP has collected more than the required amount of data to meet its obligations under the PEPR. The broad screen analysis undertaken on water sampled from the shallow wells was not required for water sampled from the deeper wells. However, such analysis appears to have been undertaken for the deeper wells on a quarterly basis until March 2022.

- With regards to the samples collected from the deep monitoring wells (TSF-D and TSF-E) the collected field parameters included water level, pH, temperature, and EC.

Table 2-1 Summary of 24 Month Dataset

Location	Sample Type	Target Feature	Month	Year	Analysis
TSF-A	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			September	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			October	2022	General
			June	2022	General
TSF-B	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-C	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-D	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-E	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-S1 (TSF-MW01)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
TSF-S2 (TSF-MW02)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			October	2023	General
			June	2023	General

Location	Sample Type	Target Feature	Month	Year	Analysis
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
Environmental Pond	Surface Grab Sample	Captures water from in and around the Site (including processing plant water)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Pit Water	Surface Grab Sample	From inflows from the southern wall collected in truck tray sump	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Raw Water Dam	Surface Grab Sample	Groundwater sourced from the production wells of the Aries Borefield (Boorthanna Formation)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
TSF Finger	Well through the centre of the TSF	Water from the TSF	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS

Note: General analysis includes analysis of total and dissolved metals (Ag, As, B, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Th, Ti, Vn, Zn, U), major ions (Ca, Mg, Na, K, Cl, HCO_3-, SO_4), pH, TDS and EC

2.2.2 Accuracy of Chemical Analysis

In general, two types of errors are discerned in chemical analyses:

- Precision – or statistical errors which reflect random fluctuations in the analytical procedure.
- Accuracy – or systematic errors displaying systematic deviations due to faulty procedures or interferences during analysis.

The precision can be calculated by repeated analysis of the same sample. Systematic errors can be tested only by analysing reference samples and by inter-laboratory comparison of the results. At low concentrations, duplicate analyses may show large variations when the sensitivity of the method is insufficient. Ordinarily, an intra duplicate is used to assess precision, and an inter laboratory duplicate is used to assess accuracy.

The accuracy can be assessed for major ions by estimating the electrical balance since the sum of positive and negative charges in the water should be equal. Appelo and Postma (2005) note that a balance >5% should be assessed, inferring a balance <5% is acceptable / desired.

$$\% \text{ Difference} = 100\,\frac{\Sigma\text{cations} - \Sigma\text{anions}}{\Sigma\text{cations} + \Sigma\text{anions}}$$

The provided data was reviewed. The average ionic balance was calculated as (-)3.3%. With Reference to the table below, whilst some values marginally exceeded the 5% threshold, on balance, the data was considered suitable for interpretation.

Table 2-2 Summary of Ionic Balance Per Location

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
Anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
% Difference	-6.1	-2.8	3.3	-7.0	-5.0	-2.9	-2.4

A further test is:

anions (meq/L) = cations (meq/L) = approx. EC/10 (mS/m)

As demonstrated in the table below, there is good agreement between balance and EC.

Table 2-3 Comparison of Aniona, Cations and EC Per Location

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
Anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
EC	12205	8363	8055	11290	12465	4207	24600
EC / 100	122.05	83.63	80.55	112.9	124.65	42.07	246

2.3 DATA PREPARATION

The processed field and laboratory analytical results were provided by BHP in compiled spreadsheets for both the groundwater and surface water monitoring locations. Assuming that BHP transcribed the data directly from the certified laboratory analytical reports/ field sheets and that an appropriate level of internal quality checks were undertaken, it was considered that the opportunity for the data (utilised for interpretation) to have become anomalous has been minimised.

Unless the water body is degraded, failure to detect contaminants in samples is common. NWQMS (2000) states that rather than concluding that the particular contaminant does not exist in a water sample, the observation should be that the reported concentration is ‘below detection limit’ (BDL), also referred to as below limit of reporting (LOR). There is no universally accepted method of dealing with BDL data. Some common approaches include:

- treating the observation as ‘missing’;
- treating the observation as zero;
- using the numerical value of the detection limit; and/ or

- using the numerical value of half the detection limit.

When a large portion of the data is below detection limit, NWQMS (2000) notes that the use of any of the above approaches will be problematic because the sample variance will be severely underestimated. Also, when standard statistical techniques are applied to data sets that have constant values in place of the BDL values, the resulting estimates are biased.

NWQMS (2000) notes suggest that routine water quality parameters (means, percentiles, etc.) be computed using the full data set with BDL data replaced by either the detection limit or half the detection limit. The impact of this strategy on computed statistical measures should be clearly understood, and the monitoring team should not proceed with any form of inferential analysis (e.g. confidence intervals or hypothesis testing) when a significant proportion (e.g. >25%) of the data set is BDL and has been substituted by a surrogate value. Advanced statistical skills should be sought when any form of inference is required in these situations.

NWQMS (2000) recommends that if only a small proportion of the data set is BDL and has been replaced by a numerical surrogate, it is best to perform any statistical analysis twice, once using zero and once using the detection limit (or half the detection limit) as the replacement value. If results from the two analyses differ markedly, the monitoring team "should investigate more sophisticated statistical methods of dealing with censored observations" (NWQMS, 2000).

Analytes reported below the laboratory limits of reporting were obvious within laboratory data (identified as '<' the reporting limit) and were then treated accordingly. These were logged in ProUCL and the software managed these non-detects using Kaplan Meier method as required by SA EPA (2024).

Please note the following data reduction and preparation techniques applied:

- **Summary Statistics** - Summary statistics included the number of samples, frequency of detection (FOD), minimum detected concentration, maximum detected concentration, and median.

- **The Interquartile Range (IQR)** - The IQR describes the range of values between the 25th and 75th percentile. A binomial method was used to estimate confidence intervals that assumes no underlying distribution, as discussed in Statistical Methods for Environmental Pollution Monitoring by Richard O. Gilbert. To calculate the percentiles, the data points were ranked by the Pro UCL software.

- **95th percentile** - With respect to BDL, the non-parametric 95th percentile was calculated using ProUCL (USEPA, 2007a). Further detail regarding the calculation and interpretation of this parameter is presented in following sections.

Field results were provided by BHP and were identified by the inclusion of 'FS' at the beginning of the analyte name. It is noted that not all required analytes were recorded for all sites at all monitoring events. Missing data were treated as blanks and were not assigned a zero value.

2.4 MANN KENDALL TREND ASSESSMENT

The purpose of this assessment is to determine if the concentrations of indicator analytes are statistically increasing at any of the compliance locations. Consistent with previous groundwater quality reviews, such assessment included only the last 24 months of data. The assessment comprised data collected during (approximately) quarterly monitoring events from June 2021 to June 2023, as summarised in Table 2-1.

The GSI Mann-Kendall Toolkit was used for this purpose. This tool supports the analysis of time-series groundwater monitoring data to quantitatively determine if the measured concentrations of a chemical are increasing, decreasing, or stable over time, based upon use of the Mann-Kendall statistical method. The software can be applied to data from monitoring points for which groundwater sampling and testing have been conducted at multiple episodes over time (i.e., time-series sampling) to evaluate the concentration trend of each chemical at each monitoring location. A benefit of the Mann Kendall approach to statistical assessment is that it is nonparametric, meaning that the calculations do not include assumptions based on the distribution of data.

The GSI-Mann-Kendall Toolkit, a Mann Kendall trend test (including graphical output), was utilised to statistically assess (at the 95% confidence level) the ongoing trend of concentrations for each leading indicator chemical substance at each compliance location as defined in the PEPR (2017).

2.5 95th PERCENTILE ASSESSMENT

NWQMS (2000) outlines a technique to derive and use percentiles of the site data for chemical substances. NWQMS recommends computation of the 80th percentile at the reference site be based on the most recent 24 monthly observations undertaken. ELA (2017) adopted a similar approach for the assessment of water chemistry percentiles and use as triggers, noting the absence of true baseline. ELA (2017) adopted the use of the 95th percentile for comparison, in place of the 80th percentile. For purposes of continuity, the same method has been adopted during previous assessment for the site by LWC and for this event as well.

As above, a statistical change is considered to be occurring where the recent sample (i.e. the latest reported concentration) is outside 2 standard deviations of the previous 2 years' data (i.e. greater than the 95th percentile). For this assessment, the calculation of the 95th percentiles were undertaken using Version 5.2 of Pro UCL software. The following is noted regarding the calculation process:

1. ProUCL has an inbuilt function to account for outliers and, as such, no pre-processing of data for outliers was undertaken.
2. Where results were reported below the laboratory limits of reporting, the limit of reporting was adopted as the concentration.

3 RESULTS

3.1 MANN KENDALL STATISTICAL TREND ASSESSMENT

Mann Kendall statistical assessment was undertaken on the last 24 months of data for each of the data collection points for the leading indicator species. The calculation sheets are presented as Appendix A. A summary of the results is presented in Table 3-1. Note that this assessment was only undertaken for compliance locations and analytes i.e. this was not undertaken for the broad analytical schedule for the deeper wells, only the analytes listed to assess compliance (with reference to Table 1-1).

The assessment of increasing trends is based on trends for which the confidence level is greater than 95%. The confidence level that an analyte is showing a particular trend is as follows:

1. >95% if stated as increasing or decreasing
2. ≥ 90% but ≤95% if stated as probably increasing or probably decreasing,
3. The differentiation between ‘stable’ and ‘no trend’ depends on both the standard deviation and variation of the data set (measured as the coefficient of variance).

Table 3-1 Summary of Mann Kendall Statistical Assessment for Compliance Analytes

Analyte	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-D**	**TSF-E**	**TSF-S1**	**TSF-S2**
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	Stable	Stable	**Increasing**	**Stable**
pH	Stable	Stable	Stable	Stable	Stable	**Prob. Decreasing**	No Trend
Depth to Water	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable	No Trend
Total Dissolved Solids	Stable	No Trend	Stable	Stable	Stable	**Decreasing**	No Trend
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Decreasing**	Stable	**Prob. Increasing**	Stable
Dissolved Potassium	No Trend	No Trend	No Trend	Stable	Stable	**Increasing**	Stable
Sulfate as SO_4	No Trend	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	**Decreasing**	Stable	No Trend	Stable
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	Stable	Stable
Dissolved Antimony	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Arsenic	Stable	Stable	No Trend	Stable	Stable	Stable	No Trend
Dissolved Boron	Stable	Stable	Stable	**Decreasing**	No Trend	Stable	No Trend
Dissolved Cadmium	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Dissolved Chromium	No Trend	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Cobalt	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Dissolved Copper	Stable	Stable	Stable	Stable	No Trend	Stable	No Trend
Dissolved Manganese	Stable	Stable	Stable	Stable	Stable	No Trend	Stable
Dissolved Molybdenum	Stable	No Trend	Stable	Stable	Stable	No Trend	Stable
Dissolved Selenium	No Trend	No Trend	Stable	Stable	Stable	Stable	Stable
Dissolved Silver	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Strontium	No Trend	Stable	No Trend	Stable	Stable	No Trend	Stable
Dissolved Tin	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Uranium	Stable	**Prob. Decreasing**	No Trend	Stable	Stable	Stable	Stable
Dissolved Vanadium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Zinc	Stable	Stable	Stable	Stable	No Trend	**Prob. Increasing**	No Trend
Total Antimony	Stable	Stable	Stable	No Trend	No Trend	Stable	No Trend
Total Arsenic	Stable	No Trend	Stable	Stable	No Trend	Stable	No Trend
Total Boron	Stable	Stable	**Prob. Decreasing**	Stable	Stable	Stable	No Trend
Total Cadmium	Stable	Stable	Stable	No Trend	No Trend	Stable	Stable
Total Chromium	**Prob. Increasing**	Stable	No Trend	Stable	Stable	No Trend	Stable
Total Cobalt	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Copper	No Trend	Stable	No Trend	No Trend	No Trend	**Prob. Increasing**	No Trend
Total Manganese	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	**Prob. Increasing**	No Trend
Total Molybdenum	Stable	No Trend	No Trend	Stable	No Trend	No Trend	No Trend
Total Selenium	Stable	No Trend	Stable	Stable	Stable	Stable	Stable
Total Silver	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Total Strontium	Stable	No Trend	Stable	**Decreasing**	Stable	Stable	**Decreasing**
Total Tin	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Total Uranium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Total Vanadium	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Zinc	**Prob. Decreasing**	Stable	Stable	Stable	Stable	No Trend	No Trend

3.2 STATISTICAL TREND INVESTIGATION

An investigation of indicative trends was undertaken for those analytes for which increasing/ probably increasing trends (at or above the 90% confidence level) were identified during the Mann Kendall Trend Assessment (refer to Table 3-2 which summarises the previous section). Note that this was only undertaken for compliance well locations (i.e. excluding deeper groundwater wells and surface water monitoring points).

Table 3-2 Summary of parameters/ analytes selected for investigation

Analyte	TSF-A	TSF-B	TSF-C	TSF-S1
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**
Salinity				
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	**Increasing**
Major Ions				
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Prob. Increasing**
Dissolved Potassium	No Trend	No Trend	No Trend	**Increasing**
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	No Trend
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable
Metals				
Dissolved Zinc	Stable	Stable	Stable	**Prob. Increasing**
Total Chromium	**Prob. Increasing**	Stable	No Trend	No Trend
Total Copper	No Trend	Stable	No Trend	**Prob. Increasing**
Total Manganese	**Prob. Increasing**	Stable	No Trend	**Prob. Increasing**

Increasing trends were identified for the following metals in TSF-A:

- Total chromium
- Total manganese

Increasing trends were identified for the following metals in TSF-S1:

- Dissolved zinc
- Total copper
- Total manganese

Salinity is increasing in TSF-B, TSF-C, and TSF-S1

Chloride is increasing in TSF-A, TSF-B, and TSF-C

3.3 ROLLING 95TH PERCENTILES

Outlier detection in the context of groundwater chemical concentrations using the rolling 95th percentile is a valuable method for identifying unusual or potentially problematic data points.

Outliers are data points that significantly differ from the rest of the dataset. In groundwater analysis, outliers could indicate unusual contamination events, measurement errors, or natural variability.

Identifying outliers is crucial because they can signal emerging environmental issues, such as new sources of pollution or changes in groundwater flow patterns.

The rolling 95th percentile is a dynamic threshold that adapts to changes in the data over time. Unlike a static threshold, it reflects the upper limit of "normal" concentration levels within a moving window of time.

By comparing each chemical concentration value to the rolling 95th percentile, it is possible to determine if it is unusually high relative to recent data.

Steps for outlier detection:

1. Calculate the Rolling 95th Percentile: this creates a moving threshold that changes over time, reflecting the distribution of the data.
2. Identify Exceedances: After calculating the rolling 95th percentile, compare each actual concentration value to this threshold:
3. Exceedance: If the concentration value exceeds the rolling 95th percentile, it is considered an outlier or exceedance.
4. No Exceedance: If the concentration is below or equal to the rolling 95th percentile, it is within the expected range of variability.

ProUCL v 5.2 was used to calculate percentiles for each chemical substance/ parameter in water from each monitoring well using quarterly analytical data gathered from September 2022 to June 2024. The ProUCL output is presented as Appendix C.

A comparison of the analytical laboratory data to the calculated 95th percentiles is presented as Appendix C for each monitoring round within the percentile period (September 2023 to June 2024) i.e. time since previous reporting (August 2023).

Exceedances of the 95th percentile calculations were reported for a small number of analytes, and these were then also compared to the previous period percentile to gauge whether there is a potential upward increase in 95th percentile over time – refer Table 3-3.

Table 3-3 Summary and discussion of 95th percentile assessment

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
TSF-A	bicarbonate and alkalinity chloride Chromium (total and dissolved) Electrical conductivity (EC) (but not total dissolved solids)	These parameters (except EC) are trending upwards; therefore these are outliers and are also trending upwards. Bicarbonate and chloride are considered to be indicators species only and are not considered significant in the context of a reduction in groundwater quality affecting suitability for water uses. Of interest is the chromium in June 2024.
TSF-B	calcium magnesium sodium sulfate EC (but not total	None of these are trending upwards but can be counted as outliers.

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
	dissolved solids strontium (dissolved but not total)	
TSF-C	None	Not applicable
TSF-D	None	Not applicable
TSF-E	boron (dissolved) copper (dissolved) thorium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (copper and thorium) with marginal value of boron above percentile but likely within laboratory error.
TSF-S1	Sodium zinc	The zinc exceedance could be due to a rounding up of the concentration (0.03 mg/L) relative to the 95th percentile (0.0274 mg/L) though given the percentile for total zinc (0.032 mg/L) the exceedance is relatively trivial.
TSF-S2	arsenic (dissolved) boron (dissolved) EC lead (total) titanium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (arsenic) and marginal value above percentile but likely within laboratory error.

4 DISCUSSION AND CONCLUSIONS

The objective of this assessment was to determine any change in the quality of groundwater surrounding the TSF at the Prominent Hill Mine. Consequently, the reported concentrations/ levels of indicator analytes/ parameters were reviewed on a statistical (and outlier) basis to identify any increasing trend over the past 24 months from date of assessment. This assessment was undertaken utilising the following approach:

1. Mann Kendall Trend Assessment was undertaken for all compliance (groundwater monitoring wells) investigation locations. The data utilised for this assessment included quarterly laboratory data and field data.

2. The time series based 95th percentile for each analyte at each compliance location was calculated. The 2024 results were compared to the two years 95th percentile and the previous period percentile (published 2023) to determine if outliers were/ are potentially present.

This provides a feedback loop to focus on parameters/ chemical substances of key interest – i.e. looking at outliers and then re-looking at the Mann-Kendall trends to determine the significance of potential changes to groundwater composition.

The reported concentrations of chemical substances and parameters recorded for each time step (event) are summarised in Table 1 (at rear). Note that only locations for which increasing trends were identified during Step 1 and Step 3 (Step 2 was only undertaken to explore increasing trends identified during Step 1) above have been included in this table.

Based on these results, the condition of water at each compliance location, comments and suggested future actions are summarised in Table 4-1.

Table 4-1 Summary of Suggested Future Actions

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-A	Predominantly stable (no trends)/ decreasing concentrations. Previous increasing trends for dissolved and total molybdenum and total copper were not confirmed however increasing chromium is flagged as an outlier and trending upwards. Based on the available data, longer term trends for copper and sodium appear to be associated with rainfall infiltration rather than seepage from the TSF.	Continue current monitoring program – report chromium to LWC for assessment following September round of monitoring.
TSF-B	No increasing trends of note other than chloride and calcium.	Continue current monitoring program.
TSF-C	No increasing trends of note other than chloride and salinity.	Continue current monitoring program.
TSF-D	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-E	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-S1	Zinc, copper and manganese are increasing trend-wise though no outliers of note except zinc which could be attributed to	Continue current monitoring program.

Monitoring Location	Condition	Comments/ Suggested Future Action
	rounding up of reported concentration.	
TSF-S2	No increasing trends nor outliers of note.	Continue current monitoring program.

Table 4-2 summarises this assessment in the context of the assessing Impact Event No. 17.2 which is the "deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL."

Table 4-2 Summary of Environmental Outcome Achievement

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are: • Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.	Following the outcomes of the statistical assessment, based on the available results, concentrations of indicator analytes in groundwater sampled from shallow groundwater wells (targeting the Bulldog Shale which is not used as a regional source of water) were considered to be either stable or decreasing with the exception of a small number of analytes from some shallow groundwater wells which were observed to be potentially increasing. These potentially increasing concentrations were not considered to be reflective of contamination, rather they were considered reflective of changes in groundwater level (from recent above average rainfall) and/ or general background regional conditions, other than chromium which is an outlier in water from TSF-A and the reason for the increase is unclear. A verification round is required and this will occur in September. Concentrations of indicator analytes in groundwater sampled from deep groundwater wells (targeting the non-artesian Eromanga Aquifer which is utilised regionally as a water source outside of the Mine Lease area) were considered to be generally stable and did not exhibit significant increasing trends. Further, the assessment of results for the shallower groundwater wells did not identify the need to expand the monitoring program for the deeper groundwater wells. Based on the outcomes of this assessment, noting the observed stable

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
		conditions of the deeper non-artesian Eromanga Aquifer, it is considered that there has been no non-trivial reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from the TSF or acid rock drainage from the IWL.

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FIGURES

APPENDIX A – MANN KENDALL TREND ASSESSMENT

APPENDIX B – PRO UCL OUTPUT – 95TH PERCENTILES

APPENDIX C – COMPARISON AGAINST 95TH PERCENTILES

APPENDIX D – STATEMENT OF LIMITATIONS

Groundwater Quality Assessment

Prominent Hill Mine, South Australia

BGP Group Limited

August 2024

Document Status

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1 INTRODUCTION

1.1 OVERVIEW

Land & Water Consulting (LWC) was engaged by BHP Group Limited (BHP) to review groundwater chemistry data associated with groundwater samples collected by BHP for the Tailings Storage Facility (TSF) groundwater wells at BHP's Prominent Hill Mine, South Australia (the Site).

It is understood that the statistical analysis of concentrations of chemical substances in groundwater sampled from TSF groundwater wells is required as part of the outcome measurement criteria for the Program for Environment Protection and Rehabilitation (PEPR) compliance report, which is due to be submitted to the Department for Energy and Mining (DEM) on 30 September 2024.

1.2 BACKGROUND

The Site is located approximately 650 kilometres north-northwest of Adelaide, around halfway between Roxby Downs and Coober Pedy. Production at BHP's Prominent Hill Mine includes underground (and previously open pit) mining and processing of the Prominent Hill copper-gold orebody.

BHP commenced construction of the project in September 2006, with the first concentrate produced in February 2009. The underground operation commenced construction in late 2010, with the underground operations scheduled to continue through 2029. The open pit operation closed in March 2018. The current expected mine life is another 9 to 15 years.

Tailings and Waste Rock are placed in an integrated waste (tailing and waste rock) landform to the north and south of the pit (refer to Figure 1):

- The Northern Waste Rock Dump (WRD);
- The Tailings Storage Facility (TSF); and
- The Southern WRD (this is also part of the integrated landform with the TSF).

To monitor potential impacts to the groundwater system beneath the mine site surrounding the TSF (i.e. changes in concentrations/ levels of chemical substances and/ or parameters in the groundwater, defined as an 'impact event' (refer Table 1-1)), BHP installed a number of groundwater monitoring wells. BHP undertake a quarterly water monitoring program that currently comprises sampling and monitoring of process water sites as well as monitoring wells screening the Bulldog Shale and the non-artesian Eromanga Aquifer.

The groundwater and surface water monitoring network surrounding the TSF comprises the following:

- Shallow monitoring wells screened within the Bulldog Shale (TSF-A, TSF-B, TSF-C, TSF-S1 and TSF-S2);
- Deep monitoring wells screened within the non-artesian Eromanga Aquifer (TSF-D and TSF-E); and
- Process water sites (Environmental Pond, Pit Water, Raw Water Dam and TSF-Finger).

A number of groundwater related environmental outcomes are defined in the PEPR. This report addresses the outcomes and measurement criteria for Impact No. 17.2 as per the latest version of the PEPR (2022) and as summarised in Table 1-1. This report details the assessment as prescribed in Table 1-1.

Table 1-1 Summary of PEPR (2022) Assessment Condition – Impact No. 17.2

Impact Event	Deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Environmental Outcome	No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Outcome Measurement Criteria Summary	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are: • Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Measurement Criteria Details	
What will be measured and form (method) of measurement	Deep TSF wells - half yearly monitoring for field parameters (EC, pH, water table). If field parameters monitored at deep TSF wells show statistical change then laboratory sampling (consistent with the shallow wells) would be conducted. Shallow wells and process water monitoring sites - quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-}, pH, TDS, EC).
Locations	Deep TSF wells (TSF-D, TSF-E) Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Outcome achievement	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use).
Frequency	Deep wells - annually Shallow wells – half yearly

Control or baseline data	Rolling two-year statistical analysis using 95 percentile approach to generate a rolling window of assessment for all samples. This method is supported by the TSF Water Quality Assessment (ELA, 2017). Historical information can be found in ELA (2017), LWC (2018), ELA (2019), LWC (2020) and LWC (2021).
Leading Indicator Criteria	Review of records undertaken annually while Waste Rock Dumps (WRDs) operational confirming that Non Acid Forming (NAF) thicknesses of 10 m minimum surrounding Potential Acid Forming (PAF) material has been maintained during operation. Annual external third-party audit of operational TSF that includes but is not limited to: • Visual inspection of structural integrity i.e. no seepage or cracks in perimeter; and • Review of operational surveillance records and piezometer monitoring data.

1.3 PREVIOUS REPORT

In September 2023, LWC undertook a water quality assessment of the process water points and groundwater as sampled from monitoring wells surrounding the TSF (installed into the Bulldog Shale and Eromanga Aquifer). This assessment included data from June 2022 to June 2024 (~24 months). The data was utilised to:

- Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location; and
- Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators.

The assessment indicated that there had been no significant changes to the concentrations of chemical substances or measured parameters in the groundwater since the previous annual monitoring period. It was recommended that the quarterly monitoring schedule be maintained, however, the analytical suite for the deeper wells could be reduced.

1.4 OBJECTIVE

The objective of this assessment was to undertake a statistical review of groundwater chemistry associated with water sampled from the TSF groundwater monitoring locations for use in the 2024 PEPR compliance reporting.

1.5 SCOPE OF WORKS

The following scope of works was adopted utilising the data collected during the most recent 24-month period i.e. from June 2022 to June 2024 monitoring events:

1. Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location;
2. Undertake trend investigation for those locations/ analytes that reported to be statistically increasing during step 1;
3. Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators; and
4. Provide report with supporting information including relevant graphical interpretation.

Where necessary, data collected prior to 2023/24 was also utilised for the assessment of the potential significance of any identified trends.

2 APPROACH AND METHODOLOGY

2.1 OVERVIEW

The following subsections detail the approach adopted to undertake the scope of works. The following flow chart summarises the approach to this assessment.

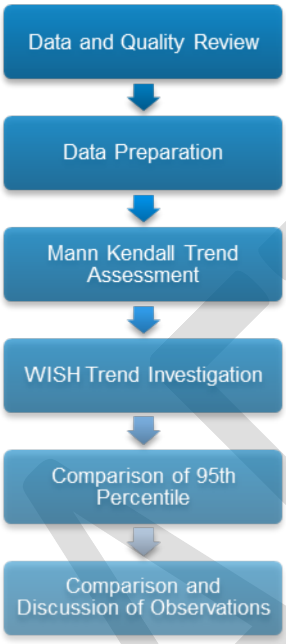

Figure 2-1 Summary of Approach to Trend Assessment

2.2 DATA AND QUALITY REVIEW

2.2.1 Analysis

The data assessed in this report was collected and submitted for laboratory analysis by BHP. It is noted that a data quality assessment was not undertaken as part of the works reported here. As per the PEPR, the following data was required to be collected:

- Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite including the following:
  - Total and dissolved metals: Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U)
  - Major ions: Ca, K, Cl, HCO3-, SO4, pH, TDS, EC
- Deep TSF wells (TSF-D and TSF-E) half yearly monitoring for field parameters including:
  - EC, pH and water table.
- A summary of the data received from BHP is presented in Table 2-1 and Table 1 (at rear). Note that BHP has collected more than the required amount of data to meet its obligations under the PEPR. The broad screen analysis undertaken on water sampled from the shallow wells was

not required for water sampled from the deeper wells. However, such analysis appears to have been undertaken for the deeper wells on a quarterly basis until March 2022.

- With regards to the samples collected from the deep monitoring wells (TSF-D and TSF-E) the collected field parameters included water level, pH, temperature, and EC.

Table 2-1 Summary of 24 Month Dataset

Location	Sample Type	Target Feature	Month	Year	Analysis
TSF-A	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			September	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			October	2022	General
			June	2022	General
TSF-B	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-C	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-D	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-E	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-S1 (TSF-MW01)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
TSF-S2 (TSF-MW02)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General

Location	Sample Type	Target Feature	Month	Year	Analysis
			December	2023	General
			October	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
Environmental Pond	Surface Grab Sample	Captures water from in and around the Site (including processing plant water)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Pit Water	Surface Grab Sample	From inflows from the southern wall collected in truck tray sump	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Raw Water Dam	Surface Grab Sample	Groundwater sourced from the production wells of the Aries Borefield (Boorthanna Formation)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
TSF Finger	Well through the centre of the TSF	Water from the TSF	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS

Note: General analysis includes analysis of total and dissolved metals (Ag, As, B, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Th, Ti, Vn, Zn, U), major ions (Ca, Mg, Na, K, Cl, HCO_3-, SO_4), pH, TDS and EC

2.2.2 Accuracy of Chemical Analysis

In general, two types of errors are discerned in chemical analyses:

- Precision – or statistical errors which reflect random fluctuations in the analytical procedure.
- Accuracy – or systematic errors displaying systematic deviations due to faulty procedures or interferences during analysis.

The precision can be calculated by repeated analysis of the same sample. Systematic errors can be tested only by analysing reference samples and by inter-laboratory comparison of the results. At low concentrations, duplicate analyses may show large variations when the sensitivity of the method is insufficient. Ordinarily, an intra duplicate is used to assess precision, and an inter laboratory duplicate is used to assess accuracy.

The accuracy can be assessed for major ions by estimating the electrical balance since the sum of positive and negative charges in the water should be equal. Appelo and Postma (2005) note that a balance >5% should be assessed, inferring a balance <5% is acceptable / desired.

$$\% \text{ Difference} = 100 \frac{\Sigma\text{cations} - \Sigma\text{anions}}{\Sigma\text{cations} + \Sigma\text{anions}}$$

The provided data was reviewed. The average ionic balance was calculated as (-)3.3%. Whilst some values marginally exceeded the 5% threshold, on balance, the data was considered suitable for interpretation,

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
% Difference	-6.1	-2.8	3.3	-7.0	-5.0	-2.9	-2.4

A further test is:

anions (meq/L) = cations (meq/L) = approx. EC/10 (mS/m)

There is good agreement between balance and EC.

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
EC	12205	8363	8055	11290	12465	4207	24600
EC / 100	122.05	83.63	80.55	112.9	124.65	42.07	246

2.3 DATA PREPARATION

The processed field and laboratory analytical results were provided by BHP in compiled spreadsheets for both the groundwater and surface water monitoring locations. Assuming that BHP transcribed the data directly from the certified laboratory analytical reports/ field sheets and that an appropriate level of internal quality checks were undertaken, it was considered that the opportunity for the data (utilised for interpretation) to have become anomalous has been minimised.

Unless the water body is degraded, failure to detect contaminants in samples is common. NWQMS (2000) states that rather than concluding that the particular contaminant does not exist in a water sample, the observation should be that the reported concentration is 'below detection limit' (BDL), also referred to as below limit of reporting (LOR). There is no universally accepted method of dealing with BDL data. Some common approaches include:

- treating the observation as 'missing';

- treating the observation as zero;
- using the numerical value of the detection limit; and/ or
- using the numerical value of half the detection limit.

When a large portion of the data is below detection limit, NWQMS (2000) notes that the use of any of the above approaches will be problematic because the sample variance will be severely underestimated. Also, when standard statistical techniques are applied to data sets that have constant values in place of the BDL values, the resulting estimates are biased.

NWQMS (2000) notes suggest that routine water quality parameters (means, percentiles, etc.) be computed using the full data set with BDL data replaced by either the detection limit or half the detection limit. The impact of this strategy on computed statistical measures should be clearly understood, and the monitoring team should not proceed with any form of inferential analysis (e.g. confidence intervals or hypothesis testing) when a significant proportion (e.g. >25%) of the data set is BDL and has been substituted by a surrogate value. Advanced statistical skills should be sought when any form of inference is required in these situations.

NWQMS (2000) recommends that if only a small proportion of the data set is BDL and has been replaced by a numerical surrogate, it is best to perform any statistical analysis twice, once using zero and once using the detection limit (or half the detection limit) as the replacement value. If results from the two analyses differ markedly, the monitoring team "should investigate more sophisticated statistical methods of dealing with censored observations" (NWQMS, 2000).

Analytes reported below the laboratory limits of reporting were obvious within laboratory data (identified as '<' the reporting limit) and were then treated accordingly. These were logged in ProUCL and the software managed these non-detects using Kaplan Meier method as required by SA EPA (2024).

Please note the following data reduction and preparation techniques applied:

- **Summary Statistics** - Summary statistics included the number of samples, frequency of detection (FOD), minimum detected concentration, maximum detected concentration, and median.
- **The Interquartile Range (IQR)** - The IQR describes the range of values between the 25th and 75th percentile. A binomial method was used to estimate confidence intervals that assumes no underlying distribution, as discussed in Statistical Methods for Environmental Pollution Monitoring by Richard O. Gilbert. To calculate the percentiles, the data points were ranked by the Pro UCL software.
- **95th percentile** - With respect to BDL, the non-parametric 95th percentile was calculated using ProUCL (USEPA, 2007a). Further detail regarding the calculation and interpretation of this parameter is presented in following sections.

Field results were provided by BHP and were identified by the inclusion of 'FS' at the beginning of the analyte name. It is noted that not all required analytes were recorded for all sites at all monitoring events. Missing data were treated as blanks and were not assigned a zero value.

2.4 MANN KENDALL TREND ASSESSMENT

The purpose of this assessment is to determine if the concentrations of indicator analytes are statistically increasing at any of the compliance locations. Consistent with previous groundwater quality reviews, such assessment included only the last 24 months of data. The assessment comprised data collected during (approximately) quarterly monitoring events from June 2021 to June 2023, as summarised in Table 2-1.

The GSI Mann-Kendall Toolkit was used for this purpose. This tool supports the analysis of time-series groundwater monitoring data to quantitatively determine if the measured concentrations of a chemical are increasing, decreasing, or stable over time, based upon use of the Mann-Kendall statistical method. The software can be applied to data from monitoring points for which groundwater sampling and testing have been conducted at multiple episodes over time (i.e., time-series sampling) to evaluate the concentration trend of each chemical at each monitoring location. A benefit of the Mann Kendall approach to statistical assessment is that it is nonparametric, meaning that the calculations do not include assumptions based on the distribution of data.

The GSI-Mann-Kendall Toolkit, a Mann Kendall trend test (including graphical output), was utilised to statistically assess (at the 95% confidence level) the ongoing trend of concentrations for each leading indicator chemical substance at each compliance location as defined in the PEPR (2017).

2.5 95th PERCENTILE ASSESSMENT

NWQMS (2000) outlines a technique to derive and use percentiles of the site data for chemical substances. NWQMS recommends computation of the 80th percentile at the reference site be based on the most recent 24 monthly observations undertaken. ELA (2017) adopted a similar approach for the assessment of water chemistry percentiles and use as triggers, noting the absence of true baseline. ELA (2017) adopted the use of the 95th percentile for comparison, in place of the 80th percentile. For purposes of continuity, the same method has been adopted during previous assessment for the site by LWC and for this event as well.

As above, a statistical change is considered to be occurring where the recent sample (i.e. the latest reported concentration) is outside 2 standard deviations of the previous 2 years' data (i.e. greater than the 95th percentile). For this assessment, the calculation of the 95th percentiles were undertaken using Version 5.2 of Pro UCL software. The following is noted regarding the calculation process:

1. ProUCL has an inbuilt function to account for outliers and, as such, no pre-processing of data for outliers was undertaken.

2. Where results were reported below the laboratory limits of reporting, the limit of reporting was adopted as the concentration.

3 RESULTS

3.1 MANN KENDALL STATISTICAL TREND ASSESSMENT

Mann Kendall statistical assessment was undertaken on the last 24 months of data for each of the data collection points for the leading indicator species. The calculation sheets are presented as Appendix A. A summary of the results is presented in Table 3-1. Note that this assessment was only undertaken for compliance locations and analytes i.e. this was not undertaken for the broad analytical schedule for the deeper wells, only the analytes listed to assess compliance (with reference to Table 1-1).

The assessment of increasing trends is based on trends for which the confidence level is greater than 95%. The confidence level that an analyte is showing a particular trend is as follows:

1. >95% if stated as increasing or decreasing
2. ≥ 90% but ≤95% if stated as probably increasing or probably decreasing,
3. The differentiation between ‘stable’ and ‘no trend’ depends on both the standard deviation and variation of the data set (measured as the coefficient of variance).

Table 3-1 Summary of Mann Kendall Statistical Assessment for Compliance Analytes

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	Stable	Stable	**Increasing**	**Stable**
pH	Stable	Stable	Stable	Stable	Stable	**Prob. Decreasing**	No Trend
Depth to Water	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable	No Trend
Total Dissolved Solids	Stable	No Trend	Stable	Stable	Stable	**Decreasing**	No Trend
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Decreasing**	Stable	**Prob. Increasing**	Stable
Dissolved Potassium	No Trend	No Trend	No Trend	Stable	Stable	**Increasing**	Stable
Sulfate as SO_4	No Trend	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	**Decreasing**	Stable	No Trend	Stable
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	Stable	Stable
Dissolved Antimony	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Arsenic	Stable	Stable	No Trend	Stable	Stable	Stable	No Trend
Dissolved Boron	Stable	Stable	Stable	**Decreasing**	No Trend	Stable	No Trend
Dissolved Cadmium	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Dissolved Chromium	No Trend	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Cobalt	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Copper	Stable	Stable	Stable	Stable	No Trend	Stable	No Trend

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Dissolved Manganese	Stable	Stable	Stable	Stable	Stable	No Trend	Stable
Dissolved Molybdenum	Stable	No Trend	Stable	Stable	Stable	No Trend	Stable
Dissolved Selenium	No Trend	No Trend	Stable	Stable	Stable	Stable	Stable
Dissolved Silver	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Strontium	No Trend	Stable	No Trend	Stable	Stable	No Trend	Stable
Dissolved Tin	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Uranium	Stable	**Prob. Decreasing**	No Trend	Stable	Stable	Stable	Stable
Dissolved Vanadium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Zinc	Stable	Stable	Stable	Stable	No Trend	**Prob. Increasing**	No Trend
Total Antimony	Stable	Stable	Stable	No Trend	No Trend	Stable	No Trend
Total Arsenic	Stable	No Trend	Stable	Stable	No Trend	Stable	No Trend
Total Boron	Stable	Stable	**Prob. Decreasing**	Stable	Stable	Stable	No Trend
Total Cadmium	Stable	Stable	Stable	No Trend	No Trend	Stable	Stable
Total Chromium	**Prob. Increasing**	Stable	No Trend	Stable	Stable	No Trend	Stable
Total Cobalt	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Copper	No Trend	Stable	No Trend	No Trend	No Trend	**Prob. Increasing**	No Trend
Total Manganese	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	**Prob. Increasing**	No Trend
Total Molybdenum	Stable	No Trend	No Trend	Stable	No Trend	No Trend	No Trend
Total Selenium	Stable	No Trend	Stable	Stable	Stable	Stable	Stable
Total Silver	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Total Strontium	Stable	No Trend	Stable	**Decreasing**	Stable	Stable	**Decreasing**
Total Tin	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Total Uranium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Total Vanadium	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Zinc	**Prob. Decreasing**	Stable	Stable	Stable	Stable	No Trend	No Trend

3.2 STATISTICAL TREND INVESTIGATION

An investigation of indicative trends was undertaken for those analytes for which increasing/ probably increasing trends (at or above the 90% confidence level) were identified during the Mann Kendall Trend Assessment (refer to Table 3-2 which summarises the previous section). Note that this was only undertaken for compliance well locations (i.e. excluding deeper groundwater wells and surface water monitoring points).

Table 3-2 Summary of parameters/ analytes selected for investigation

Analyte	TSF-A	TSF-B	TSF-C	TSF-S1
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**
Salinity				
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	**Increasing**
Major Ions				
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Prob. Increasing**
Dissolved Potassium	No Trend	No Trend	No Trend	**Increasing**
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	No Trend
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable
Metals				
Dissolved Zinc	Stable	Stable	Stable	**Prob. Increasing**
Total Chromium	**Prob. Increasing**	Stable	No Trend	No Trend
Total Copper	No Trend	Stable	No Trend	**Prob. Increasing**
Total Manganese	**Prob. Increasing**	Stable	No Trend	**Prob. Increasing**

Increasing trends were identified for the following metals in TSF-A:

- Total chromium
- Total manganese

Increasing trends were identified for the following metals in TSF-S1:

- Dissolved zinc
- Total copper
- Total manganese

Salinity is increasing in TSF-B, TSF-C, and TSF-S1

Chloride is increasing in TSF-A, TSF-B, and TSF-C

3.3 ROLLING 95TH PERCENTILES

Outlier detection in the context of groundwater chemical concentrations using the rolling 95th percentile is a valuable method for identifying unusual or potentially problematic data points.

Outliers are data points that significantly differ from the rest of the dataset. In groundwater analysis, outliers could indicate unusual contamination events, measurement errors, or natural variability.

Identifying outliers is crucial because they can signal emerging environmental issues, such as new sources of pollution or changes in groundwater flow patterns.

The rolling 95th percentile is a dynamic threshold that adapts to changes in the data over time. Unlike a static threshold, it reflects the upper limit of "normal" concentration levels within a moving window of time.

By comparing each chemical concentration value to the rolling 95th percentile, it is possible to determine if it is unusually high relative to recent data.

<u>Steps for outlier detection:</u>

1. Calculate the Rolling 95th Percentile: this creates a moving threshold that changes over time, reflecting the distribution of the data.
2. Identify Exceedances: After calculating the rolling 95th percentile, compare each actual concentration value to this threshold:
3. Exceedance: If the concentration value exceeds the rolling 95th percentile, it is considered an outlier or exceedance.
4. No Exceedance: If the concentration is below or equal to the rolling 95th percentile, it is within the expected range of variability.

ProUCL v 5.2 was used to calculate percentiles for each chemical substance/ parameter in water from each monitoring well using quarterly analytical data gathered September 2022 to June 2024. The ProUCL output is presented as Appendix C.

A comparison of the analytical laboratory data to the calculated 95th percentiles is presented as Appendix D for each monitoring round within the percentile period (September 2023 to June 2024) i.e. time since previous reporting (August 2023).

Exceedances of the 95th percentile calculations were reported for a small number of analytes, and these were then also compared to the previous period percentile to gauge whether there is a potential upward increase in 95th percentile over time – refer Table 3-3.

Table 3-3 Summary and discussion of 95th percentile assessment

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
TSF-A	Bicarbonate and alkalinity Chloride Chromium (total and dissolved) Electrical conductivity (EC) (but not total dissolved solids)	These parameters (except EC) are trending upwards; therefore these are outliers and are also trending upwards. Of interest is the chromium in one month – June 2024.
TSF-B	Calcium Magnesium	None of these are trending upwards but can be counted as outliers.

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
	Sodium Sulfate EC (but not total dissolved solids) Strontium (dissolved but not total)	
TSF-C	None	Not applicable
TSF-D	None	Not applicable
TSF-E	boron (dissolved) copper (dissolved) thorium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (copper and thorium) with marginal value of boron above percentile but likely within laboratory error.
TSF-S1	Sodium zinc	The zinc exceedance could be due to a rounding up of the concentration (0.03 mg/L) relative to the 95th percentile (0.0274 mg/L) though given the percentile for total zinc (0.032 mg/L) the exceedance is relatively trivial.
TSF-S2	arsenic (dissolved) boron (dissolved) EC lead (total) titanium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (arsenic) and marginal value above percentile but likely within laboratory error.

4 DISCUSSION AND CONCLUSIONS

The objective of this assessment was to determine any change in the quality of groundwater surrounding the TSF at the Prominent Hill Mine. Consequently, the reported concentrations/ levels of indicator analytes/ parameters were reviewed on a statistical (and outlier) basis to identify any increasing trend over the past 24 months from date of assessment. This assessment was undertaken utilising the following approach:

1. Mann Kendall Trend Assessment was undertaken for all compliance (groundwater monitoring wells) investigation locations. The data utilised for this assessment included quarterly laboratory data and field data.

2. For those locations/ analytes that reported statistical increasing, further investigation was undertaken. It is noted that these results were considered to only be indicative and were used generally to support, but not contradict, the Mann Kendall Assessment.

3. The time series based 95th percentile for each analyte at each compliance location was calculated. The 2024 results were compared to the two years 95th percentile and the previous period percentile (published 2023) to determine if outliers were/ are potentially present.

This provides a feedback loop to focus on parameters/ chemical substances of key interest – i.e. looking at outliers and then re-looking at the Mann-Kendall trends to determine the significance of potential changes to groundwater composition.

The reported concentrations of chemical substances and parameters recorded for each time step (event) are summarised in Table 1 (at rear). Note that only locations for which increasing trends were identified during Step 1 and Step 3 (Step 2 was only undertaken to explore increasing trends identified during Step 1) above have been included in this table.

Based on these results, the condition of water at each compliance location, comments and suggested future actions are summarised in Table 4-1.

Table 4-1 Summary of Suggested Future Actions

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-A	Predominantly stable (no trends)/ decreasing concentrations. Previous increasing trends for dissolved and total molybdenum and total copper were not confirmed however increasing chromium is flagged as an outlier and trending upwards. Based on the available data, longer term trends for copper and sodium appear to be associated with rainfall infiltration rather than seepage from the TSF.	Continue current monitoring program – report chromium to LWC for assessment following September round of monitoring.
TSF-B	No increasing trends of note other than chloride and calcium.	Continue current monitoring program.

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-C	No increasing trends of note other than chloride and salinity.	Continue current monitoring program.
TSF-D	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-E	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-S1	Zinc, copper and manganese are increasing trend-wise though no outliers of note except zinc which could be attributed to rounding up of reported concentration.	Continue current monitoring program.
TSF-S2	No increasing trends nor outliers of note.	Continue current monitoring program.

Table 4-2 summarises this assessment in the context of the assessing Impact Event No. 17.2 which is the “deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL.”

Table 4-2 Summary of Environmental Outcome Achievement

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are:	Following the outcomes of the statistical assessment, based on the available results, concentrations of indicator analytes in groundwater sampled from shallow groundwater wells (targeting the Bulldog Shale which is not used as a regional source of water) were considered to be either stable or decreasing with the exception of a small number of analytes from some shallow groundwater wells which were observed to be potentially increasing. These potentially increasing concentrations were not considered to be reflective of contamination, rather they were considered reflective of changes in groundwater level (from recent above average rainfall) and/ or general background regional conditions, other

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
	• Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.	than chromium which is an outlier in water from TSF-A and the reason for the increase is unclear. A verification round is required and this will occur in September. Concentrations of indicator analytes in groundwater sampled from deep groundwater wells (targeting the non-artesian Eromanga Aquifer which is utilised regionally as a water source outside of the Mine Lease area) were considered to be generally stable and did not exhibit significant increasing trends. Further, the assessment of results for the shallower groundwater wells did not identify the need to expand the monitoring program for the deeper groundwater wells. Based on the outcomes of this assessment, noting the observed stable conditions of the deeper non-artesian Eromanga Aquifer, it is considered that there has been no non-trivial reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from the TSF or acid rock drainage from the IWL.

5 REFERENCES

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FIGURES

APPENDIX A – MANN KENDALL TREND ASSESSMENT

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APPENDIX B – PRO UCL OUTPUT – 95TH PERCENTILES

APPENDIX C – COMPARISON AGAINST 95TH PERCENTILES

APPENDIX D – STATEMENT OF LIMITATIONS

● Process Water Monitoring Site (Quarterly Frequency)

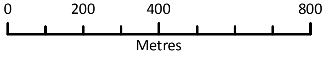
● Bulldog Shale Wells (Quarterly Frequency)

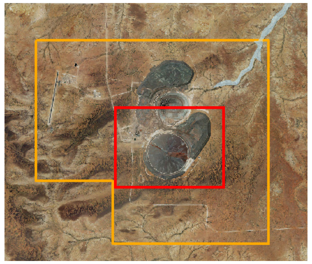
● Non-artesian Eromanga Aquifer Wells (Half-yearly Frequency)

— Road/Track

▭ Prominent Hill Mining Lease (ML)

GDA 1994 MGA Zone 53
A4 1:20,000





TSF Monitoring Locations

OZ MINERALS

LWC
Land and Water Consulting

Groundwater Quality Assessment

Prominent Hill Mine, South Australia

BHP Group Limited

August 2024

Document Status

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1 INTRODUCTION

1.1 OVERVIEW

Land & Water Consulting (LWC) was engaged by BHP Group Limited (BHP) to review groundwater chemistry data associated with groundwater samples collected by BHP for the Tailings Storage Facility (TSF) groundwater wells at BHP's Prominent Hill Mine, South Australia (the Site).

It is understood that the statistical analysis of concentrations of chemical substances in groundwater sampled from TSF groundwater wells is required as part of the outcome measurement criteria for the Program for Environment Protection and Rehabilitation (PEPR) compliance report, which is due to be submitted to the Department for Energy and Mining (DEM) on 30 September 2024.

1.2 BACKGROUND

The Site is located approximately 650 kilometres north-northwest of Adelaide, around halfway between Roxby Downs and Coober Pedy. Production at BHP's Prominent Hill Mine includes underground (and previously open pit) mining and processing of the Prominent Hill copper-gold orebody.

BHP commenced construction of the project in September 2006, with the first concentrate produced in February 2009. The underground operation commenced construction in late 2010, with the underground operations scheduled to continue through 2029. The open pit operation closed in March 2018. The current expected mine life is another 9 to 15 years.

Tailings and Waste Rock are placed in an integrated waste (tailing and waste rock) landform to the north and south of the pit (refer to Figure 1):

- The Northern Waste Rock Dump (WRD);
- The Tailings Storage Facility (TSF); and
- The Southern WRD (this is also part of the integrated landform with the TSF).

To monitor potential impacts to the groundwater system beneath the mine site surrounding the TSF (i.e. changes in concentrations/ levels of chemical substances and/ or parameters in the groundwater, defined as an 'impact event' (refer Table 1-1)), BHP installed a number of groundwater monitoring wells. BHP undertake a quarterly water monitoring program that currently comprises sampling and monitoring of process water sites as well as monitoring wells screening the Bulldog Shale and the non-artesian Eromanga Aquifer.

The groundwater and surface water monitoring network surrounding the TSF comprises the following:

- Shallow monitoring wells screened within the Bulldog Shale (TSF-A, TSF-B, TSF-C, TSF-S1 and TSF-S2);
- Deep monitoring wells screened within the non-artesian Eromanga Aquifer (TSF-D and TSF-E); and
- Process water sites (Environmental Pond, Pit Water, Raw Water Dam and TSF-Finger).

A number of groundwater related environmental outcomes are defined in the PEPR. This report addresses the outcomes and measurement criteria for Impact No. 17.2 as per the latest version of the PEPR (2022) and as summarised in Table 1-1. This report details the assessment as prescribed in Table 1-1.

Table 1-1 Summary of PEPR (2022) Assessment Condition – Impact No. 17.2

Impact Event	Deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Environmental Outcome	No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL
Outcome Measurement Criteria Summary	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are: • Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Measurement Criteria Details	
What will be measured and form (method) of measurement	Deep TSF wells - half yearly monitoring for field parameters (EC, pH, water table). If field parameters monitored at deep TSF wells show statistical change then laboratory sampling (consistent with the shallow wells) would be conducted. Shallow wells and process water monitoring sites - quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-}, pH, TDS, EC).
Locations	Deep TSF wells (TSF-D, TSF-E) Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental Pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.
Outcome achievement	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use).
Frequency	Deep wells - annually Shallow wells – half yearly
Control or baseline data	Rolling two-year statistical analysis using 95 percentile approach to generate a rolling window of assessment for all samples. This method is supported by the TSF Water Quality

	Assessment (ELA, 2017). Historical information can be found in ELA (2017), LWC (2018), ELA (2019), LWC (2020) and LWC (2021).
Leading Indicator Criteria	Review of records undertaken annually while Waste Rock Dumps (WRDs) operational confirming that Non Acid Forming (NAF) thicknesses of 10 m minimum surrounding Potential Acid Forming (PAF) material has been maintained during operation. Annual external third-party audit of operational TSF that includes but is not limited to: • Visual inspection of structural integrity i.e. no seepage or cracks in perimeter; and • Review of operational surveillance records and piezometer monitoring data.

1.3 PREVIOUS REPORT

In September 2023, LWC undertook a water quality assessment of the process water points and groundwater as sampled from monitoring wells surrounding the TSF (installed into the Bulldog Shale and Eromanga Aquifer). This assessment included data from June 2022 to June 2024 (~24 months). The data was utilised to:

- Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location; and
- Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators.

The assessment indicated that there had been no significant changes to the concentrations of chemical substances or measured parameters in the groundwater since the previous annual monitoring period. It was recommended that the quarterly monitoring schedule be maintained, however, the analytical suite for the deeper wells could be reduced.

1.4 OBJECTIVE

The objective of this assessment was to undertake a statistical review of groundwater chemistry associated with water sampled from the TSF groundwater monitoring locations for use in the 2024 PEPR compliance reporting.

1.5 SCOPE OF WORKS

The following scope of works was adopted utilising the data collected during the most recent 24-month period i.e. from June 2022 to June 2024 monitoring events:

1. Prepare Mann Kendall assessment for trend analysis of each leading indicator at each location;
2. Undertake trend investigation for those locations/ analytes that reported to be statistically increasing during step 1;
3. Review current relevant environmental data as pertains to groundwater and calculate current 95th percentiles of historically identified leading indicators; and
4. Provide report with supporting information including relevant graphical interpretation.

Where necessary, data collected prior to 2023/24 was also utilised for the assessment of the potential significance of any identified trends.

2 APPROACH AND METHODOLOGY

2.1 OVERVIEW

The following subsections detail the approach adopted to undertake the scope of works. The following flow chart summarises the approach to this assessment.

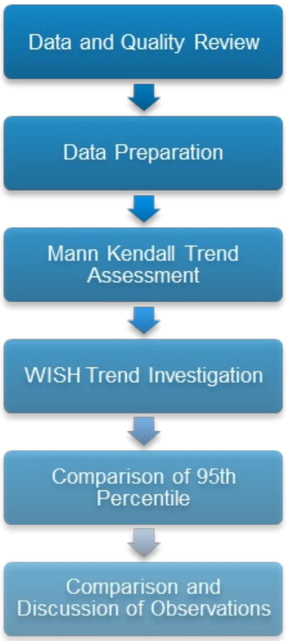

Figure 2-1 Summary of Approach to Trend Assessment

2.2 DATA AND QUALITY REVIEW

2.2.1 Analysis

The data assessed in this report was collected and submitted for laboratory analysis by BHP. It is noted that a data quality assessment was not undertaken as part of the works reported here. As per the PEPR, the following data was required to be collected:

- Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite including the following:
    - Total and dissolved metals: Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U)
    - Major ions: Ca, K, Cl, HCO3-, SO4, pH, TDS, EC
- Deep TSF wells (TSF-D and TSF-E) half yearly monitoring for field parameters including:
    - EC, pH and water table.
- A summary of the data received from BHP is presented in Table 2-1 and Table 1 (at rear). Note that BHP has collected more than the required amount of data to meet its obligations

under the PEPR. The broad screen analysis undertaken on water sampled from the shallow wells was not required for water sampled from the deeper wells. However, such analysis appears to have been undertaken for the deeper wells on a quarterly basis until March 2022.

- With regards to the samples collected from the deep monitoring wells (TSF-D and TSF-E) the collected field parameters included water level, pH, temperature, and EC.

Table 2-1 Summary of 24 Month Dataset

Location	Sample Type	Target Feature	Month	Year	Analysis
TSF-A	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			September	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			October	2022	General
			June	2022	General
TSF-B	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-C	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2023	General
			September	2023	General
			June	2023	General
TSF-D	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-E	Deep well	Non-artesian Eromanga Aquifer	June	2024	General
			December	2024	General
			June	2023	Field Only
			March	2023	-
			December	2023	General
			September	2023	General
			June	2023	General
TSF-S1 (TSF-MW01)	Shallow well	Bulldog Shale	June	2024	General
			March	2024	General
			December	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
TSF-S2 (TSF-	Shallow well	Bulldog Shale	June	2024	General

Location	Sample Type	Target Feature	Month	Year	Analysis
MW02)			March	2024	General
			December	2023	General
			October	2023	General
			June	2023	General
			March	2023	General
			December	2022	General
			September	2022	General
			June	2022	General
Environmental Pond	Surface Grab Sample	Captures water from in and around the Site (including processing plant water)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Pit Water	Surface Grab Sample	From inflows from the southern wall collected in truck tray sump	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
Raw Water Dam	Surface Grab Sample	Groundwater sourced from the production wells of the Aries Borefield (Boorthanna Formation)	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS
TSF Finger	Well through the centre of the TSF	Water from the TSF	June	2024	General Except TDS
			March	2024	General Except TDS
			December	2023	General Except TDS
			October	2023	General Except TDS
			June	2023	General Except TDS
			March	2023	General Except TDS
			December	2022	General Except TDS
			September	2022	General Except TDS
			June	2022	General Except TDS

Note: General analysis includes analysis of total and dissolved metals (Ag, As, B, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Th, Ti, Vn, Zn, U), major ions (Ca, Mg, Na, K, Cl, HCO_3-, SO_4), pH, TDS and EC

2.2.2 Accuracy of Chemical Analysis

In general, two types of errors are discerned in chemical analyses:

- Precision – or statistical errors which reflect random fluctuations in the analytical procedure.
- Accuracy – or systematic errors displaying systematic deviations due to faulty procedures or interferences during analysis.

The precision can be calculated by repeated analysis of the same sample. Systematic errors can be tested only by analysing reference samples and by inter-laboratory comparison of the results. At low concentrations, duplicate analyses may show large variations when the sensitivity of the method is insufficient. Ordinarily, an intra duplicate is used to assess precision, and an inter laboratory duplicate is used to assess accuracy.

The accuracy can be assessed for major ions by estimating the electrical balance since the sum of positive and negative charges in the water should be equal. Appelo and Postma (2005) note that a balance >5% should be assessed, inferring a balance <5% is acceptable / desired.

$$\%\ \text{Difference} = 100\,\frac{\Sigma\text{cations} - \Sigma\text{anions}}{\Sigma\text{cations} + \Sigma\text{anions}}$$

The provided data was reviewed. The average ionic balance was calculated as (-)3.3%. Whilst some values marginally exceeded the 5% threshold, on balance, the data was considered suitable for interpretation,

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
% Difference	-6.1	-2.8	3.3	-7.0	-5.0	-2.9	-2.4

A further test is:

anions (meq/L) = cations (meq/L) = approx. EC/10 (mS/m)

There is good agreement between balance and EC.

	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2
cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8
anions Total (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5
EC	12205	8363	8055	11290	12465	4207	24600
EC / 100	122.05	83.63	80.55	112.9	124.65	42.07	246

2.3 DATA PREPARATION

The processed field and laboratory analytical results were provided by BHP in compiled spreadsheets for both the groundwater and surface water monitoring locations. Assuming that BHP transcribed the data directly from the certified laboratory analytical reports/ field sheets and that an appropriate level of internal quality checks were undertaken, it was considered that the opportunity for the data (utilised for interpretation) to have become anomalous has been minimised.

Unless the water body is degraded, failure to detect contaminants in samples is common. NWQMS (2000) states that rather than concluding that the particular contaminant does not exist in a water sample, the observation should be that the reported concentration is 'below detection limit' (BDL), also referred to as below limit of reporting (LOR). There is no universally accepted method of dealing with BDL data. Some common approaches include:

- treating the observation as 'missing';
- treating the observation as zero;
- using the numerical value of the detection limit; and/ or
- using the numerical value of half the detection limit.

When a large portion of the data is below detection limit, NWQMS (2000) notes that the use of any of the above approaches will be problematic because the sample variance will be severely underestimated. Also, when standard statistical techniques are applied to data sets that have constant values in place of the BDL values, the resulting estimates are biased.

NWQMS (2000) notes suggest that routine water quality parameters (means, percentiles, etc.) be computed using the full data set with BDL data replaced by either the detection limit or half the detection limit. The impact of this strategy on computed statistical measures should be clearly understood, and the monitoring team should not proceed with any form of inferential analysis (e.g. confidence intervals or hypothesis testing) when a significant proportion (e.g. >25%) of the data set is BDL and has been substituted by a surrogate value. Advanced statistical skills should be sought when any form of inference is required in these situations.

NWQMS (2000) recommends that if only a small proportion of the data set is BDL and has been replaced by a numerical surrogate, it is best to perform any statistical analysis twice, once using zero and once using the detection limit (or half the detection limit) as the replacement value. If results from the two analyses differ markedly, the monitoring team "should investigate more sophisticated statistical methods of dealing with censored observations" (NWQMS, 2000).

Analytes reported below the laboratory limits of reporting were obvious within laboratory data (identified as '<' the reporting limit) and were then treated accordingly. These were logged in ProUCL and the software managed these non-detects using Kaplan Meier method as required by SA EPA (2024).

Please note the following data reduction and preparation techniques applied:

- **Summary Statistics** - Summary statistics included the number of samples, frequency of detection (FOD), minimum detected concentration, maximum detected concentration, and median.
- **The Interquartile Range (IQR)** - The IQR describes the range of values between the 25th and 75th percentile. A binomial method was used to estimate confidence intervals that assumes no underlying distribution, as discussed in Statistical Methods for Environmental Pollution Monitoring by Richard O. Gilbert. To calculate the percentiles, the data points were ranked by the Pro UCL software.
- **95th percentile** - With respect to BDL, the non-parametric 95th percentile was calculated using ProUCL (USEPA, 2007a). Further detail regarding the calculation and interpretation of this parameter is presented in following sections.

Field results were provided by BHP and were identified by the inclusion of 'FS' at the beginning of the analyte name. It is noted that not all required analytes were recorded for all sites at all monitoring events. Missing data were treated as blanks and were not assigned a zero value.

2.4 MANN KENDALL TREND ASSESSMENT

The purpose of this assessment is to determine if the concentrations of indicator analytes are statistically increasing at any of the compliance locations. Consistent with previous groundwater quality reviews, such assessment included only the last 24 months of data. The assessment comprised data collected during (approximately) quarterly monitoring events from June 2021 to June 2023, as summarised in Table 2-1.

The GSI Mann-Kendall Toolkit was used for this purpose. This tool supports the analysis of time-series groundwater monitoring data to quantitatively determine if the measured concentrations of a chemical are increasing, decreasing, or stable over time, based upon use of the Mann-Kendall statistical method. The software can be applied to data from monitoring points for which groundwater sampling and testing have been conducted at multiple episodes over time (i.e., time-series sampling) to evaluate the concentration trend of each chemical at each monitoring location. A benefit of the Mann Kendall approach to statistical assessment is that it is nonparametric, meaning that the calculations do not include assumptions based on the distribution of data.

The GSI-Mann-Kendall Toolkit, a Mann Kendall trend test (including graphical output), was utilised to statistically assess (at the 95% confidence level) the ongoing trend of concentrations for each leading indicator chemical substance at each compliance location as defined in the PEPR (2017).

2.5 95th PERCENTILE ASSESSMENT

NWQMS (2000) outlines a technique to derive and use percentiles of the site data for chemical substances. NWQMS recommends computation of the 80th percentile at the reference site be based on the most recent 24 monthly observations undertaken. ELA (2017) adopted a similar approach for the assessment of water chemistry percentiles and use as triggers, noting the absence of true baseline. ELA (2017) adopted the use of the 95th percentile for comparison, in place of the 80th percentile. For purposes of continuity, the same method has been adopted during previous assessment for the site by LWC and for this event as well.

As above, a statistical change is considered to be occurring where the recent sample (i.e. the latest reported concentration) is outside 2 standard deviations of the previous 2 years' data (i.e. greater than the 95th percentile). For this assessment, the calculation of the 95th percentiles were undertaken using Version 5.2 of Pro UCL software. The following is noted regarding the calculation process:

1. ProUCL has an inbuilt function to account for outliers and, as such, no pre-processing of data for outliers was undertaken.

2. Where results were reported below the laboratory limits of reporting, the limit of reporting was adopted as the concentration.

3 RESULTS

3.1 MANN KENDALL STATISTICAL TREND ASSESSMENT

Mann Kendall statistical assessment was undertaken on the last 24 months of data for each of the data collection points for the leading indicator species. The calculation sheets are presented as Appendix A. A summary of the results is presented in Table 3-1. Note that this assessment was only undertaken for compliance locations and analytes i.e. this was not undertaken for the broad analytical schedule for the deeper wells, only the analytes listed to assess compliance (with reference to Table 1-1).

The assessment of increasing trends is based on trends for which the confidence level is greater than 95%. The confidence level that an analyte is showing a particular trend is as follows:

1. >95% if stated as increasing or decreasing
2. ≥ 90% but ≤95% if stated as probably increasing or probably decreasing,
3. The differentiation between ‘stable’ and ‘no trend’ depends on both the standard deviation and variation of the data set (measured as the coefficient of variance).

Table 3-1 Summary of Mann Kendall Statistical Assessment for Compliance Analytes

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	Stable	Stable	**Increasing**	**Stable**
pH	Stable	Stable	Stable	Stable	Stable	**Prob. Decreasing**	No Trend
Depth to Water	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable	No Trend
Total Dissolved Solids	Stable	No Trend	Stable	Stable	Stable	**Decreasing**	No Trend
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Decreasing**	Stable	**Prob. Increasing**	Stable
Dissolved Potassium	No Trend	No Trend	No Trend	Stable	Stable	**Increasing**	Stable
Sulfate as SO$_4$	No Trend	No Trend	Stable	**Decreasing**	**Decreasing**	No Trend	Stable
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	**Decreasing**	Stable	No Trend	Stable
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	Stable	Stable
Dissolved Antimony	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Arsenic	Stable	Stable	No Trend	Stable	Stable	Stable	No Trend
Dissolved Boron	Stable	Stable	Stable	**Decreasing**	No Trend	Stable	No Trend
Dissolved Cadmium	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Dissolved Chromium	No Trend	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Cobalt	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Analyte	TSF-A	TSF-B	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Dissolved Copper	Stable	Stable	Stable	Stable	No Trend	Stable	No Trend
Dissolved Manganese	Stable	Stable	Stable	Stable	Stable	No Trend	Stable
Dissolved Molybdenum	Stable	No Trend	Stable	Stable	Stable	No Trend	Stable
Dissolved Selenium	No Trend	No Trend	Stable	Stable	Stable	Stable	Stable
Dissolved Silver	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Dissolved Strontium	No Trend	Stable	No Trend	Stable	Stable	No Trend	Stable
Dissolved Tin	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Uranium	Stable	**Prob. Decreasing**	No Trend	Stable	Stable	Stable	Stable
Dissolved Vanadium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Dissolved Zinc	Stable	Stable	Stable	Stable	No Trend	**Prob. Increasing**	No Trend
Total Antimony	Stable	Stable	Stable	No Trend	No Trend	Stable	No Trend
Total Arsenic	Stable	No Trend	Stable	Stable	No Trend	Stable	No Trend
Total Boron	Stable	Stable	**Prob. Decreasing**	Stable	Stable	Stable	No Trend
Total Cadmium	Stable	Stable	Stable	No Trend	No Trend	Stable	Stable
Total Chromium	**Prob. Increasing**	Stable	No Trend	Stable	Stable	No Trend	Stable
Total Cobalt	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Copper	No Trend	Stable	No Trend	No Trend	No Trend	**Prob. Increasing**	No Trend
Total Manganese	**Prob. Increasing**	Stable	No Trend	Stable	No Trend	**Prob. Increasing**	No Trend
Total Molybdenum	Stable	No Trend	No Trend	Stable	No Trend	No Trend	No Trend
Total Selenium	Stable	No Trend	Stable	Stable	Stable	Stable	Stable
Total Silver	Stable	Stable	Stable	Stable	Stable	No Trend	No Trend
Total Strontium	Stable	No Trend	Stable	**Decreasing**	Stable	Stable	**Decreasing**
Total Tin	Stable	Stable	Stable	Stable	Stable	Stable	No Trend
Total Uranium	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Total Vanadium	Stable	Stable	No Trend	Stable	Stable	Stable	Stable
Total Zinc	**Prob. Decreasing**	Stable	Stable	Stable	Stable	No Trend	No Trend

3.2 STATISTICAL TREND INVESTIGATION

An investigation of indicative trends was undertaken for those analytes for which increasing/ probably increasing trends (at or above the 90% confidence level) were identified during the Mann Kendall Trend Assessment (refer to Table 3-2 which summarises the previous section). Note that this was only undertaken for compliance well locations (i.e. excluding deeper groundwater wells and surface water monitoring points).

Table 3-2 Summary of parameters/ analytes selected for investigation

Analyte	TSF-A	TSF-B	TSF-C	TSF-S1
Compliance Site?	**Yes**	**Yes**	**Yes**	**Yes**
Salinity				
Electrical Conductivity	No Trend	**Prob. Increasing**	**Increasing**	**Increasing**
Major Ions				
Dissolved Calcium	Stable	**Prob. Increasing**	No Trend	**Prob. Increasing**
Dissolved Potassium	No Trend	No Trend	No Trend	**Increasing**
Chloride	**Prob. Increasing**	**Prob. Increasing**	**Increasing**	No Trend
Bicarbonate Alkalinity	**Prob. Increasing**	Stable	No Trend	Stable
Metals				
Dissolved Zinc	Stable	Stable	Stable	**Prob. Increasing**
Total Chromium	**Prob. Increasing**	Stable	No Trend	No Trend
Total Copper	No Trend	Stable	No Trend	**Prob. Increasing**
Total Manganese	**Prob. Increasing**	Stable	No Trend	**Prob. Increasing**

Increasing trends were identified for the following metals in TSF-A:

- Total chromium
- Total manganese

Increasing trends were identified for the following metals in TSF-S1:

- Dissolved zinc
- Total copper
- Total manganese

Salinity is increasing in TSF-B, TSF-C, and TSF-S1

Chloride is increasing in TSF-A, TSF-B, and TSF-C

3.3 ROLLING 95TH PERCENTILES

Outlier detection in the context of groundwater chemical concentrations using the rolling 95th percentile is a valuable method for identifying unusual or potentially problematic data points.

Outliers are data points that significantly differ from the rest of the dataset. In groundwater analysis, outliers could indicate unusual contamination events, measurement errors, or natural variability.

Identifying outliers is crucial because they can signal emerging environmental issues, such as new sources of pollution or changes in groundwater flow patterns.

The rolling 95th percentile is a dynamic threshold that adapts to changes in the data over time. Unlike a static threshold, it reflects the upper limit of "normal" concentration levels within a moving window of time.

By comparing each chemical concentration value to the rolling 95th percentile, it is possible to determine if it is unusually high relative to recent data.

Steps for outlier detection:

1. Calculate the Rolling 95th Percentile: this creates a moving threshold that changes over time, reflecting the distribution of the data.

2. Identify Exceedances: After calculating the rolling 95th percentile, compare each actual concentration value to this threshold:

3. Exceedance: If the concentration value exceeds the rolling 95th percentile, it is considered an outlier or exceedance.

4. No Exceedance: If the concentration is below or equal to the rolling 95th percentile, it is within the expected range of variability.

ProUCL v 5.2 was used to calculate percentiles for each chemical substance/ parameter in water from each monitoring well using quarterly analytical data gathered September 2022 to June 2024. The ProUCL output is presented as Appendix C.

A comparison of the analytical laboratory data to the calculated 95th percentiles is presented as Appendix D for each monitoring round within the percentile period (September 2023 to June 2024) i.e. time since previous reporting (August 2023).

Exceedances of the 95th percentile calculations were reported for a small number of analytes, and these were then also compared to the previous period percentile to gauge whether there is a potential upward increase in 95th percentile over time – refer Table 3-3.

Table 3-3 Summary and discussion of 95th percentile assessment

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
TSF-A	Bicarbonate and alkalinity Chloride Chromium (total and dissolved) Electrical conductivity (EC) (but not total dissolved solids)	These parameters (except EC) are trending upwards; therefore these are outliers and are also trending upwards. Of interest is the chromium in one month – June 2024.
TSF-B	Calcium Magnesium	None of these are trending upwards but can be counted as outliers.

Monitoring Location	Analytes Exceeding 95th Percentile for Compliance Analytes	Comment
	Sodium Sulfate EC (but not total dissolved solids) Strontium (dissolved but not total)	
TSF-C	None	Not applicable
TSF-D	None	Not applicable
TSF-E	boron (dissolved) copper (dissolved) thorium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (copper and thorium) with marginal value of boron above percentile but likely within laboratory error.
TSF-S1	Sodium zinc	The zinc exceedance could be due to a rounding up of the concentration (0.03 mg/L) relative to the 95th percentile (0.0274 mg/L) though given the percentile for total zinc (0.032 mg/L) the exceedance is relatively trivial.
TSF-S2	arsenic (dissolved) boron (dissolved) EC lead (total) titanium (total)	These are not trending upwards and are likely identified due to possible change in laboratory limit of reporting (arsenic) and marginal value above percentile but likely within laboratory error.

4 DISCUSSION AND CONCLUSIONS

The objective of this assessment was to determine any change in the quality of groundwater surrounding the TSF at the Prominent Hill Mine. Consequently, the reported concentrations/ levels of indicator analytes/ parameters were reviewed on a statistical (and outlier) basis to identify any increasing trend over the past 24 months from date of assessment. This assessment was undertaken utilising the following approach:

1. Mann Kendall Trend Assessment was undertaken for all compliance (groundwater monitoring wells) investigation locations. The data utilised for this assessment included quarterly laboratory data and field data.

2. For those locations/ analytes that reported statistical increasing, further investigation was undertaken. It is noted that these results were considered to only be indicative and were used generally to support, but not contradict, the Mann Kendall Assessment.

3. The time series based 95th percentile for each analyte at each compliance location was calculated. The 2024 results were compared to the two years 95th percentile and the previous period percentile (published 2023) to determine if outliers were/ are potentially present.

This provides a feedback loop to focus on parameters/ chemical substances of key interest – i.e. looking at outliers and then re-looking at the Mann-Kendall trends to determine the significance of potential changes to groundwater composition.

The reported concentrations of chemical substances and parameters recorded for each time step (event) are summarised in Table 1 (at rear). Note that only locations for which increasing trends were identified during Step 1 and Step 3 (Step 2 was only undertaken to explore increasing trends identified during Step 1) above have been included in this table.

Based on these results, the condition of water at each compliance location, comments and suggested future actions are summarised in Table 4-1.

Table 4-1 Summary of Suggested Future Actions

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-A	Predominantly stable (no trends)/ decreasing concentrations. Previous increasing trends for dissolved and total molybdenum and total copper were not confirmed however increasing chromium is flagged as an outlier and trending upwards. Based on the available data, longer term trends for copper and sodium appear to be associated with rainfall infiltration rather than seepage from the TSF.	Continue current monitoring program – report chromium to LWC for assessment following September round of monitoring.
TSF-B	No increasing trends of note other than chloride and calcium.	Continue current monitoring program.

Monitoring Location	Condition	Comments/ Suggested Future Action
TSF-C	No increasing trends of note other than chloride and salinity.	Continue current monitoring program.
TSF-D	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-E	No increasing trends nor outliers of note.	Continue current monitoring program.
TSF-S1	Zinc, copper and manganese are increasing trend-wise though no outliers of note except zinc which could be attributed to rounding up of reported concentration.	Continue current monitoring program.
TSF-S2	No increasing trends nor outliers of note.	Continue current monitoring program.

Table 4-2 summarises this assessment in the context of the assessing Impact Event No. 17.2 which is the “deterioration in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL.”

Table 4-2 Summary of Environmental Outcome Achievement

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
No reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from TSF or acid rock drainage from the IWL	Water quality data in monitoring wells outside the TSF is consistent over time (assessed using a rolling 24-month 95th percentile assessment, or a robust statistical assessment subsequently developed across any sites that exhibit any variable trends or data inconsistencies). If changes in water quality data over time are detected by this assessment, further investigation (or modelling of seepage extent) undertaken by an independent groundwater consultant demonstrates that TSF seepage or ARD from the IWL has not or is not likely to result in off-site impacts to groundwater quality that would affect its suitability for water uses (potable use and/or pastoral use). Monitoring wells, frequency and parameters measured are:	Following the outcomes of the statistical assessment, based on the available results, concentrations of indicator analytes in groundwater sampled from shallow groundwater wells (targeting the Bulldog Shale which is not used as a regional source of water) were considered to be either stable or decreasing with the exception of a small number of analytes from some shallow groundwater wells which were observed to be potentially increasing. These potentially increasing concentrations were not considered to be reflective of contamination, rather they were considered reflective of changes in groundwater level (from recent above average rainfall) and/ or general background regional conditions, other

Environmental Outcome	Outcome Measurement Criteria Summary	Evidence of Outcome Achievement
	• Deep TSF wells (TSF-D, TSF-E) - half yearly monitoring for field parameters (EC, pH, water table). • Shallow wells (TSF-S1, TSF-S2, TSF-A, TSF-B, TSF-C) quarterly monitoring with a broad analyte suite: (Metals dissolved and total - Ag, As, B, Cd, Co, Cr, Cu, Mn, Mo, Sb, Se, Sn, Sr, Vn, Zn, U, Major Ions – Ca, K, Cl, HCO_3-, SO_4^{2-} pH, TDS, EC). Note: process water sites (Pit water S09 ramp, Raw water dam, Environmental pond, TSF Finger) are also monitored quarterly to aid analysis but not as a compliance site for the purpose of this PEPR.	than chromium which is an outlier in water from TSF-A and the reason for the increase is unclear. A verification round is required and this will occur in September. Concentrations of indicator analytes in groundwater sampled from deep groundwater wells (targeting the non-artesian Eromanga Aquifer which is utilised regionally as a water source outside of the Mine Lease area) were considered to be generally stable and did not exhibit significant increasing trends. Further, the assessment of results for the shallower groundwater wells did not identify the need to expand the monitoring program for the deeper groundwater wells. Based on the outcomes of this assessment, noting the observed stable conditions of the deeper non-artesian Eromanga Aquifer, it is considered that there has been no non-trivial reduction in groundwater quality affecting suitability for water uses (potable use and agricultural use) due to seepage from the TSF or acid rock drainage from the IWL.

5 REFERENCES

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USEPA (United States Environmental Protection Agency). 2007b. ProUCL Version 4.0 Technical Guide. Las Vegas: United States Environmental Protection Agency, Office of Research and Development. EPA/600/R-07/041. pg 71, 73, 74, 78, 80, 100, 101, 121.

FIGURES

●	Process Water Monitoring Site (Quarterly Frequency)
●	Bulldog Shale Wells (Quarterly Frequency)
●	Non-artesian Eromanga Aquifer Wells (Half-yearly Frequency)
—	Road/Track
☐	Prominent Hill Mining Lease (ML)

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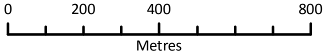

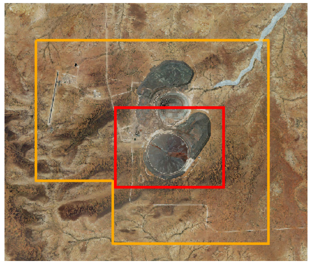

TSF Monitoring Locations

APPENDIX A – MANN KENDALL TREND ASSESSMENT

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Bicarbonate Alkalinity
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**BICARBONATE ALKALINITY CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	231	254					
3	18-Jun-23	232	255					
4	19-Dec-23	175	200					
5	16-Jun-24	217	255					
6								
7								
8								
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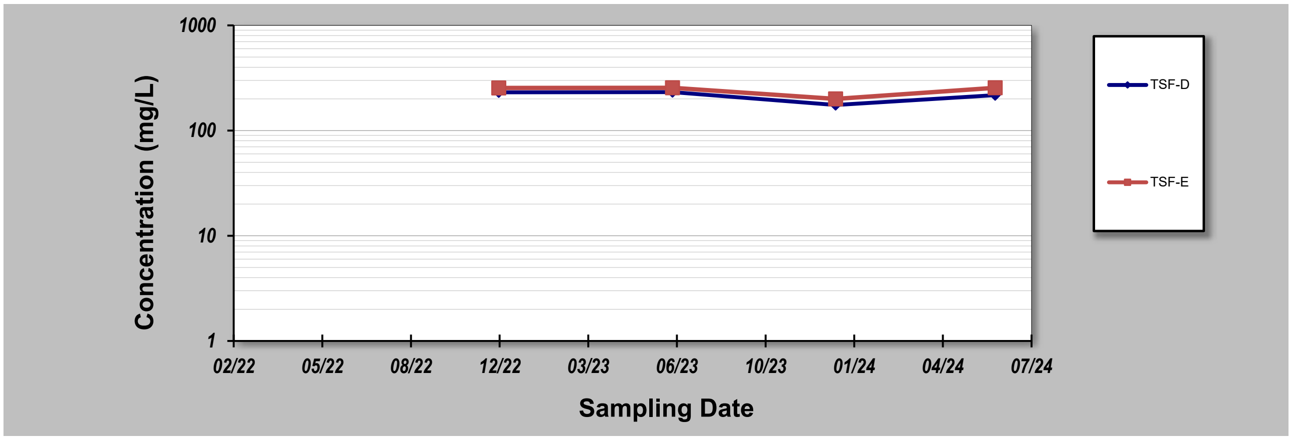
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.13	0.11					
	Mann-Kendall Statistic (S):	-2	1					
	Confidence Factor:	62.5%	50.0%					
	Concentration Trend:	Stable	No Trend					



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.

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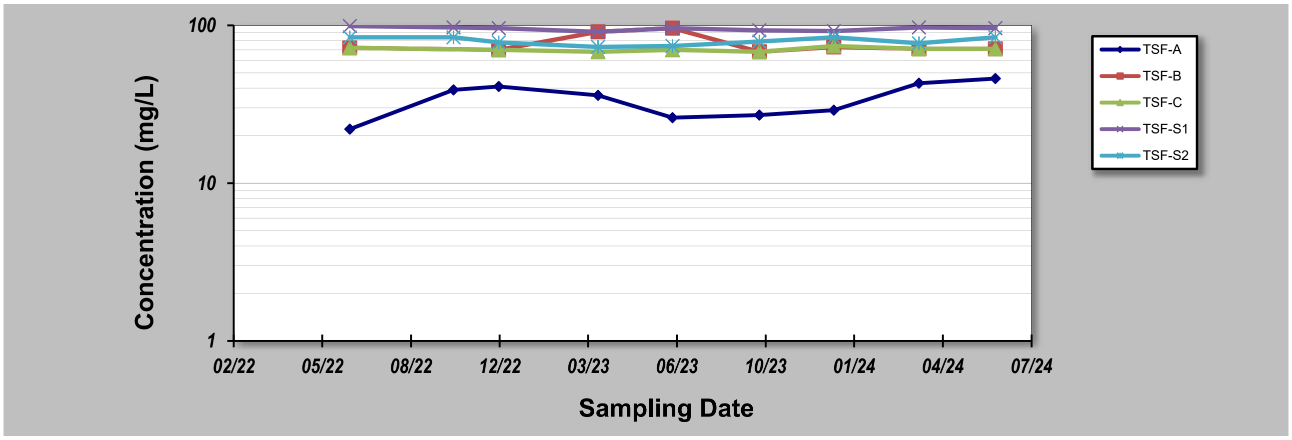
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Bicarbonate Alkalinity
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	BICARBONATE ALKALINITY CONCENTRATION (mg/L)						
1	19-Jun-22	22	72	72	99	84		
2	14-Oct-22	39			97	84		
3	4-Dec-22	41	70	70	96	78		
4	26-Mar-23	36	91	68	91	73		
5	18-Jun-23	26	96	70	96	74		
6	24-Sep-23	27	68	68	93	79		
7	17-Dec-23	29	73	74	92	84		
8	22-Mar-24	43	71	71	97	77		
9	16-Jun-24	46	71	71	96	84		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.25	0.14	0.03	0.03	0.06		
	Mann-Kendall Statistic (S):	14	-3	3	-10	0		
	Confidence Factor:	91.0%	59.4%	59.4%	82.1%	46.0%		
	Concentration Trend:	Prob. Increasing	Stable	No Trend	Stable	Stable		



Notes:

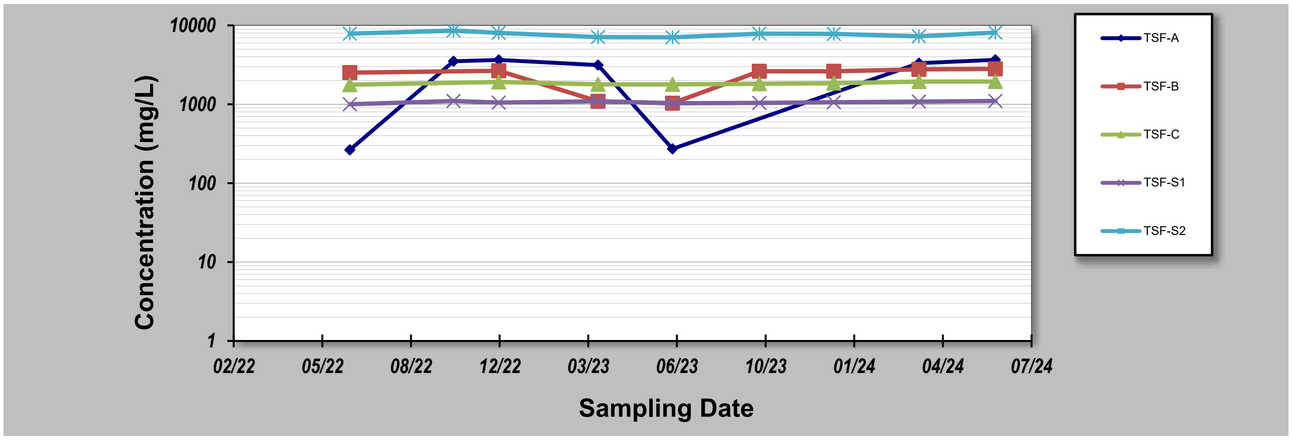
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Chloride
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	19-Jun-22	264	2520	1770	1000	7850		
2	14-Oct-22	3510			1100	8570		
3	4-Dec-22	3650	2660	1920	1050	8030		
4	26-Mar-23	3140	1090	1790	1090	7100		
5	18-Jun-23	272	1030	1790	1030	7060		
6	24-Sep-23	368	2620	1820	1040	7850		
7	17-Dec-23	266	2620	1850	1060	7790		
8	22-Mar-24	3320	2770	1940	1080	7260		
9	16-Jun-24	3660	2810	1940	1100	8110		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.62	0.33	0.04	0.03	0.07		
	Mann-Kendall Statistic (S):	12	13	18	11	-5		
	Confidence Factor:	94.9%	92.9%	98.4%	84.6%	65.7%		
	Concentration Trend:	Prob. Increasing	Prob. Increasing	Increasing	No Trend	Stable		



Notes:

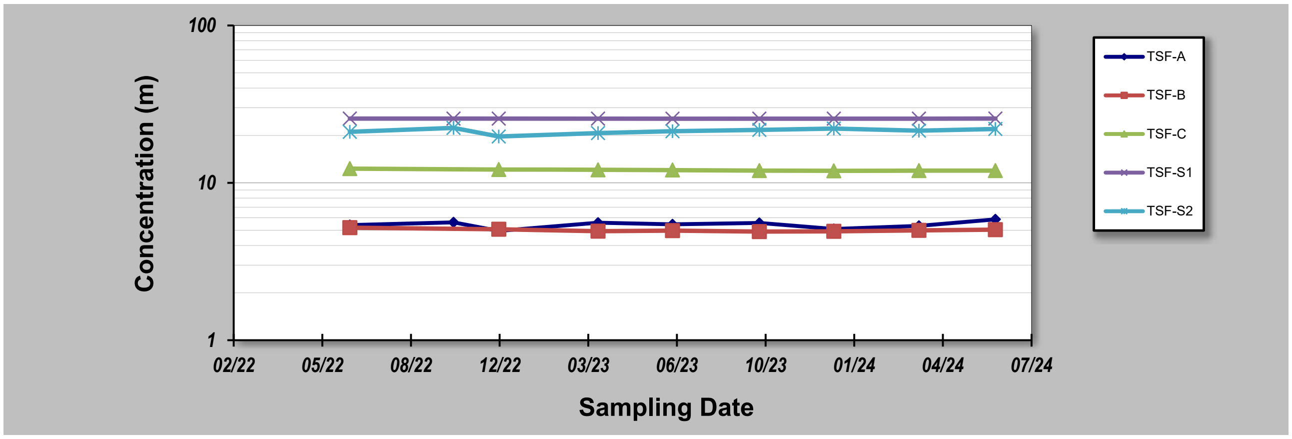
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Depth to Water
Concentration Units: m

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DEPTH TO WATER CONCENTRATION (m)**						
1	19-Jun-22	5.39	5.19	12.31	25.61	21.09		
2	14-Oct-22	5.61			25.6	22.34		
3	4-Dec-22	4.95	5.07	12.15	25.59	19.7		
4	26-Mar-23	5.58	4.93	12.09	25.57	20.71		
5	18-Jun-23	5.45	4.97	12.07	25.56	21.28		
6	24-Sep-23	5.56	4.9	11.96	25.57	21.7		
7	17-Dec-23	5.09	4.92	11.92	25.57	22.13		
8	22-Mar-24	5.33	4.99	11.96	25.57	21.45		
9	16-Jun-24	5.86	5.04	11.96	25.62	21.99		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.05	0.02	0.01	0.00	0.04		
Mann-Kendall Statistic (S):		2	-6	-21	-8	12		
Confidence Factor:		54.0%	72.6%	99.6%	76.2%	87.0%		
Concentration Trend:		No Trend	Stable	Decreasing	Stable	No Trend		



Notes:

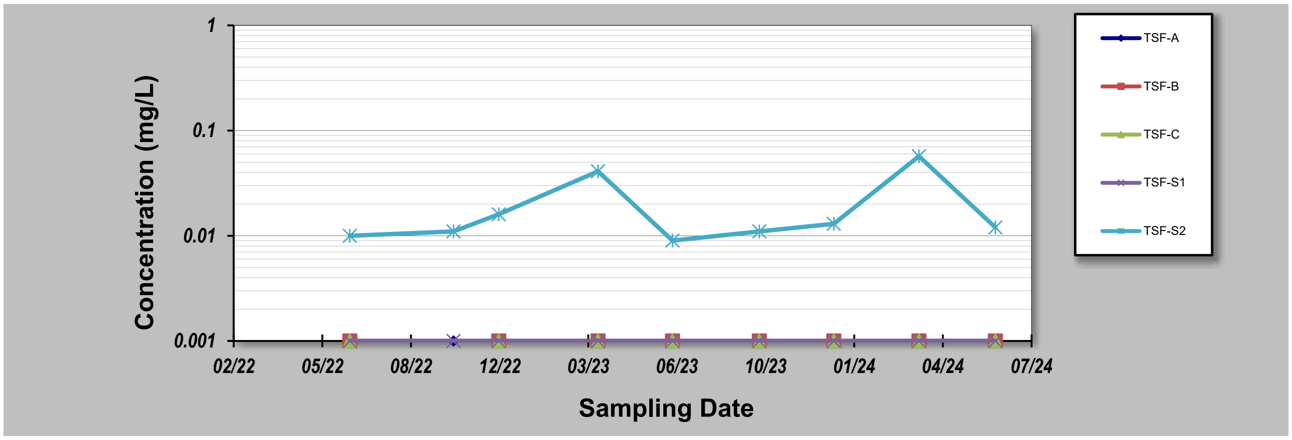
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Antimony
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED ANTIMONY CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.01		
2	14-Oct-22	0.001			0.001	0.011		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.016		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.041		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.009		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.011		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.013		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.057		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.012		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.85		
	Mann-Kendall Statistic (S):	0	0	0	0	11		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	84.6%		
	Concentration Trend:	Stable	Stable	Stable	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Arsenic
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED ARSENIC CONCENTRATION (mg/L)**						
1	19-Jun-22	0.002	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.002	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.002	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.002	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.002	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.002	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.002	0.001	0.001		
9	16-Jun-24	0.002	0.001	0.002	0.001	0.002		
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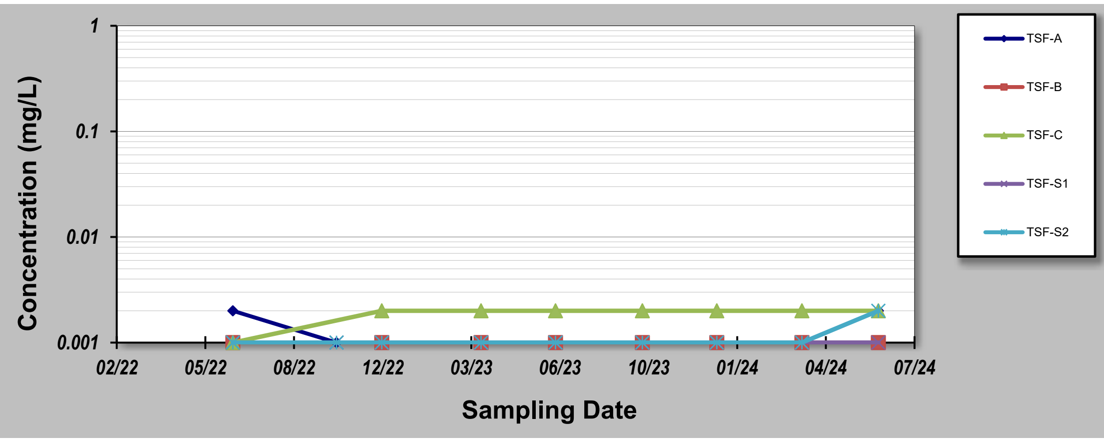
Coefficient of Variation:		0.36	0.00	0.19	0.00	0.30		
Mann-Kendall Statistic (S):		0	0	7	0	8		
Confidence Factor:		46.0%	45.2%	76.4%	46.0%	76.2%		
Concentration Trend:		Stable	Stable	No Trend	Stable	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Boron
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DISSOLVED BORON CONCENTRATION (mg/L)**						
1	19-Jun-22	0.35	1.38	1.8	1.36	1.79		
2	14-Oct-22	4.29			1.08	2.35		
3	4-Dec-22	4.14	1.15	1.54	1.1	2.23		
4	26-Mar-23	2.02	1.14	1.61	1.14	2.22		
5	18-Jun-23	0.21	0.84	1.41	0.84	1.96		
6	24-Sep-23	0.4	1.16	1.49	1.13	2.38		
7	17-Dec-23	0.25	1.15	1.46	0.98	1.79		
8	22-Mar-24	3.51	1.12	1.51	1.12	1.92		
9	16-Jun-24	4.22	1.18	1.56	1.05	2.49		
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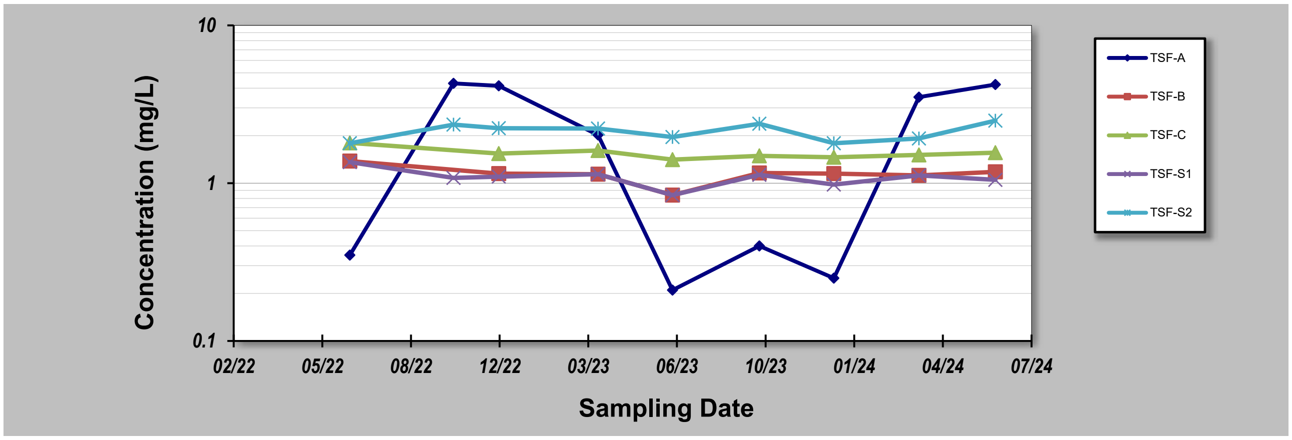
Coefficient of Variation:		0.87	0.13	0.08	0.13	0.12		
Mann-Kendall Statistic (S):		0	-3	-6	-10	3		
Confidence Factor:		46.0%	59.4%	72.6%	82.1%	58.0%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cadmium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**DISSOLVED CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.0001	0.0001	0.0001	0.0001	0.0001		
2	14-Oct-22	0.0001			0.0002	0.0002		
3	4-Dec-22	0.0001	0.0001	0.0001	0.0003	0.0002		
4	26-Mar-23	0.0001	0.0002	0.0001	0.0002	0.0004		
5	18-Jun-23	0.0001	0.0002	0.0001	0.0002	0.0002		
6	24-Sep-23	0.0001	0.0001	0.0001	0.0003	0.0002		
7	17-Dec-23	0.0001	0.0001	0.0001	0.0003	0.0003		
8	22-Mar-24	0.0001	0.0001	0.0001	0.0003	0.0004		
9	16-Jun-24	0.0001	0.0001	0.0001	0.0002	0.0002		
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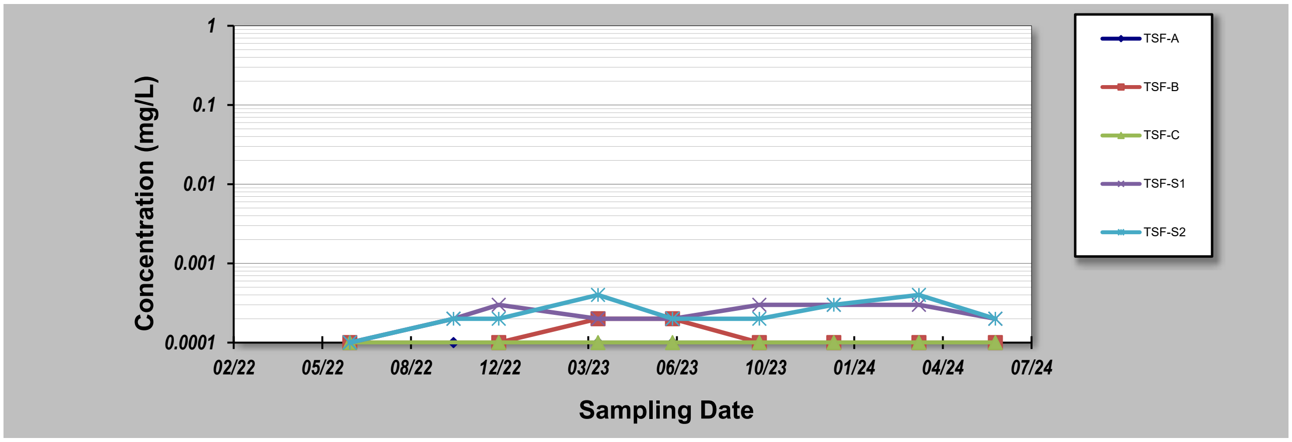
	Coefficient of Variation:	0.00	0.37	0.00	0.30	0.41		
	Mann-Kendall Statistic (S):	0	-4	0	12	13		
	Confidence Factor:	46.0%	64.0%	45.2%	87.0%	89.0%		
	Concentration Trend:	Stable	Stable	Stable	No Trend	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Calcium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED CALCIUM CONCENTRATION (mg/L)						
1	19-Jun-22	61	484	323	165	1070		
2	14-Oct-22	463			180	1230		
3	4-Dec-22	431	518	351	173	1170		
4	26-Mar-23	221	184	370	184	995		
5	18-Jun-23	70	188	374	188	1140		
6	24-Sep-23	85	585	383	195	1190		
7	17-Dec-23	65	539	342	178	1090		
8	22-Mar-24	363	561	366	192	830		
9	16-Jun-24	423	563	361	182	1070		
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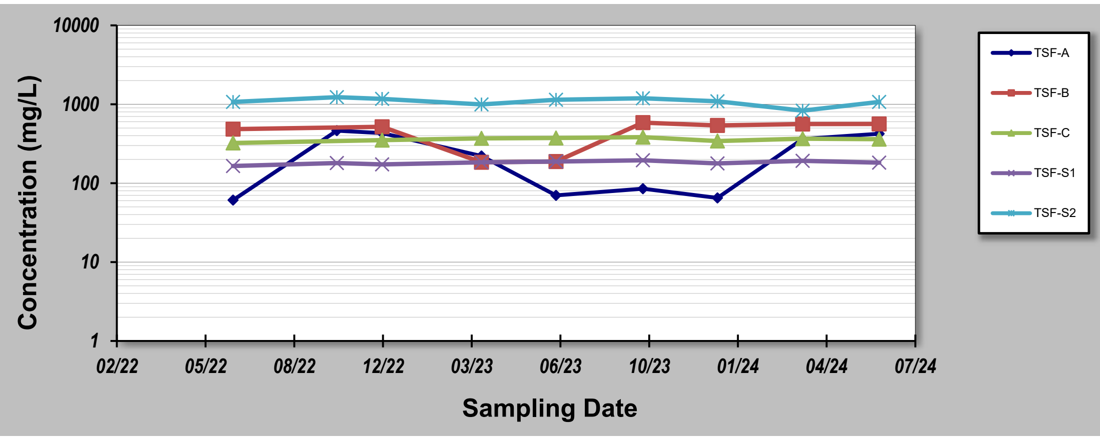
	Coefficient of Variation:	0.73	0.37	0.05	0.05	0.11		
	Mann-Kendall Statistic (S):	0	14	6	16	-11		
	Confidence Factor:	46.0%	94.6%	72.6%	94.0%	84.6%		
	Concentration Trend:	Stable	Prob. Increasing	No Trend	Prob. Increasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Chromium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED CHROMIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.004	0.002	0.002		
2	14-Oct-22	0.002			0.002	0.002		
3	4-Dec-22	0.002	0.001	0.004	0.002	0.002		
4	26-Mar-23	0.002	0.002	0.004	0.002	0.002		
5	18-Jun-23	0.001	0.002	0.004	0.002	0.002		
6	24-Sep-23	0.001	0.001	0.004	0.002	0.002		
7	17-Dec-23	0.001	0.001	0.004	0.002	0.002		
8	22-Mar-24	0.002	0.001	0.004	0.002	0.001		
9	16-Jun-24	0.004	0.001	0.004	0.002	0.002		
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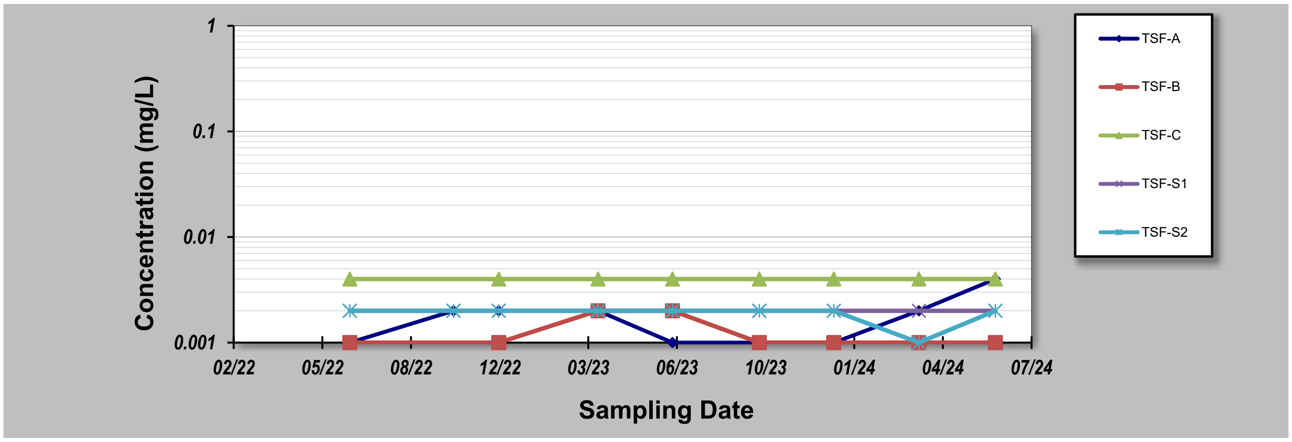
	Coefficient of Variation:	0.55	0.37	0.00	0.00	0.18		
	Mann-Kendall Statistic (S):	6	-4	0	0	-6		
	Confidence Factor:	69.4%	64.0%	45.2%	46.0%	69.4%		
	Concentration Trend:	No Trend	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cobalt
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED COBALT CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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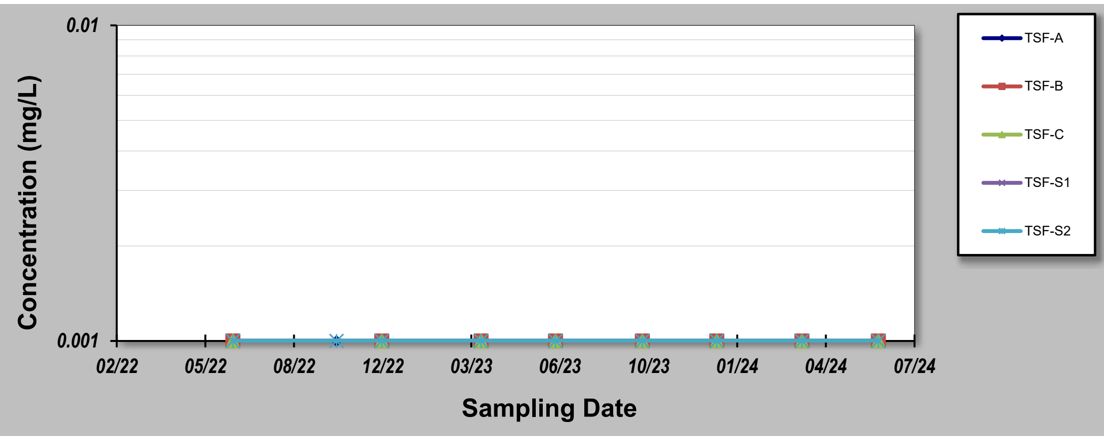
Coefficient of Variation:		0.00	0.00	0.00	0.00	0.00		
Mann-Kendall Statistic (S):		0	0	0	0	0		
Confidence Factor:		46.0%	45.2%	45.2%	46.0%	46.0%		
Concentration Trend:		Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Copper
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22	0.013	0.001	0.001	0.002	0.007		
2	14-Oct-22	0.008			0.001	0.006		
3	4-Dec-22	0.007	0.003	0.001	0.002	0.01		
4	26-Mar-23	0.01	0.003	0.002	0.003	0.019		
5	18-Jun-23	0.012	0.001	0.001	0.001	0.008		
6	24-Sep-23	0.013	0.002	0.001	0.002	0.007		
7	17-Dec-23	0.014	0.002	0.002	0.002	0.007		
8	22-Mar-24	0.008	0.001	0.001	0.001	0.024		
9	16-Jun-24	0.007	0.002	0.001	0.001	0.007		
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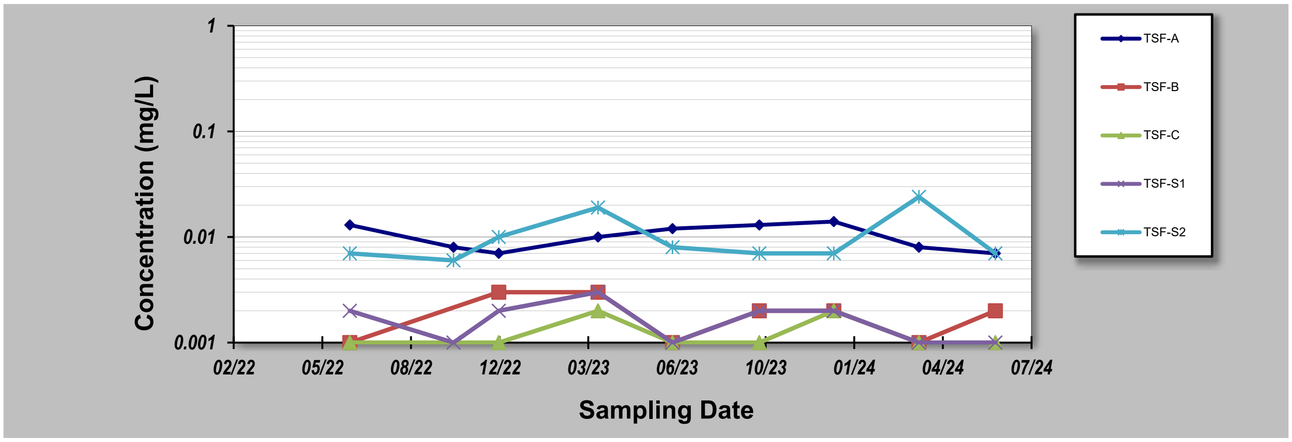
Coefficient of Variation:		0.28	0.45	0.37	0.42	0.61		
Mann-Kendall Statistic (S):		-1	-3	0	-8	4		
Confidence Factor:		50.0%	59.4%	45.2%	76.2%	61.9%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Manganese
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED MANGANESE CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.002	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.002		
4	26-Mar-23	0.001	0.002	0.001	0.002	0.003		
5	18-Jun-23	0.001	0.003	0.001	0.003	0.001		
6	24-Sep-23	0.001	0.002	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.002	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.002	0.004		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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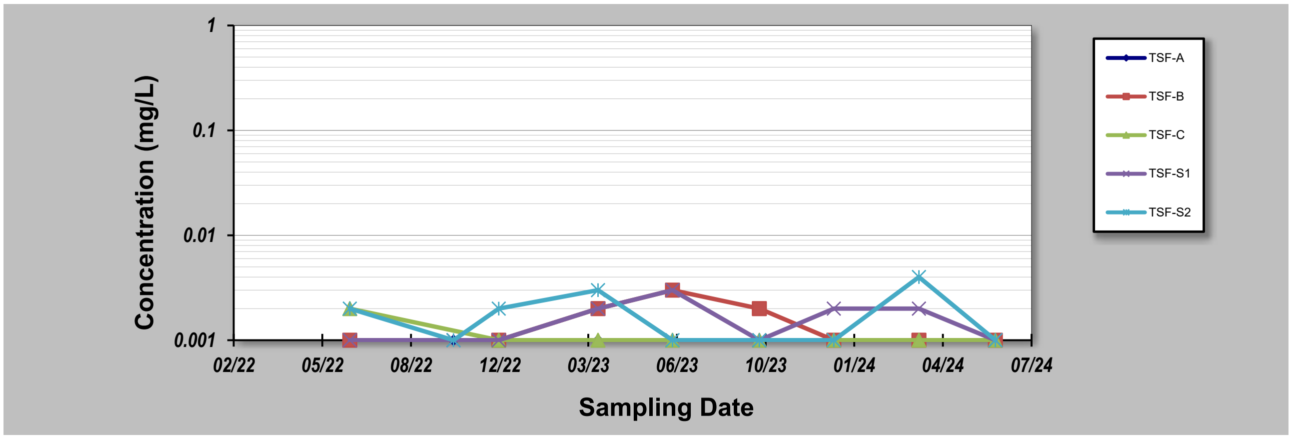
20								
Coefficient of Variation:		0.00	0.50	0.31	0.47	0.61		
Mann-Kendall Statistic (S):		0	-3	-7	7	-3		
Confidence Factor:		46.0%	59.4%	76.4%	72.8%	58.0%		
Concentration Trend:		Stable	Stable	Stable	No Trend	Stable		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED MOLYBDENUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.008	0.006	0.008	0.002	0.003		
2	14-Oct-22	0.008			0.024	0.01		
3	4-Dec-22	0.007	0.006	0.003	0.004	0.004		
4	26-Mar-23	0.006	0.003	0.002	0.003	0.005		
5	18-Jun-23	0.009	0.003	0.002	0.003	0.003		
6	24-Sep-23	0.009	0.006	0.002	0.003	0.004		
7	17-Dec-23	0.009	0.007	0.003	0.002	0.003		
8	22-Mar-24	0.004	0.006	0.002	0.003	0.008		
9	16-Jun-24	0.005	0.007	0.003	0.003	0.004		
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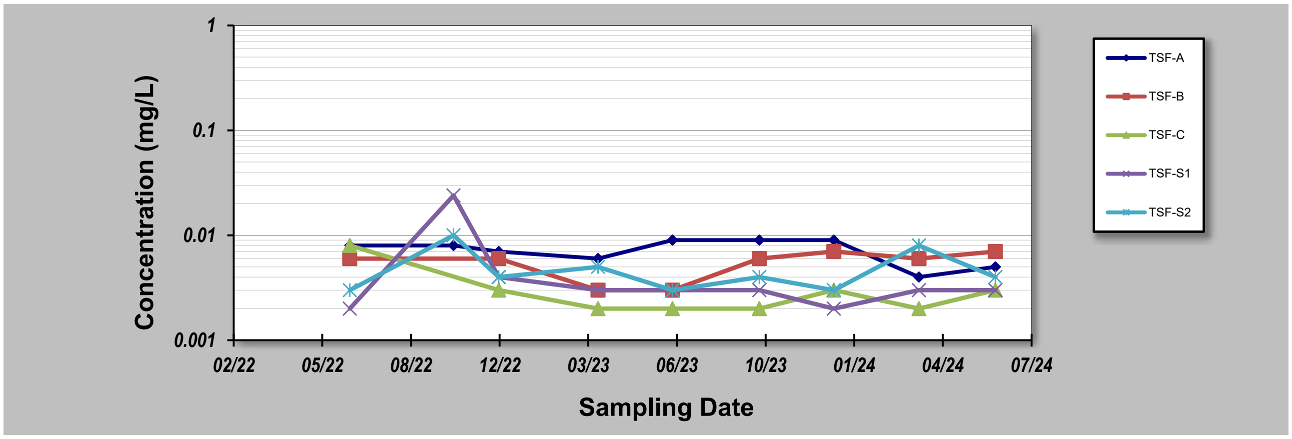
	Coefficient of Variation:	0.26	0.29	0.65	1.35	0.51		
	Mann-Kendall Statistic (S):	-6	10	-5	-7	0		
	Confidence Factor:	69.4%	86.2%	68.3%	72.8%	46.0%		
	Concentration Trend:	Stable	No Trend	Stable	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Potassium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED POTASSIUM CONCENTRATION (mg/L)						
1	19-Jun-22	7	31	28	18	66		
2	14-Oct-22	52			19	82		
3	4-Dec-22	50	35	32	19	78		
4	26-Mar-23	25	19	31	19	64		
5	18-Jun-23	9	20	32	20	71		
6	24-Sep-23	10	37	33	20	73		
7	17-Dec-23	9	37	33	20	77		
8	22-Mar-24	41	35	30	19	57		
9	16-Jun-24	46	35	32	20	69		
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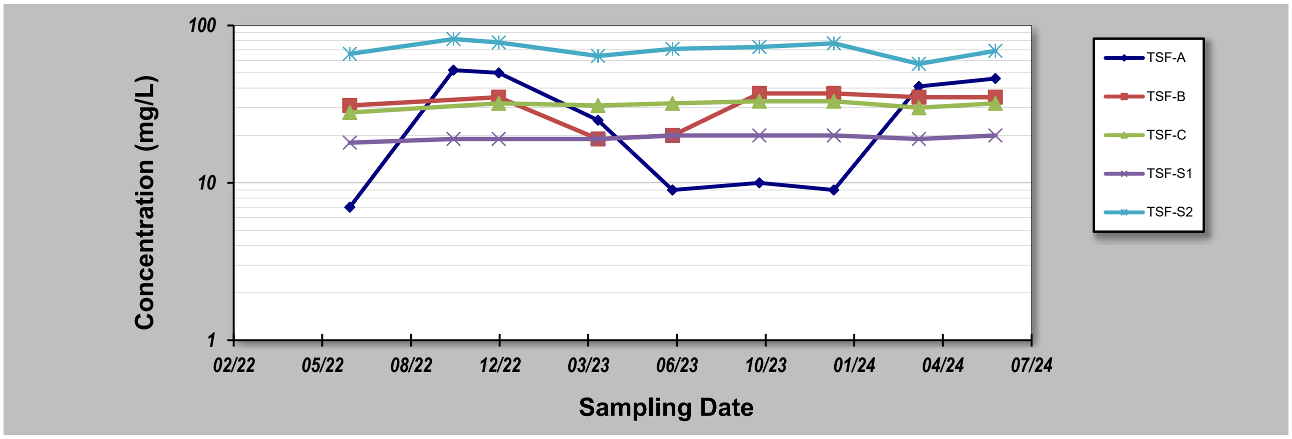
	Coefficient of Variation:	0.71	0.24	0.05	0.04	0.11		
	Mann-Kendall Statistic (S):	1	8	8	18	-8		
	Confidence Factor:	50.0%	80.1%	80.1%	96.2%	76.2%		
	Concentration Trend:	No Trend	No Trend	No Trend	Increasing	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED SELENIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.01	0.02	0.01	0.01	0.01		
2	14-Oct-22	0.02			0.01	0.01		
3	4-Dec-22	0.02	0.02	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.02	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.02	0.01	0.01	0.01		
8	22-Mar-24	0.02	0.02	0.01	0.01	0.01		
9	16-Jun-24	0.02	0.02	0.01	0.01	0.01		
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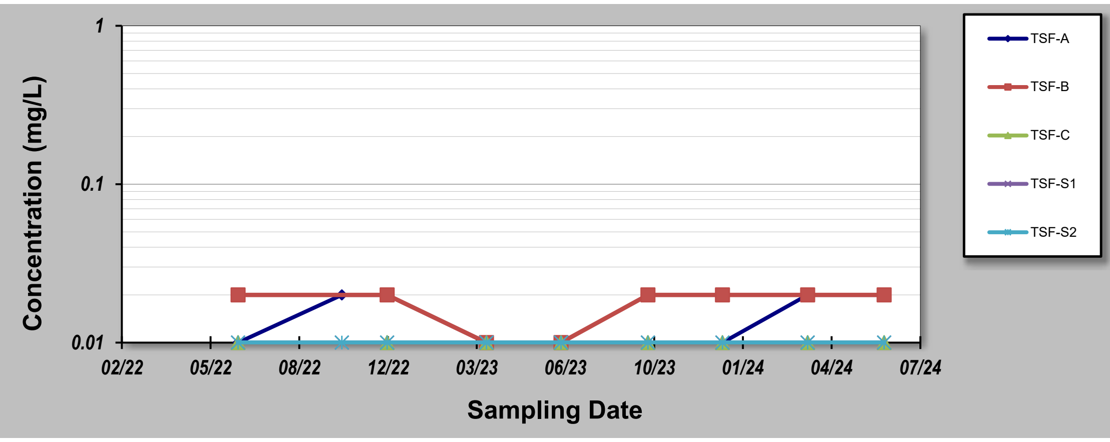
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.36	0.26	0.00	0.00	0.00		
	Mann-Kendall Statistic (S):	4	4	0	0	0		
	Confidence Factor:	61.9%	64.0%	45.2%	46.0%	46.0%		
	Concentration Trend:	No Trend	No Trend	Stable	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Silver
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED SILVER CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.003		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.003	0.004	0.003	0.01		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.002		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.002		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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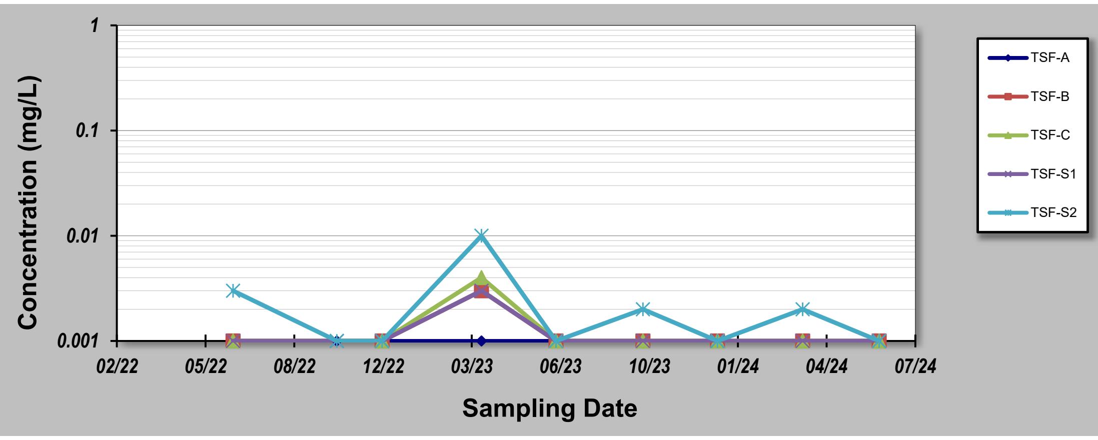
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.57	0.77	0.55	1.19		
Mann-Kendall Statistic (S):		0	-3	-3	-2	-5		
Confidence Factor:		46.0%	59.4%	59.4%	54.0%	65.7%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Strontium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**DISSOLVED STRONTIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.51	6.13	4.35	2.2	14.7		
2	14-Oct-22	6.03			2.46	15.5		
3	4-Dec-22	4.88	5.56	4.07	2.08	12.3		
4	26-Mar-23	2.62	2.22	4.24	2.22	11.5		
5	18-Jun-23	0.522	2.4	4.45	2.4	13.8		
6	24-Sep-23	0.679	5.85	4.08	2.11	12.3		
7	17-Dec-23	0.499	5.98	4.23	2.26	12.7		
8	22-Mar-24	4.96	6.26	4.26	2.23	10.4		
9	16-Jun-24	5.52	6.27	4.31	2.3	13		
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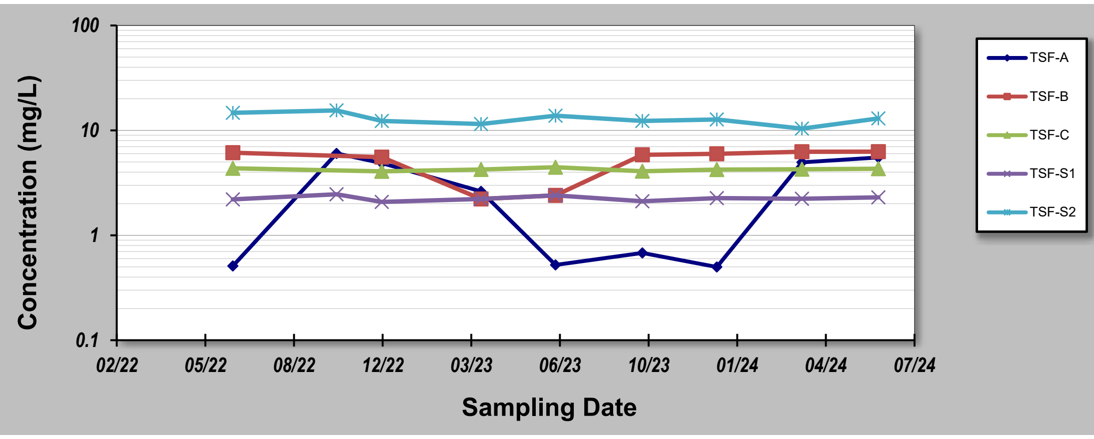
19								
20								
	Coefficient of Variation:	0.83	0.34	0.03	0.05	0.12		
	Mann-Kendall Statistic (S):	2	14	4	6	-11		
	Confidence Factor:	54.0%	94.6%	64.0%	69.4%	84.6%		
	Concentration Trend:	No Trend	Prob. Increasing	No Trend	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Tin
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED TIN CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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13								
14								
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16								
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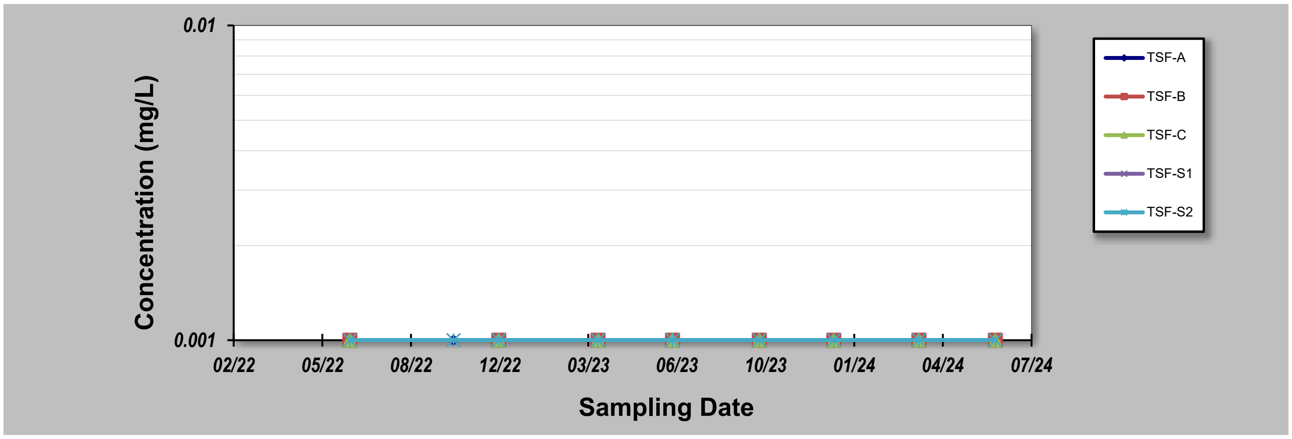
Coefficient of Variation:		0.00	0.00	0.00	0.00	0.00		
Mann-Kendall Statistic (S):		0	0	0	0	0		
Confidence Factor:		46.0%	45.2%	45.2%	46.0%	46.0%		
Concentration Trend:		Stable	Stable	Stable	Stable	Stable		



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.002	0.002	0.002	0.009		
2	14-Oct-22	0.001			0.005	0.007		
3	4-Dec-22							
4	26-Mar-23	0.001	0.002	0.001	0.002	0.005		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.005		
6	24-Sep-23	0.001	0.001	0.001	0.002	0.005		
7	17-Dec-23	0.001	0.001	0.002	0.001	0.002		
8	22-Mar-24	0.001	0.001	0.001	0.002	0.007		
9	16-Jun-24	0.001	0.001	0.002	0.002	0.006		
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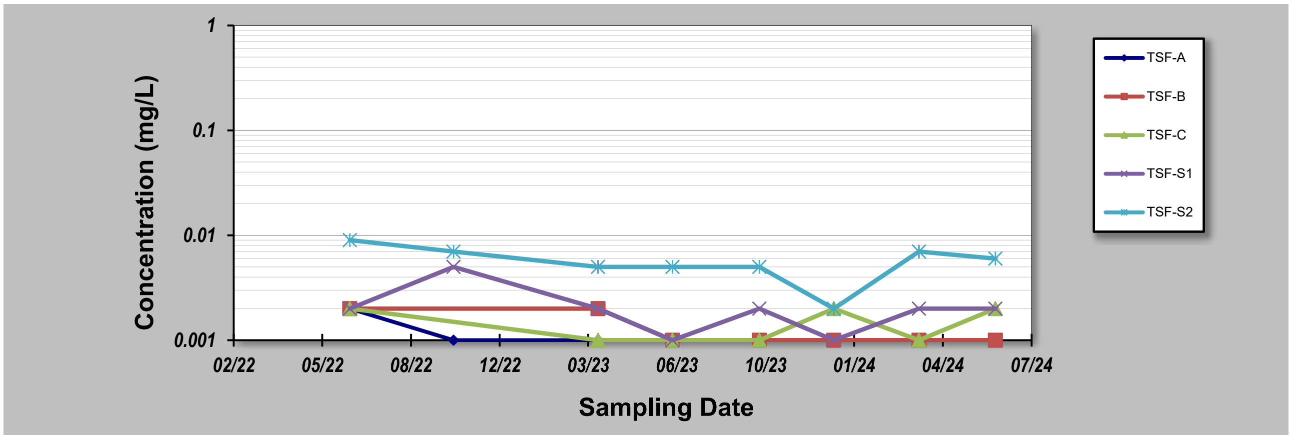
17								
18								
19								
20								
Coefficient of Variation:		0.31	0.38	0.37	0.59	0.36		
Mann-Kendall Statistic (S):		-7	-10	2	-5	-8		
Confidence Factor:		76.4%	90.7%	55.7%	68.3%	80.1%		
Concentration Trend:		Stable	Prob. Decreasing	No Trend	Stable	Stable		



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Vanadium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED VANADIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.01	0.01	0.01	0.01	0.01		
2	14-Oct-22	0.01			0.01	0.01		
3	4-Dec-22	0.01	0.01	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.01	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.01	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.01	0.01	0.01	0.01		
9	16-Jun-24	0.01	0.01	0.01	0.01	0.01		
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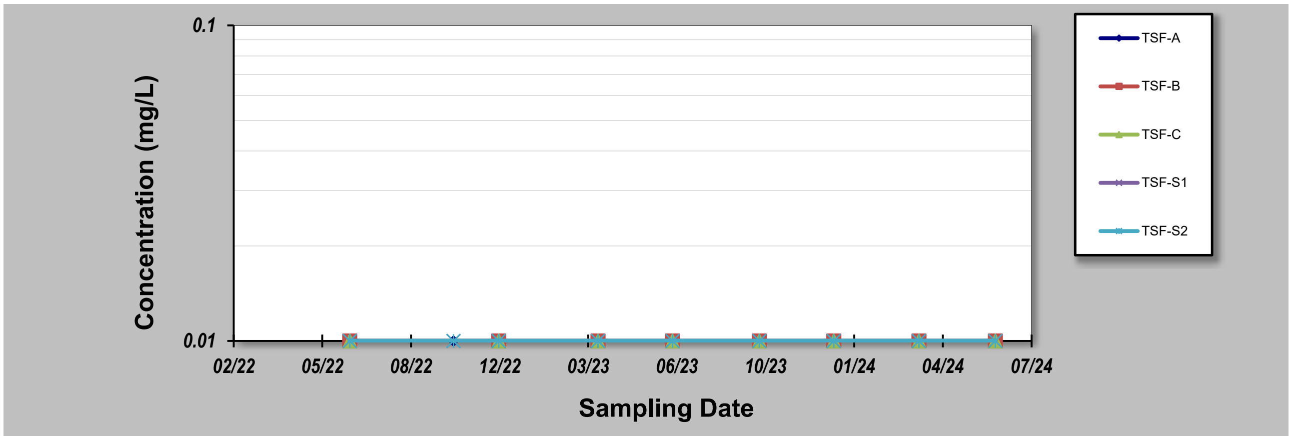
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.00		
	Mann-Kendall Statistic (S):	0	0	0	0	0		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	46.0%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Zinc
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	DISSOLVED ZINC CONCENTRATION (mg/L)						
1	19-Jun-22	0.025	0.009	0.008	0.023	0.034		
2	14-Oct-22	0.014			0.02	0.031		
3	4-Dec-22	0.016	0.01	0.009	0.022	0.048		
4	26-Mar-23	0.021	0.028	0.019	0.028	0.048		
5	18-Jun-23	0.021	0.023	0.009	0.023	0.034		
6	24-Sep-23	0.025	0.012	0.008	0.024	0.033		
7	17-Dec-23	0.018	0.007	0.011	0.030	0.040		
8	22-Mar-24	0.013	0.009	0.007	0.027	0.058		
9	16-Jun-24	0.02	0.010	0.007	0.026	0.036		
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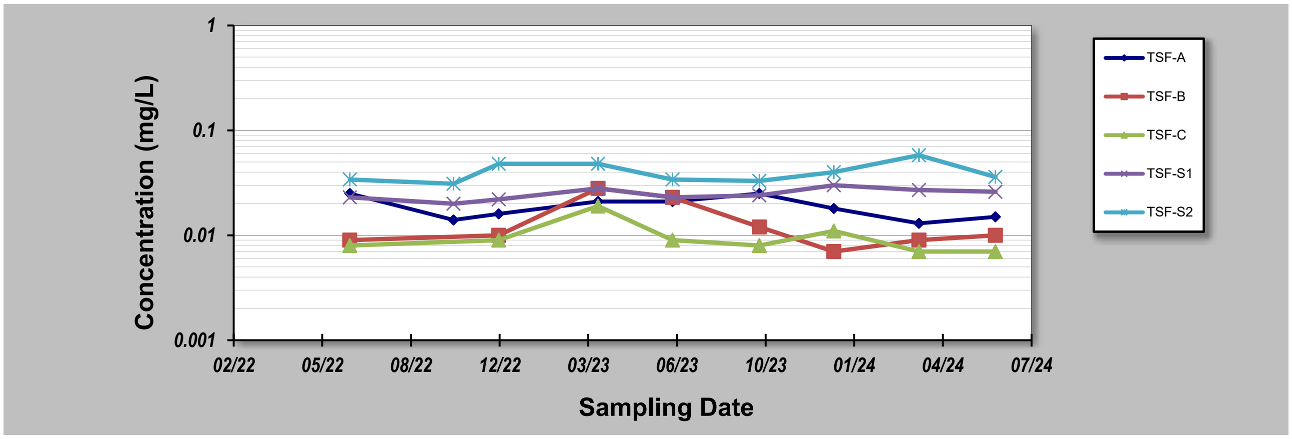
19								
20								
	Coefficient of Variation:	0.24	0.57	0.41	0.13	0.23		
	Mann-Kendall Statistic (S):	-8	-4	-9	17	8		
	Confidence Factor:	76.2%	64.0%	83.2%	95.1%	76.2%		
	Concentration Trend:	Stable	Stable	Stable	Increasing	No Trend		



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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Electrical Conductivity
Concentration Units: S/cm

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**ELECTRICAL CONDUCTIVITY CONCENTRATION (S/cm)**						
1	19-Jun-22	1220	7940	6630	3840	22800		
2	14-Oct-22	11100			3960	24600		
3	4-Dec-22	12400	8820	6410	3720	24600		
4	26-Mar-23	10600	4250	7040	4250	22900		
5	18-Jun-23	1230	3960	7060	3960	21400		
6	24-Sep-23	1540	8260	6640	3990	22700		
7	17-Dec-23	1370	10600	8230	4180	27000		
8	22-Mar-24	11600	9030	7140	4030	22000		
9	16-Jun-24	12300	9230	7160	4050	24300		
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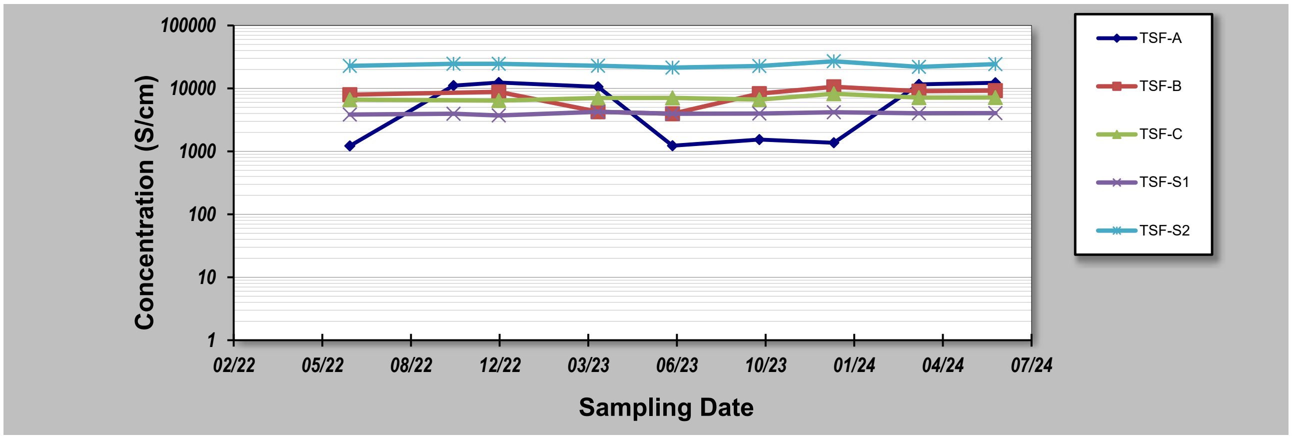
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.77	0.31	0.08	0.04	0.07		
	Mann-Kendall Statistic (S):	8	12	18	17	-3		
	Confidence Factor:	76.2%	91.1%	98.4%	95.1%	58.0%		
	Concentration Trend:	No Trend	Prob. Increasing	Increasing	Increasing	Stable		



Notes:

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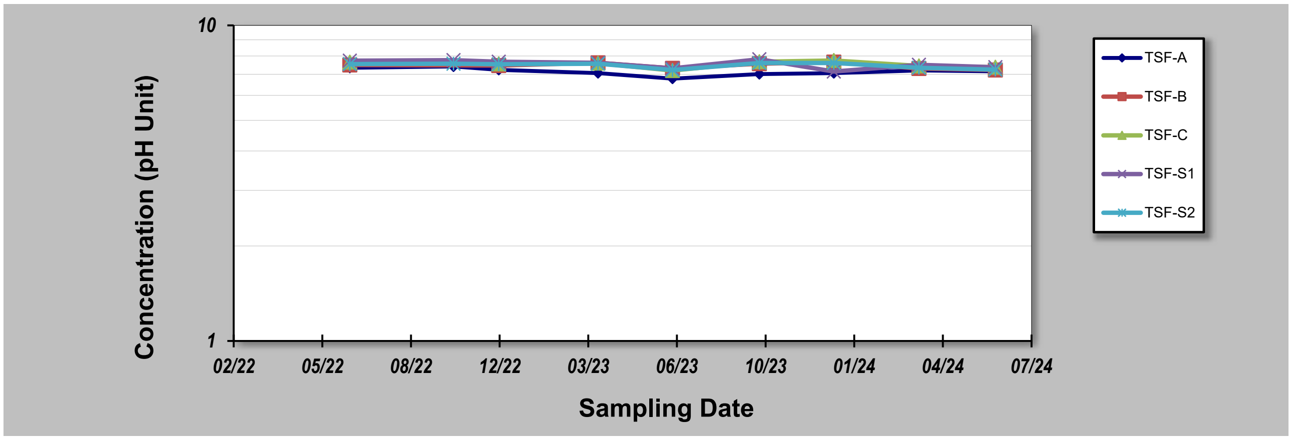
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: pH
Concentration Units: pH Unit

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	PH CONCENTRATION (pH Unit)						
1	19-Jun-22	7.34	7.49	7.65	7.73	7.54		
2	14-Oct-22	7.41			7.76	7.56		
3	4-Dec-22	7.23	7.46	7.55	7.67	7.53		
4	26-Mar-23	7.06	7.61	7.59	7.61	7.56		
5	18-Jun-23	6.78	7.31	7.19	7.31	7.22		
6	24-Sep-23	7.01	7.56	7.67	7.81	7.6		
7	17-Dec-23	7.06	7.65	7.74	7.14	7.6		
8	22-Mar-24	7.2	7.3	7.44	7.5	7.34		
9	16-Jun-24	7.15	7.22	7.37	7.37	7.24		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.03	0.02	0.02	0.03	0.02		
Mann-Kendall Statistic (S):		-11	-8	-4	-16	-4		
Confidence Factor:		84.6%	80.1%	64.0%	94.0%	61.9%		
Concentration Trend:		Stable	Stable	Stable	Prob. 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.*
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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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Sulfate as SO4 - Turbidimetric (Dissolved)
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**SULFATE AS SO4 - TURBIDIMETRIC (DISSOLVED) CONCENTRATION (mg/L)**						
1	19-Jun-22	185	937	751	349	2130		
2	14-Oct-22	1420			372	2330		
3	4-Dec-22	1530	980	792	363	2210		
4	26-Mar-23	1270	358	693	358	1920		
5	18-Jun-23	193	353	772	353	1890		
6	24-Sep-23	231	958	763	352	2070		
7	17-Dec-23	194	982	775	364	2180		
8	22-Mar-24	1340	988	765	366	1900		
9	16-Jun-24	1500	954	759	356	2090		
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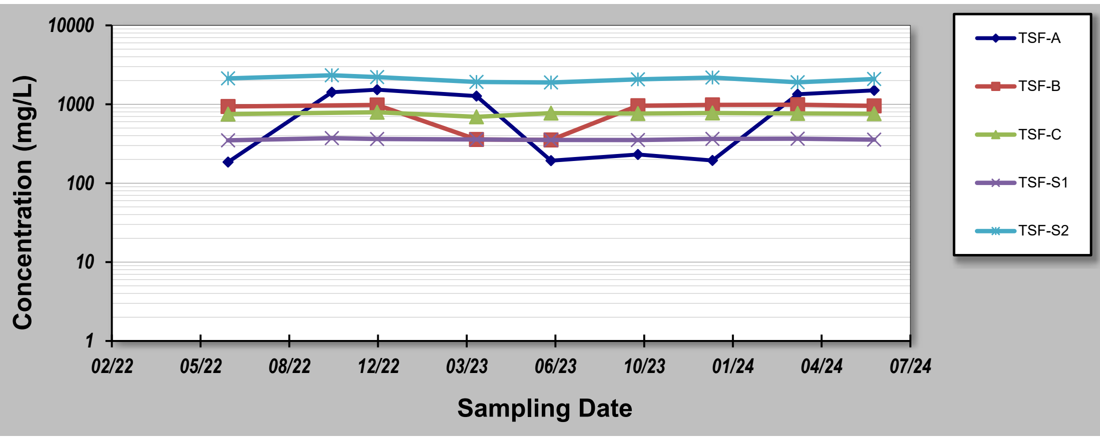
	Coefficient of Variation:	0.74	0.35	0.04	0.02	0.07		
	Mann-Kendall Statistic (S):	6	8	0	2	-10		
	Confidence Factor:	69.4%	80.1%	45.2%	54.0%	82.1%		
	Concentration Trend:	No Trend	No Trend	Stable	No Trend	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Dissolved Solids
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)						
1	19-Jun-22	700	5930	4270	2500	17500		
2	14-Oct-22	16000			2320	16100		
3	4-Dec-22	7770	5600	4340	2480	15500		
4	26-Mar-23	6730	2440	4470	2440	14900		
5	18-Jun-23	811	2280	5260	2280	16100		
6	24-Sep-23	1300	4270	4420	2070	15000		
7	17-Dec-23	775	6210	3740	2180	16000		
8	22-Mar-24	7480	6520	4820	2380	16300		
9	16-Jun-24	6560	5340	3850	2070	16800		
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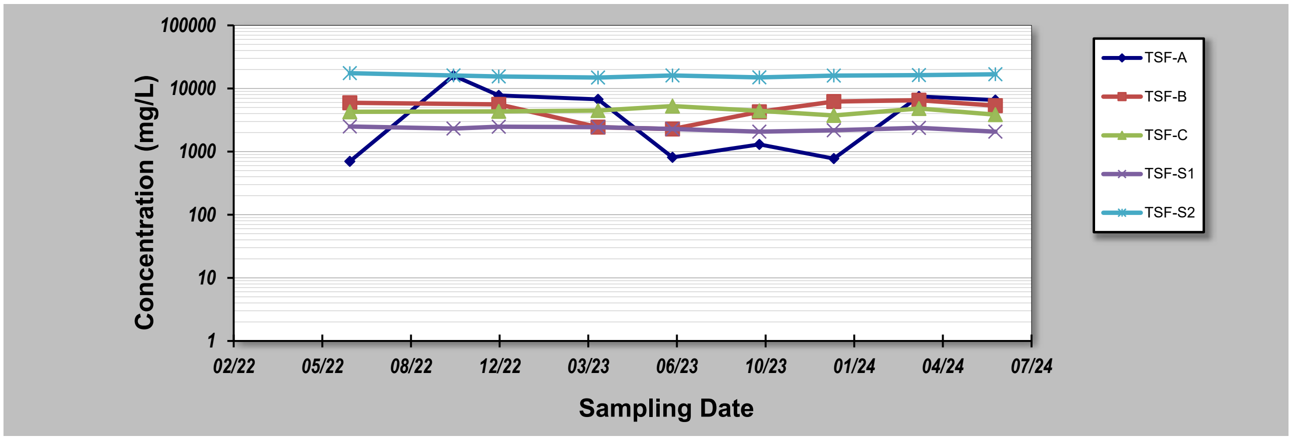
Coefficient of Variation:		0.95	0.34	0.11	0.07	0.05		
Mann-Kendall Statistic (S):		-4	4	0	-21	3		
Confidence Factor:		61.9%	64.0%	45.2%	98.3%	58.0%		
Concentration Trend:		Stable	No Trend	Stable	Decreasing	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Antimony
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL ANTIMONY CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.012		
2	14-Oct-22	0.001			0.001	0.009		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.025		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.043		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.037		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.013		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.014		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.060		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.016		
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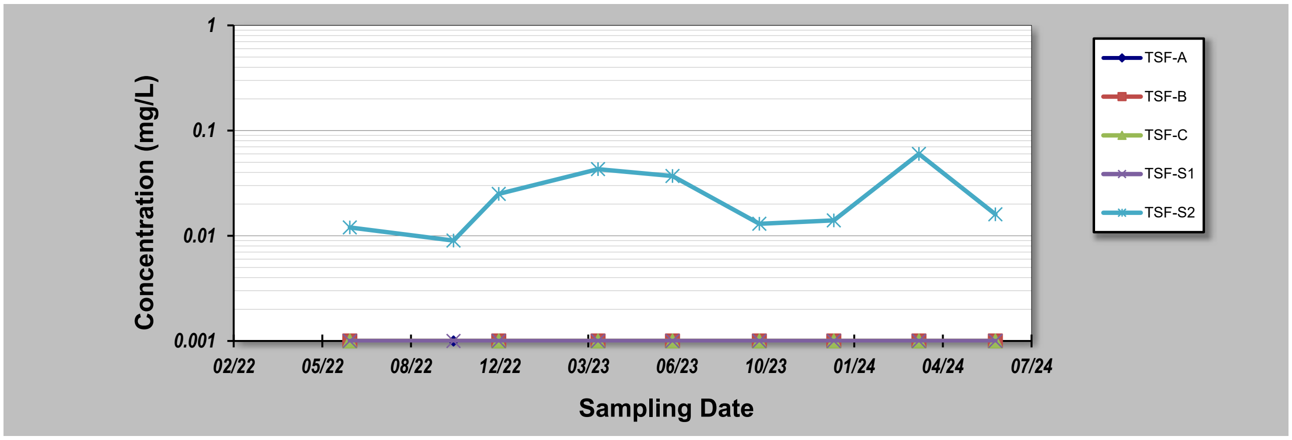
	Coefficient of Variation:	0.00	0.00	0.00	0.00	0.69		
	Mann-Kendall Statistic (S):	0	0	0	0	12		
	Confidence Factor:	46.0%	45.2%	45.2%	46.0%	87.0%		
	Concentration Trend:	Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Arsenic
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.001	0.002	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.002	0.001	0.002		
4	26-Mar-23	0.002	0.001	0.002	0.001	0.002		
5	18-Jun-23	0.002	0.001	0.002	0.001	0.002		
6	24-Sep-23	0.002	0.002	0.002	0.001	0.002		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.002	0.001	0.002		
9	16-Jun-24	0.002	0.001	0.002	0.001	0.002		
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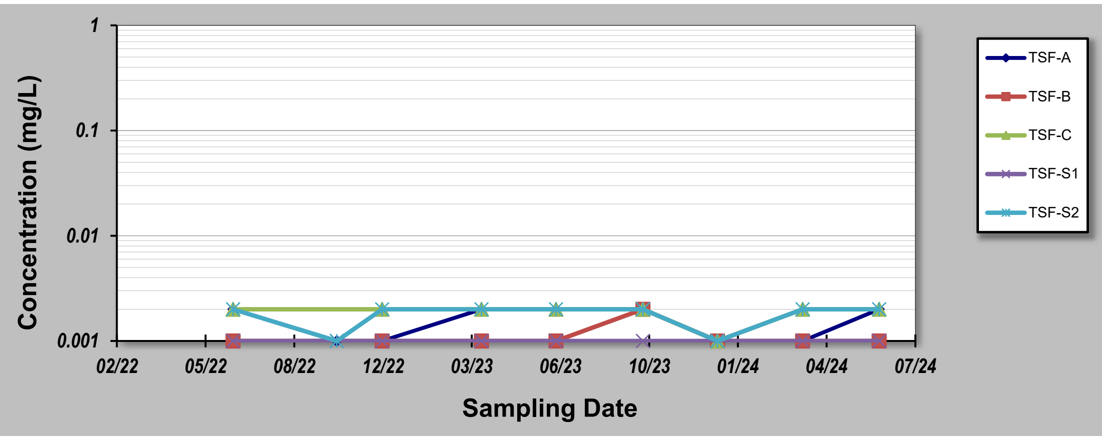
Coefficient of Variation:		0.34	0.31	0.19	0.00	0.25		
Mann-Kendall Statistic (S):		0	1	-3	0	2		
Confidence Factor:		46.0%	50.0%	59.4%	46.0%	54.0%		
Concentration Trend:		Stable	No Trend	Stable	Stable	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Boron
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL BORON CONCENTRATION (mg/L)						
1	19-Jun-22	0.24	1.22	1.7	1.16	2.05		
2	14-Oct-22	4.32			1.02	2.31		
3	4-Dec-22	4.05	1.24	1.66	1.17	2.4		
4	26-Mar-23	2.05	1.17	1.56	1.17	2.33		
5	18-Jun-23	0.27	1.18	1.56	1.18	2.23		
6	24-Sep-23	0.36	1.08	1.43	1.16	2.38		
7	17-Dec-23	0.26	1.27	1.66	1.12	2.6		
8	22-Mar-24	3.28	1.14	1.5	1.08	1.91		
9	16-Jun-24	4.03	1.2	1.55	1.14	2.3		
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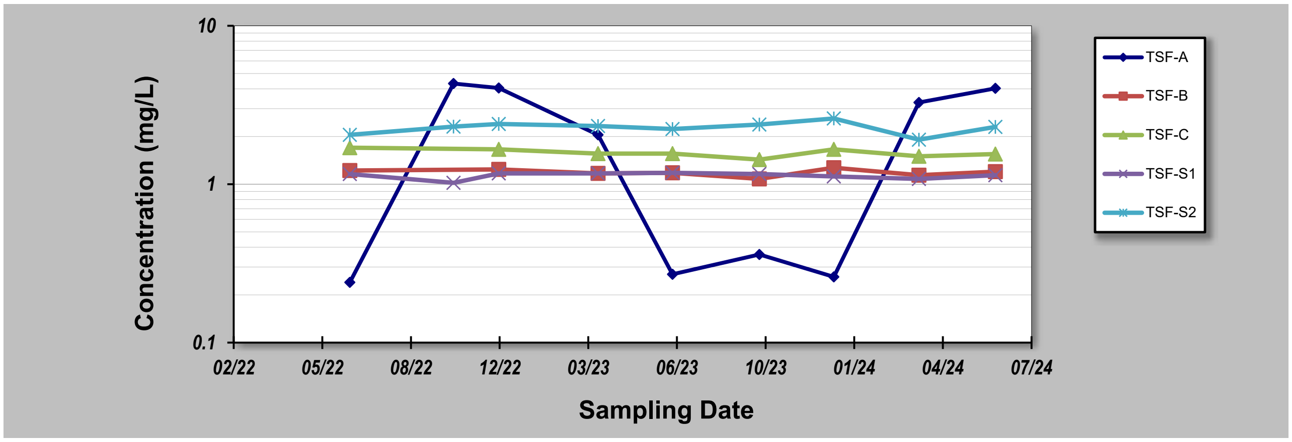
	Coefficient of Variation:	0.88	0.05	0.06	0.05	0.09		
	Mann-Kendall Statistic (S):	0	-4	-14	-6	2		
	Confidence Factor:	46.0%	64.0%	94.6%	69.4%	54.0%		
	Concentration Trend:	Stable	Stable	Prob. Decreasing	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cadmium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL CADMIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.0001	0.0001	0.0001	0.0004	0.0003		
2	14-Oct-22	0.0001			0.0003	0.0002		
3	4-Dec-22	0.0001	0.0001	0.0001	0.0002	0.0002		
4	26-Mar-23	0.0001	0.0002	0.0001	0.0002	0.0004		
5	18-Jun-23	0.0001	0.0002	0.0001	0.0002	0.0003		
6	24-Sep-23	0.0001	0.0001	0.0001	0.0002	0.0002		
7	17-Dec-23	0.0001	0.0001	0.0001	0.0001	0.0002		
8	22-Mar-24	0.0001	0.0001	0.0001	0.0003	0.0003		
9	16-Jun-24	0.0001	0.0001	0.0001	0.0003	0.0002		
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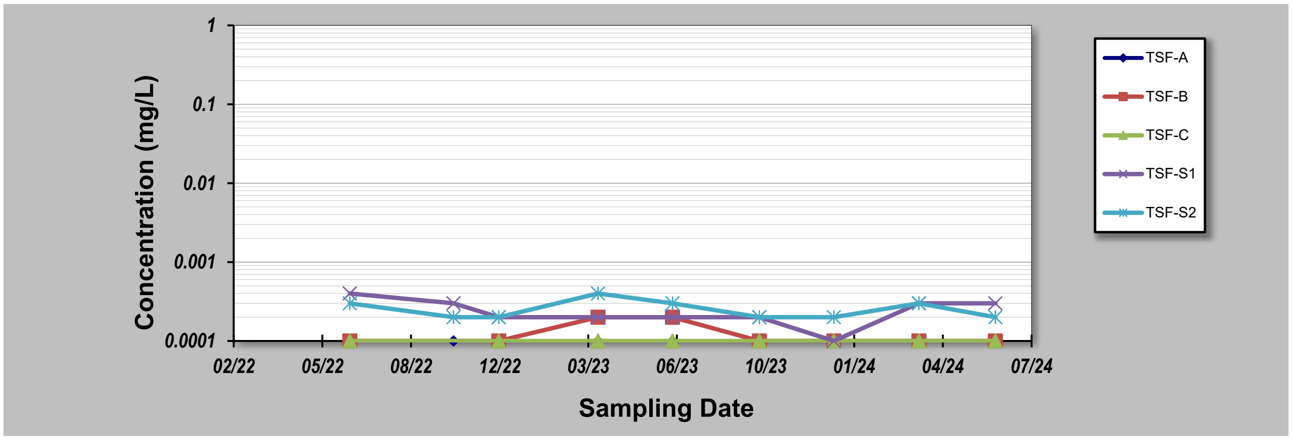
	Coefficient of Variation:	0.00	0.37	0.00	0.36	0.28		
	Mann-Kendall Statistic (S):	0	-4	0	-7	-5		
	Confidence Factor:	46.0%	64.0%	45.2%	72.8%	65.7%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Chromium
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL CHROMIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.004	0.003	0.004		
2	14-Oct-22	0.002			0.002	0.002		
3	4-Dec-22	0.002	0.002	0.004	0.002	0.003		
4	26-Mar-23	0.002	0.002	0.004	0.002	0.003		
5	18-Jun-23	0.001	0.002	0.004	0.002	0.003		
6	24-Sep-23	0.003	0.001	0.004	0.003	0.003		
7	17-Dec-23	0.001	0.001	0.004	0.003	0.002		
8	22-Mar-24	0.004	0.001	0.013	0.003	0.002		
9	16-Jun-24	0.005	0.001	0.004	0.002	0.003		
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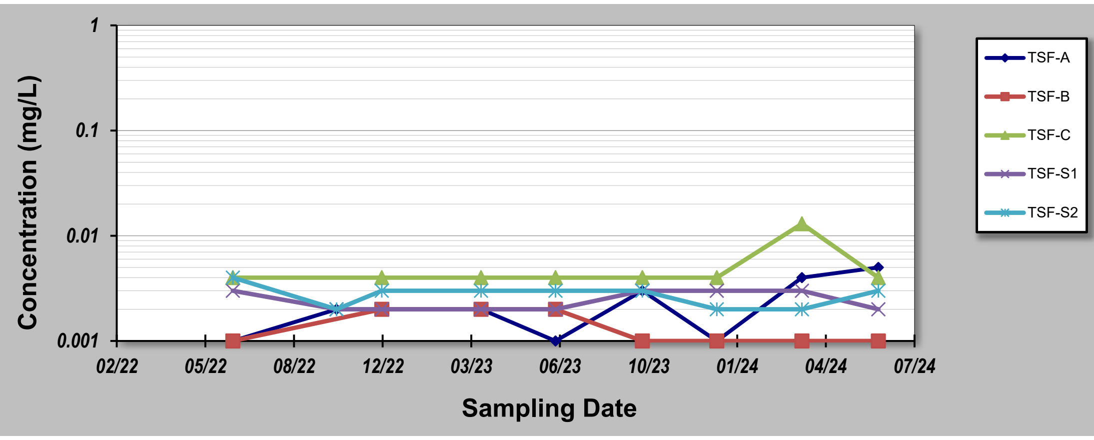
Coefficient of Variation:		0.61	0.38	0.62	0.22	0.24		
Mann-Kendall Statistic (S):		16	-9	5	4	-9		
Confidence Factor:		94.0%	83.2%	68.3%	61.9%	79.2%		
Concentration Trend:		Prob. Increasing	Stable	No Trend	No Trend	Stable		



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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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cobalt
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL COBALT CONCENTRATION (mg/L)**						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.001	0.001	0.001		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.012	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.001		
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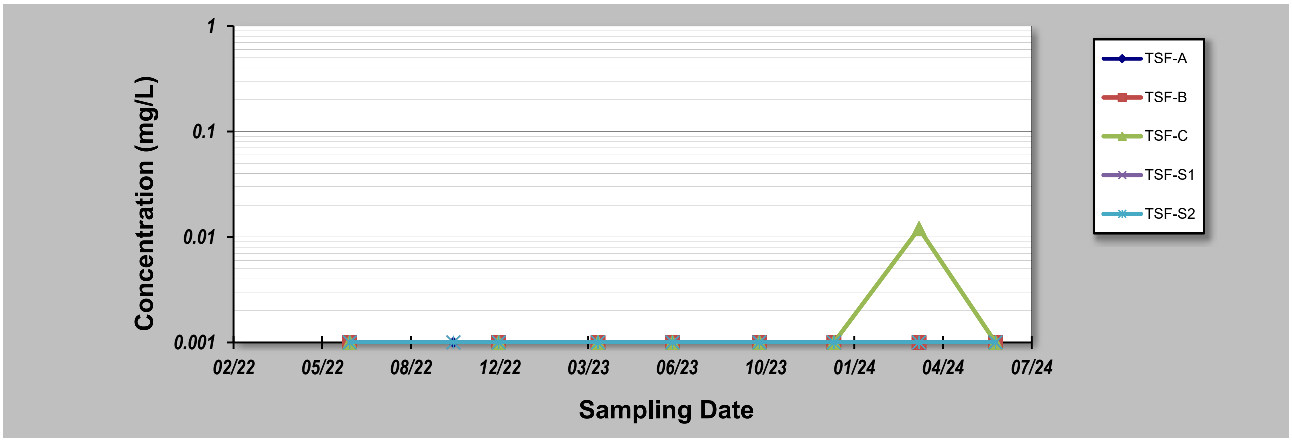
Coefficient of Variation:		0.00	0.00	1.64	0.00	0.00		
Mann-Kendall Statistic (S):		0	0	5	0	0		
Confidence Factor:		46.0%	45.2%	68.3%	46.0%	46.0%		
Concentration Trend:		Stable	Stable	No Trend	Stable	Stable		



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Copper
Concentration Units: mg/L

Sampling Event	**Sampling Date**	**TOTAL COPPER CONCENTRATION (mg/L)**						
	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
1	19-Jun-22	0.028	0.003	0.002	0.003	0.034		
2	14-Oct-22	0.02			0.003	0.019		
3	4-Dec-22	0.016	0.004	0.002	0.003	0.047		
4	26-Mar-23	0.024	0.004	0.003	0.004	0.079		
5	18-Jun-23	0.032	0.004	0.003	0.006	0.216		
6	24-Sep-23	0.031	0.006	0.003	0.003	0.035		
7	17-Dec-23	0.04	0.002	0.003	0.004	0.025		
8	22-Mar-24	0.022	0.002	0.008	0.006	0.055		
9	16-Jun-24	0.017	0.004	0.002	0.004	0.017		
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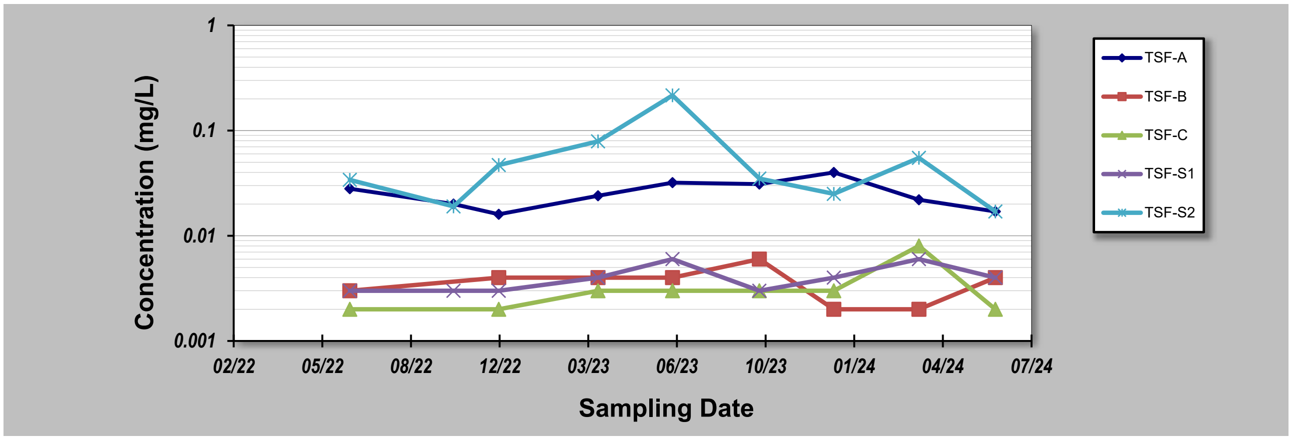
Coefficient of Variation:		0.31	0.36	0.61	0.31	1.06		
Mann-Kendall Statistic (S):		2	-1	9	16	-2		
Confidence Factor:		54.0%	50.0%	83.2%	94.0%	54.0%		
Concentration Trend:		No Trend	Stable	No Trend	Prob. Increasing	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Manganese
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL MANGANESE CONCENTRATION (mg/L)						
1	19-Jun-22	0.004	0.005	0.002	0.004	0.011		
2	14-Oct-22	0.003			0.001	0.016		
3	4-Dec-22	0.003	0.004	0.002	0.004	0.015		
4	26-Mar-23	0.004	0.007	0.002	0.007	0.019		
5	18-Jun-23	0.006	0.02	0.002	0.02	0.03		
6	24-Sep-23	0.005	0.009	0.002	0.004	0.015		
7	17-Dec-23	0.005	0.002	0.002	0.01	0.008		
8	22-Mar-24	0.006	0.002	0.472	0.008	0.011		
9	16-Jun-24	0.004	0.004	0.001	0.008	0.022		
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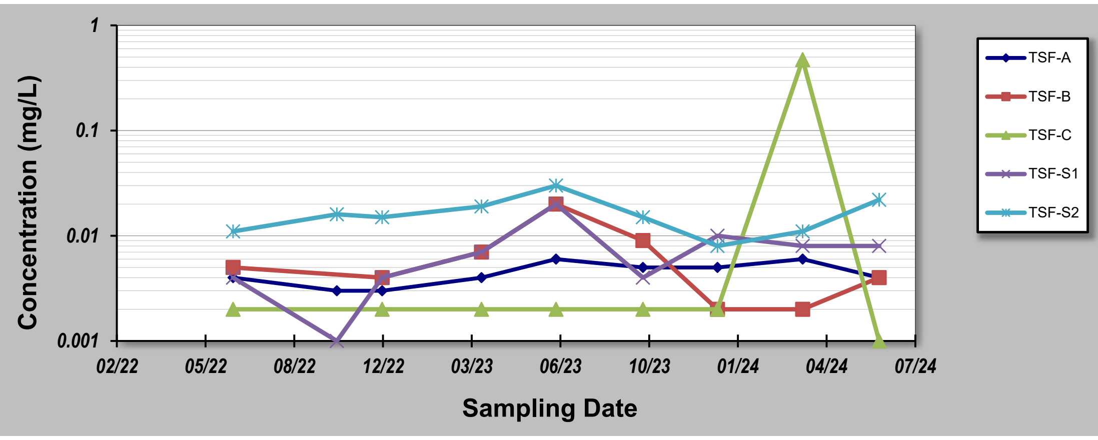
Coefficient of Variation:		0.25	0.89	2.74	0.75	0.41		
Mann-Kendall Statistic (S):		14	-6	-1	16	2		
Confidence Factor:		91.0%	72.6%	50.0%	94.0%	54.0%		
Concentration Trend:		Prob. Increasing	Stable	No Trend	Prob. Increasing	No Trend		



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL MOLYBDENUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.008	0.006	0.004	0.003	0.003		
2	14-Oct-22	0.007			0.007	0.006		
3	4-Dec-22	0.007	0.008	0.004	0.003	0.003		
4	26-Mar-23	0.01	0.004	0.003	0.004	0.009		
5	18-Jun-23	0.012	0.004	0.003	0.004	0.008		
6	24-Sep-23	0.012	0.009	0.004	0.004	0.005		
7	17-Dec-23	0.012	0.008	0.004	0.004	0.004		
8	22-Mar-24	0.007	0.008	0.004	0.005	0.012		
9	16-Jun-24	0.006	0.009	0.004	0.004	0.005		
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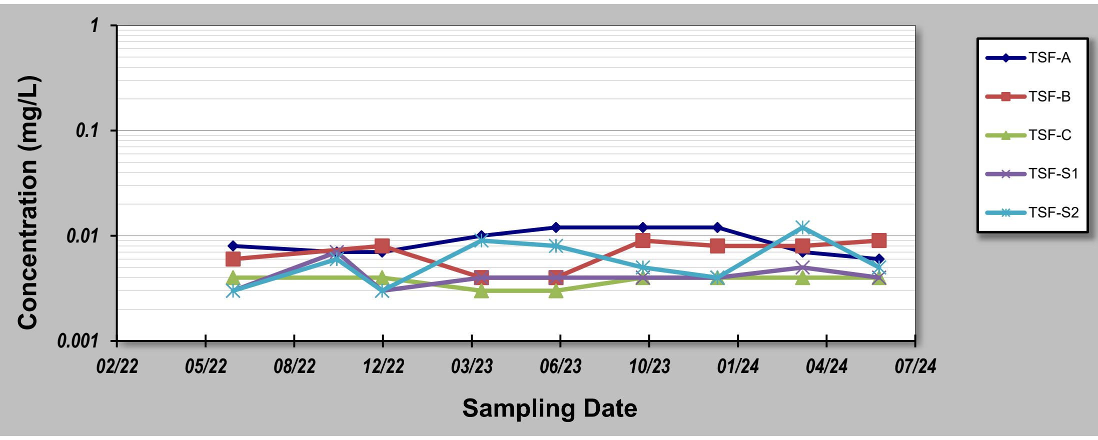
Coefficient of Variation:		0.28	0.30	0.12	0.28	0.49		
Mann-Kendall Statistic (S):		0	11	4	9	8		
Confidence Factor:		46.0%	88.7%	64.0%	79.2%	76.2%		
Concentration Trend:		Stable	No Trend	No Trend	No Trend	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Selenium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**TOTAL SELENIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.01	0.02	0.01	0.01	0.01		
2	14-Oct-22	0.02			0.01	0.01		
3	4-Dec-22	0.02	0.02	0.02	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.02	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.02	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.02	0.01	0.01	0.01		
9	16-Jun-24	0.02	0.02	0.01	0.01	0.01		
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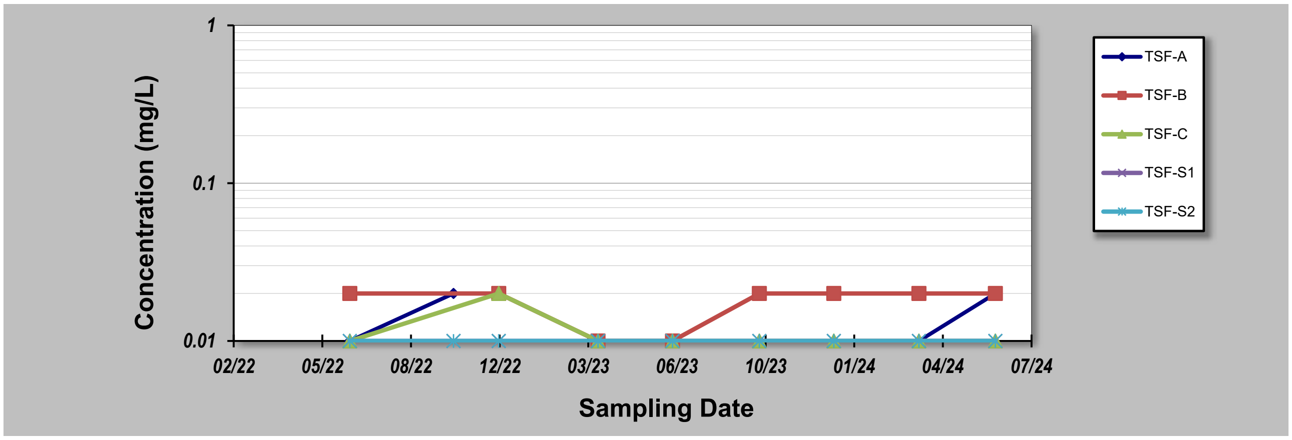
	Coefficient of Variation:	0.38	0.26	0.31	0.00	0.00		
	Mann-Kendall Statistic (S):	-2	4	-5	0	0		
	Confidence Factor:	54.0%	64.0%	68.3%	46.0%	46.0%		
	Concentration Trend:	Stable	No Trend	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Silver
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL SILVER CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.002		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.008		
4	26-Mar-23	0.001	0.002	0.001	0.002	0.011		
5	18-Jun-23	0.001	0.002	0.001	0.002	0.006		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.006		
7	17-Dec-23	0.001	0.001	0.001	0.002	0.002		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.003		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.007		
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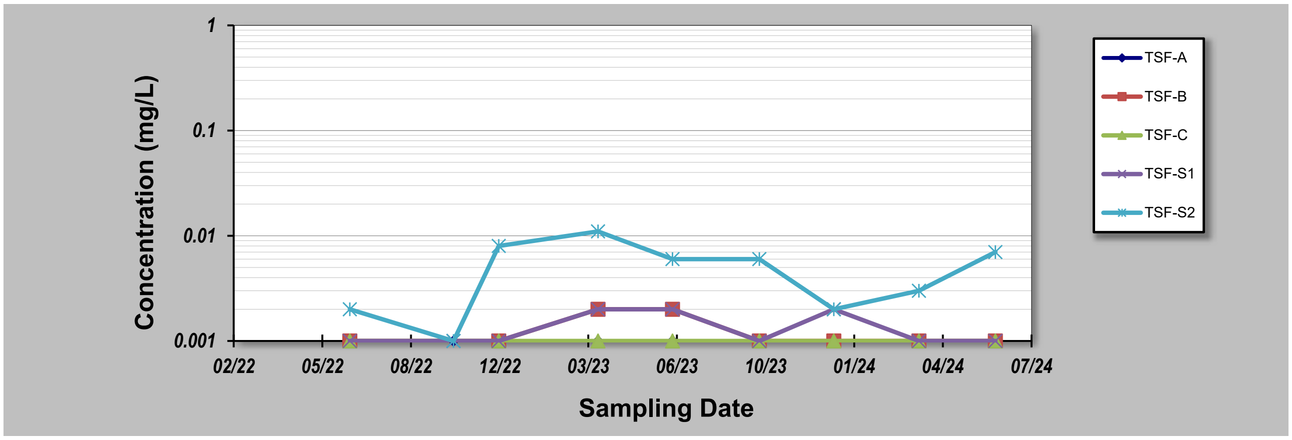
	Coefficient of Variation:	0.00	0.37	0.00	0.38	0.65		
	Mann-Kendall Statistic (S):	0	-4	0	2	4		
	Confidence Factor:	46.0%	64.0%	45.2%	54.0%	61.9%		
	Concentration Trend:	Stable	Stable	Stable	No Trend	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Strontium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	**Sampling Date**	**TOTAL STRONTIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.489	5.63	4.19	2.08	13.7		
2	14-Oct-22	5.77			2.32	14.9		
3	4-Dec-22	5.58	6.23	4.64	2.32	14.7		
4	26-Mar-23	2.87	2.35	4.47	2.35	12.4		
5	18-Jun-23	0.52	2.29	4.16	2.29	11.5		
6	24-Sep-23	0.703	6.16	4.24	2.3	13.2		
7	17-Dec-23	0.502	5.61	3.68	1.97	11.6		
8	22-Mar-24	4.9	6.48	4.41	2.26	10.3		
9	16-Jun-24	5.14	6.03	4.18	2.24	12.3		
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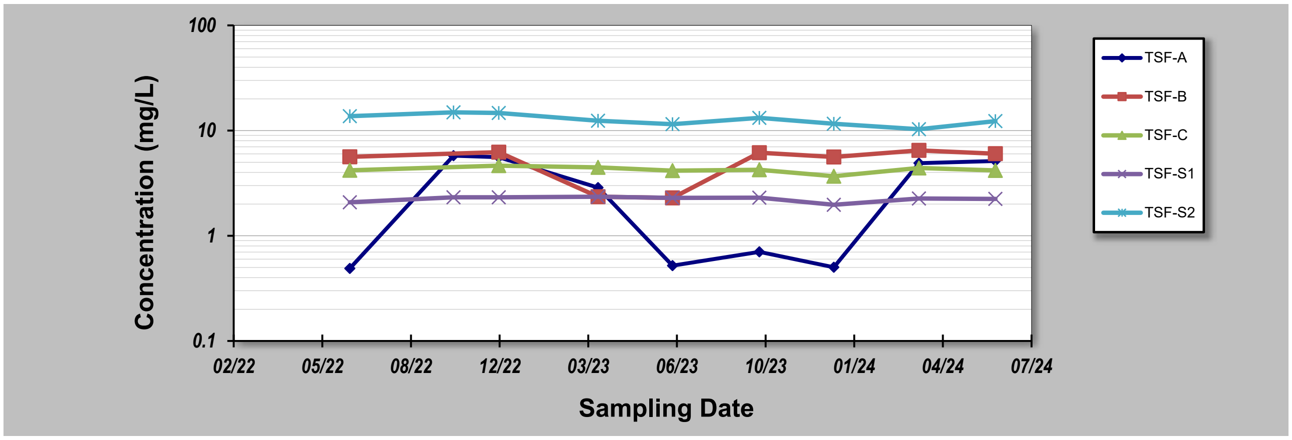
	Coefficient of Variation:	0.82	0.34	0.07	0.06	0.12		
	Mann-Kendall Statistic (S):	0	4	-8	-11	-20		
	Confidence Factor:	46.0%	64.0%	80.1%	84.6%	97.8%		
	Concentration Trend:	Stable	No Trend	Stable	Stable	Decreasing		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Tin
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL TIN CONCENTRATION (mg/L)						
1	19-Jun-22	0.001	0.001	0.001	0.001	0.001		
2	14-Oct-22	0.001			0.001	0.001		
3	4-Dec-22	0.001	0.001	0.001	0.001	0.001		
4	26-Mar-23	0.001	0.001	0.001	0.001	0.001		
5	18-Jun-23	0.001	0.001	0.002	0.001	0.002		
6	24-Sep-23	0.001	0.001	0.001	0.001	0.001		
7	17-Dec-23	0.001	0.001	0.001	0.001	0.001		
8	22-Mar-24	0.001	0.001	0.001	0.001	0.001		
9	16-Jun-24	0.001	0.001	0.001	0.001	0.002		
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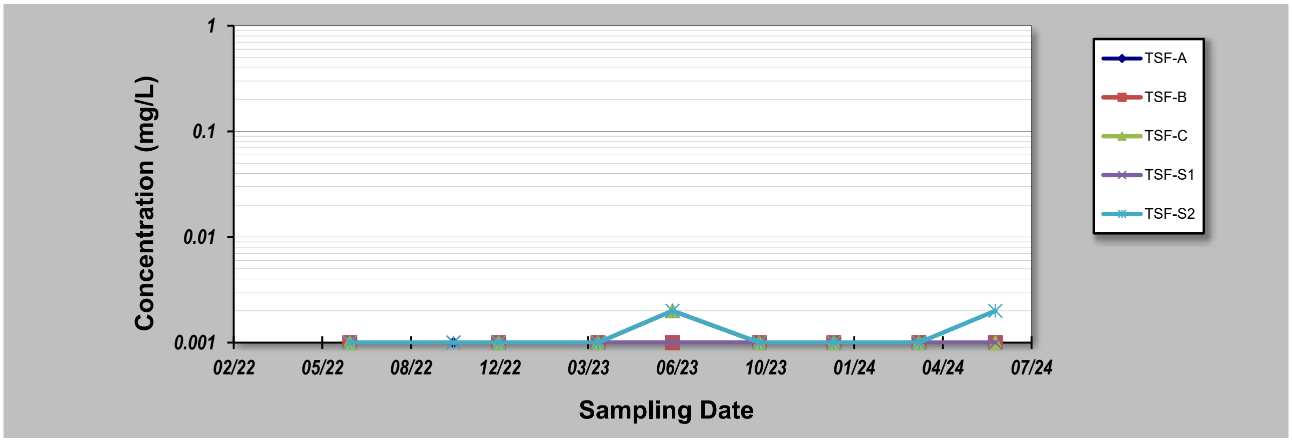
Coefficient of Variation:		0.00	0.00	0.31	0.00	0.36		
Mann-Kendall Statistic (S):		0	0	-1	0	8		
Confidence Factor:		46.0%	45.2%	50.0%	46.0%	76.2%		
Concentration Trend:		Stable	Stable	Stable	Stable	No Trend		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22	0.002	0.001	0.002	0.002	0.007		
2	14-Oct-22	0.001			0.003	0.007		
3	4-Dec-22							
4	26-Mar-23	0.001	0.002	0.002	0.002	0.007		
5	18-Jun-23	0.001	0.002	0.002	0.002	0.007		
6	24-Sep-23	0.001	0.001	0.002	0.002	0.006		
7	17-Dec-23	0.001	0.001	0.002	0.002	0.006		
8	22-Mar-24	0.001	0.001	0.002	0.002	0.008		
9	16-Jun-24	0.001	0.001	0.002	0.002	0.006		
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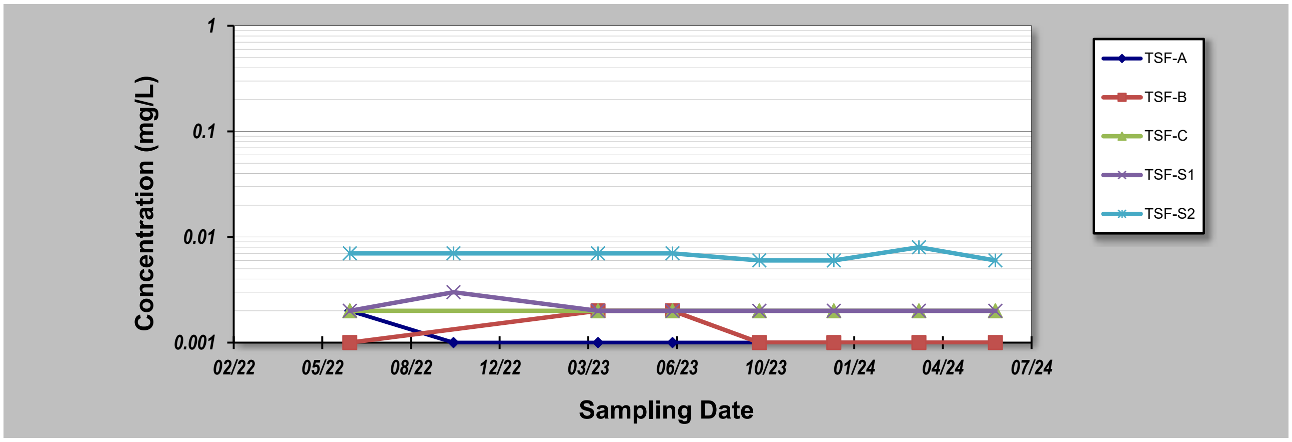
	Coefficient of Variation:	0.31	0.38	0.00	0.17	0.10		
	Mann-Kendall Statistic (S):	-7	-6	0	-5	-7		
	Confidence Factor:	76.4%	76.4%	37.9%	68.3%	76.4%		
	Concentration Trend:	Stable	Stable	Stable	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Vanadium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-A**	**TSF-B**	**TSF-C**	**TSF-S1**	**TSF-S2**		
Sampling Event	**Sampling Date**	**TOTAL VANADIUM CONCENTRATION (mg/L)**						
1	19-Jun-22	0.01	0.01	0.01	0.01	0.01		
2	14-Oct-22	0.01			0.01	0.01		
3	4-Dec-23	0.01	0.01	0.01	0.01	0.01		
4	26-Mar-23	0.01	0.01	0.01	0.01	0.01		
5	18-Jun-23	0.01	0.01	0.01	0.01	0.01		
6	24-Sep-23	0.01	0.01	0.01	0.01	0.01		
7	17-Dec-23	0.01	0.01	0.01	0.01	0.01		
8	22-Mar-24	0.01	0.01	0.03	0.01	0.01		
9	16-Jun-24	0.01	0.01	0.01	0.01	0.01		
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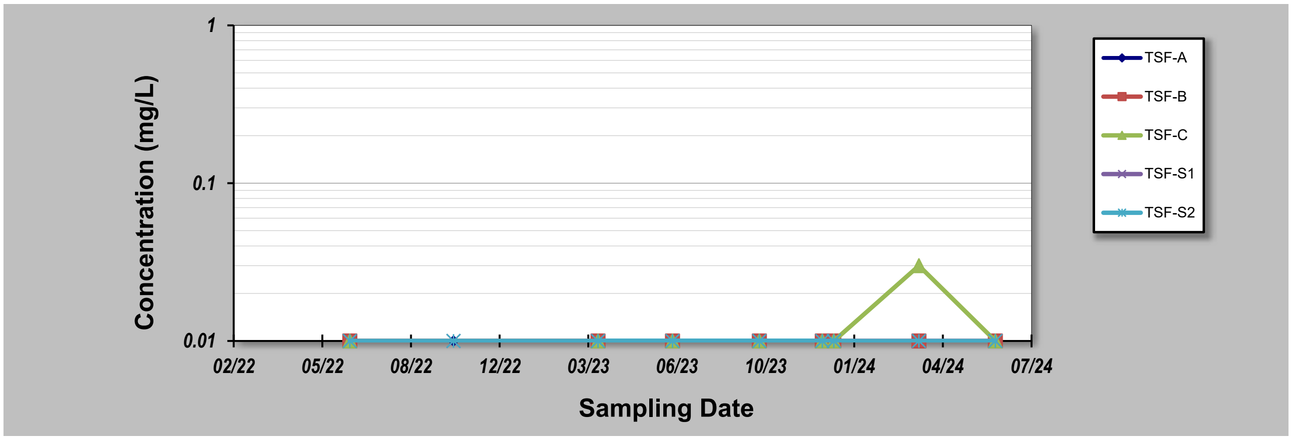
Coefficient of Variation:		0.00	0.00	0.57	0.00	0.00		
Mann-Kendall Statistic (S):		0	0	5	0	0		
Confidence Factor:		46.0%	45.2%	68.3%	46.0%	46.0%		
Concentration Trend:		Stable	Stable	No Trend	Stable	Stable		



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Zinc
Concentration Units: mg/L

Sampling Point ID:		TSF-A	TSF-B	TSF-C	TSF-S1	TSF-S2		
Sampling Event	Sampling Date	TOTAL ZINC CONCENTRATION (mg/L)						
1	19-Jun-22	0.029	0.006	0.007	0.031	0.038		
2	14-Oct-22	0.013			0.018	0.03		
3	4-Dec-22	0.012	0.007	0.008	0.021	0.044		
4	26-Mar-23	0.025	0.023	0.02	0.023	0.059		
5	18-Jun-23	0.02	0.026	0.01	0.026	0.057		
6	24-Sep-23	0.024	0.010	0.005	0.022	0.032		
7	17-Dec-23	0.018	0.005	0.008	0.025	0.037		
8	22-Mar-24	0.013	0.005	0.008	0.024	0.061		
9	16-Jun-24	0.01	0.008	0.006	0.032	0.035		
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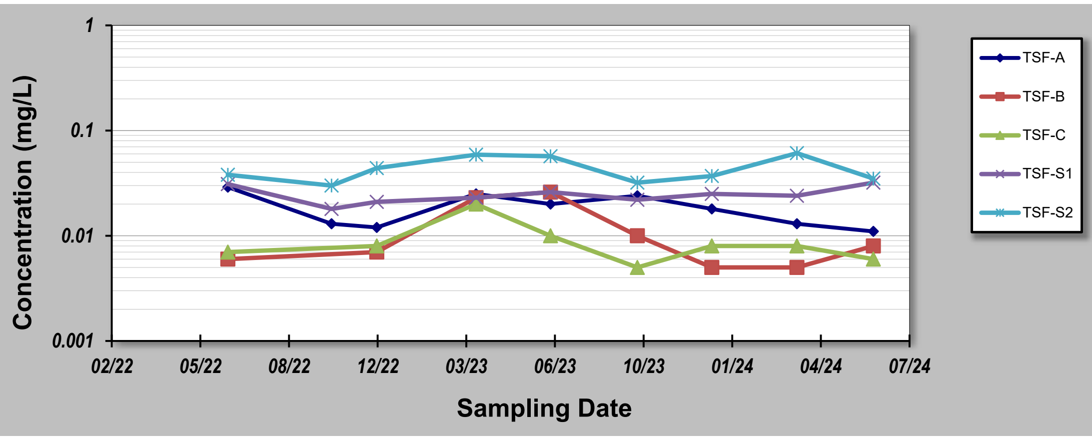
Coefficient of Variation:		0.36	0.74	0.52	0.18	0.28		
Mann-Kendall Statistic (S):		-15	-3	-5	12	4		
Confidence Factor:		92.5%	59.4%	68.3%	87.0%	61.9%		
Concentration Trend:		Prob. Decreasing	Stable	Stable	No Trend	No Trend		



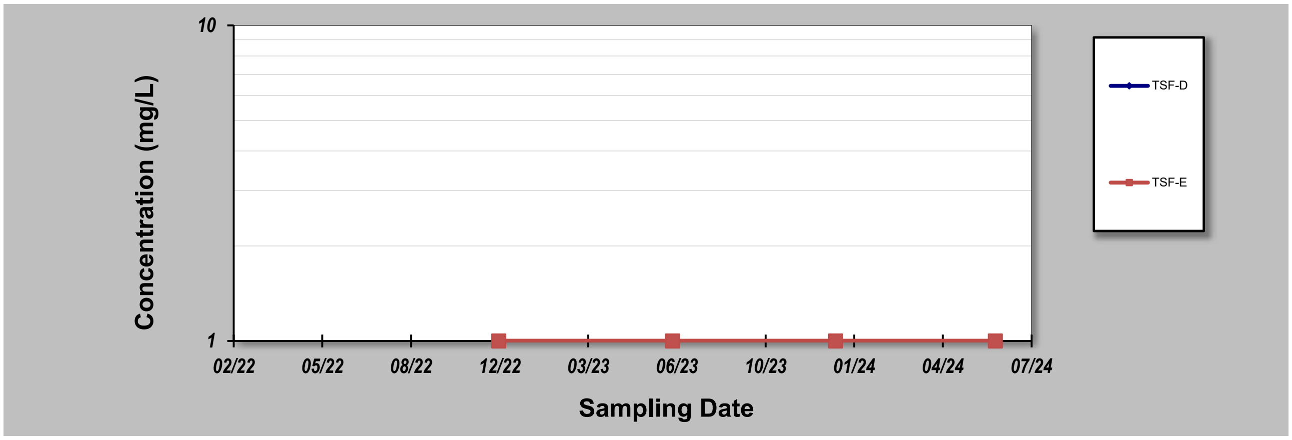
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Carbonate Alkalinity
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	CARBONATE ALKALINITY CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	1	1					
3	18-Jun-23	1	1					
4	19-Dec-23	1	1					
5	16-Jun-24	1	1					
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:		37.5%	37.5%					
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Chloride
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**CHLORIDE CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	2970	3550					
3	18-Jun-23	2820	3360					
4	19-Dec-23	2730	3320					
5	16-Jun-24	2350	3390					
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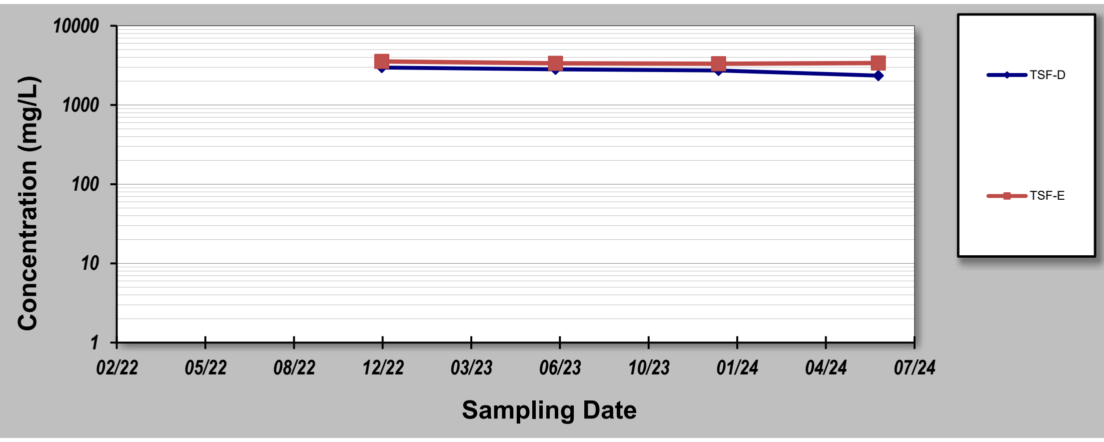
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.10	0.03					
Mann-Kendall Statistic (S):		-6	-2					
Confidence Factor:		95.8%	62.5%					
Concentration Trend:		Decreasing	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Depth to Water
Concentration Units: m

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DEPTH TO WATER CONCENTRATION (m)**						
1	19-Jun-22	90.53	95.62					
2	4-Dec-22	90.43	95.57					
3	18-Jun-23	90.45	95.64					
4	19-Dec-23	90.37	95.56					
5	16-Jun-24	90.36	95.65					
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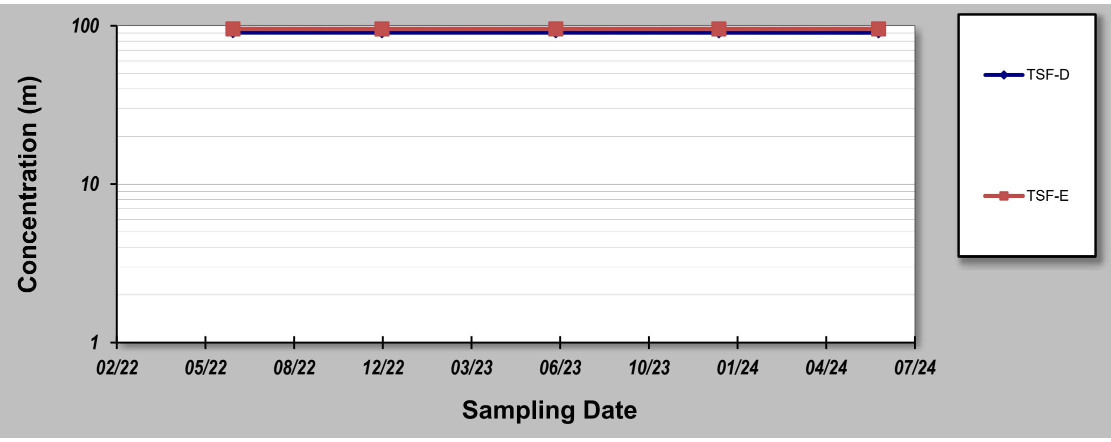
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	-8	2					
	Confidence Factor:	95.8%	59.2%					
	Concentration Trend:	Decreasing	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Antimony
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ANTIMONY CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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12								
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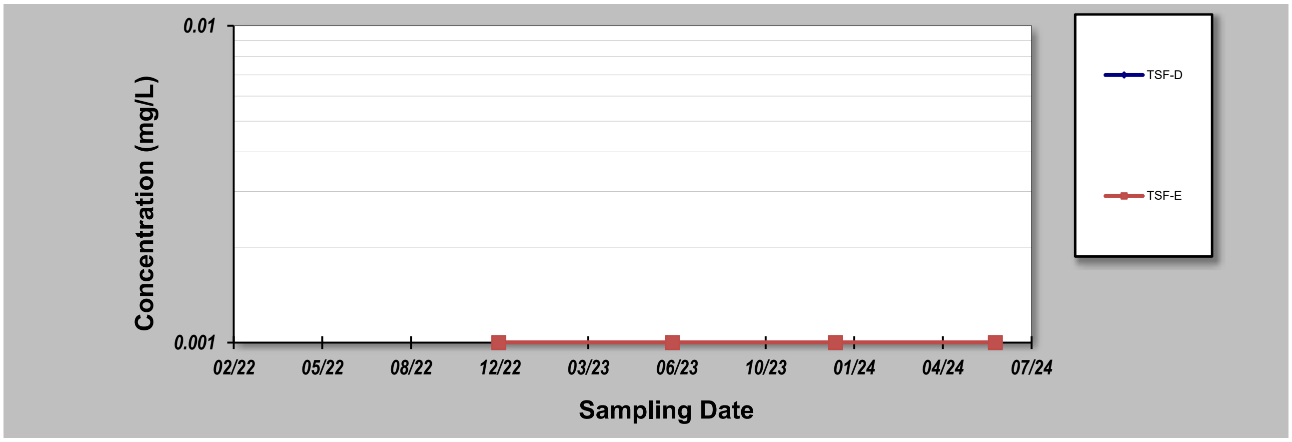
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



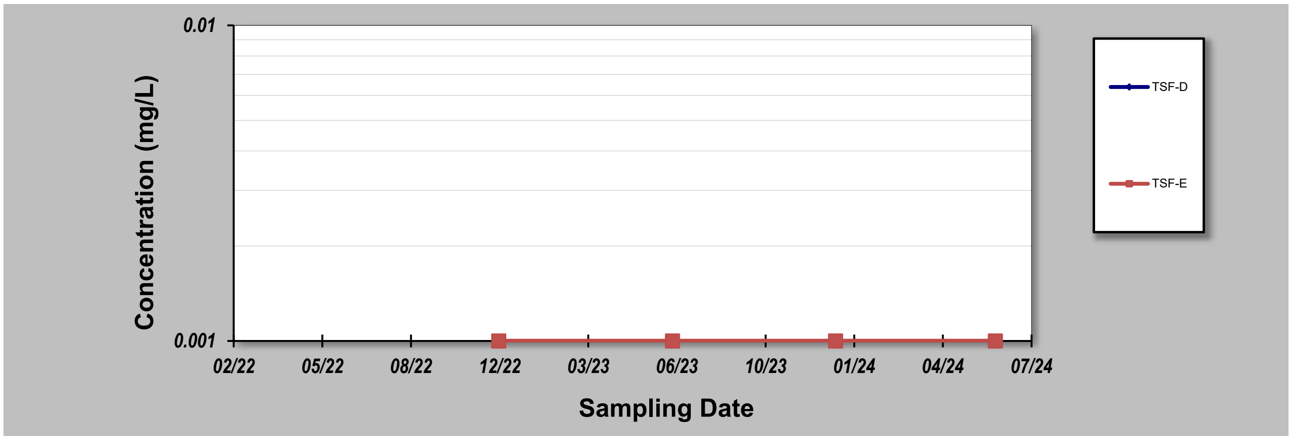
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Arsenic
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Boron
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED BORON CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.66	4.4					
3	18-Jun-23	3.36	3.54					
4	19-Dec-23	3.16	3.63					
5	16-Jun-24	3.06	4.45					
6								
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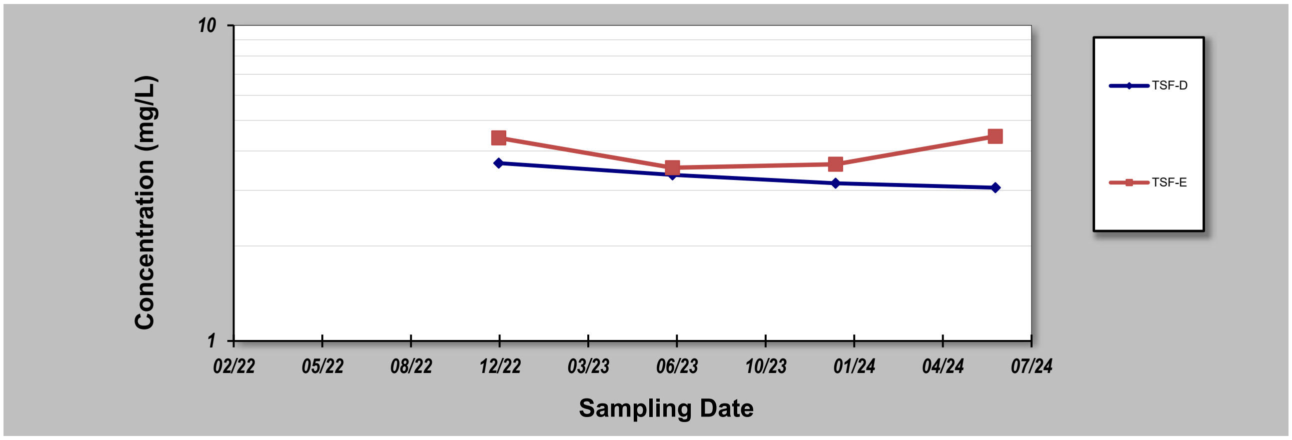
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.08	0.12					
	Mann-Kendall Statistic (S):	-6	2					
	Confidence Factor:	95.8%	62.5%					
	Concentration Trend:	Decreasing	No Trend					



Notes:

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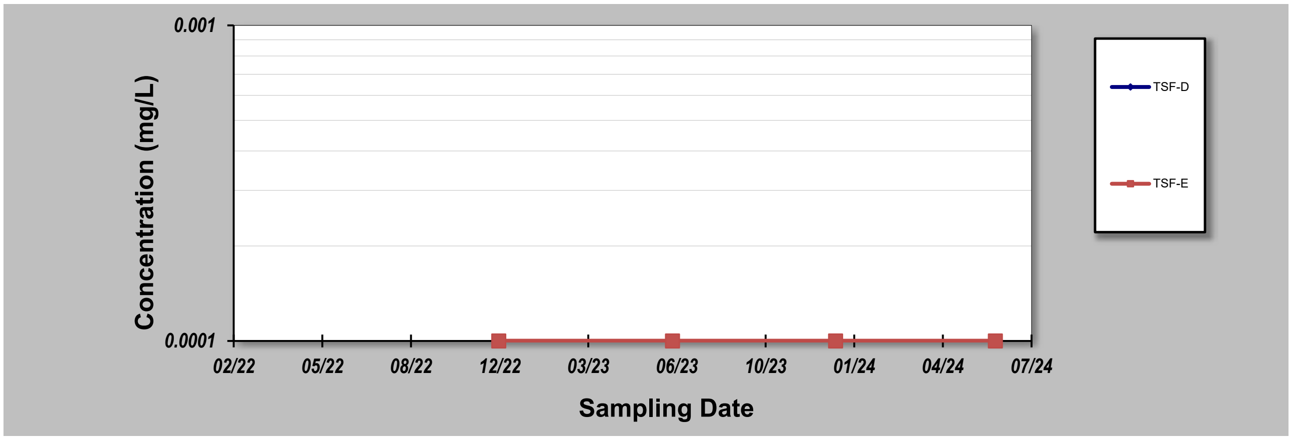
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology 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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cadmium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.0001	0.0001					
3	18-Jun-23	0.0001	0.0001					
4	19-Dec-23	0.0001	0.0001					
5	16-Jun-24	0.0001	0.0001					
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:	37.5%	37.5%					
	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Calcium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED CALCIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	281	298					
3	18-Jun-23	265	309					
4	19-Dec-23	245	290					
5	16-Jun-24	235	288					
6								
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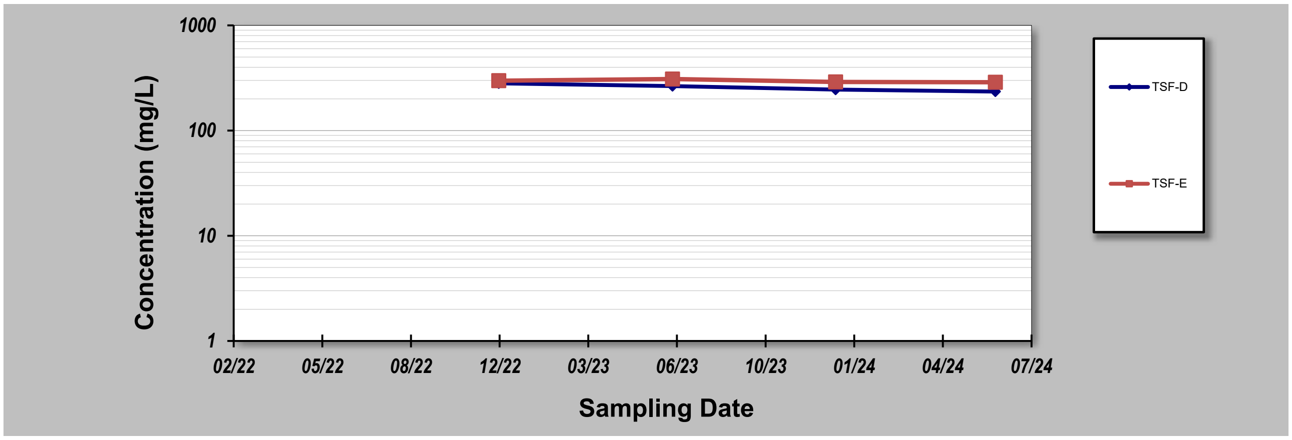
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.08	0.03					
Mann-Kendall Statistic (S):		-6	-4					
Confidence Factor:		95.8%	83.3%					
Concentration Trend:		Decreasing	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Chromium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED CHROMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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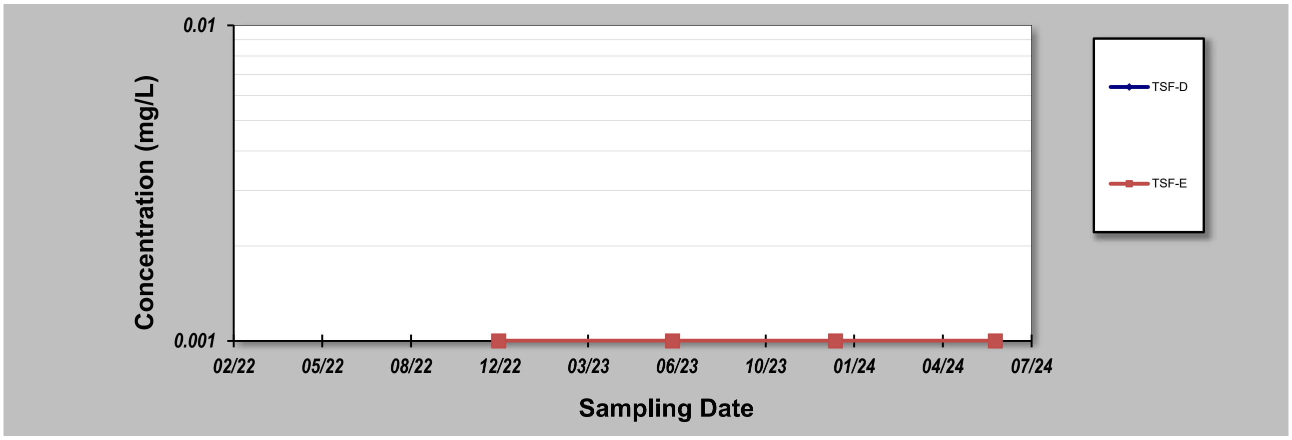
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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.
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Cobalt
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED COBALT CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
7								
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9								
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13								
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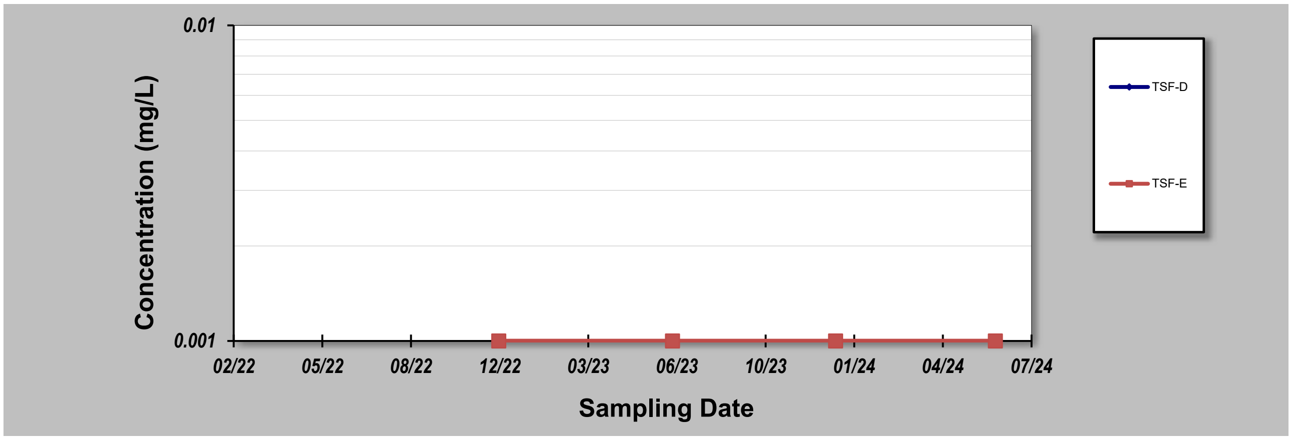
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Copper
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.002					
5	16-Jun-24	0.001	0.002					
6								
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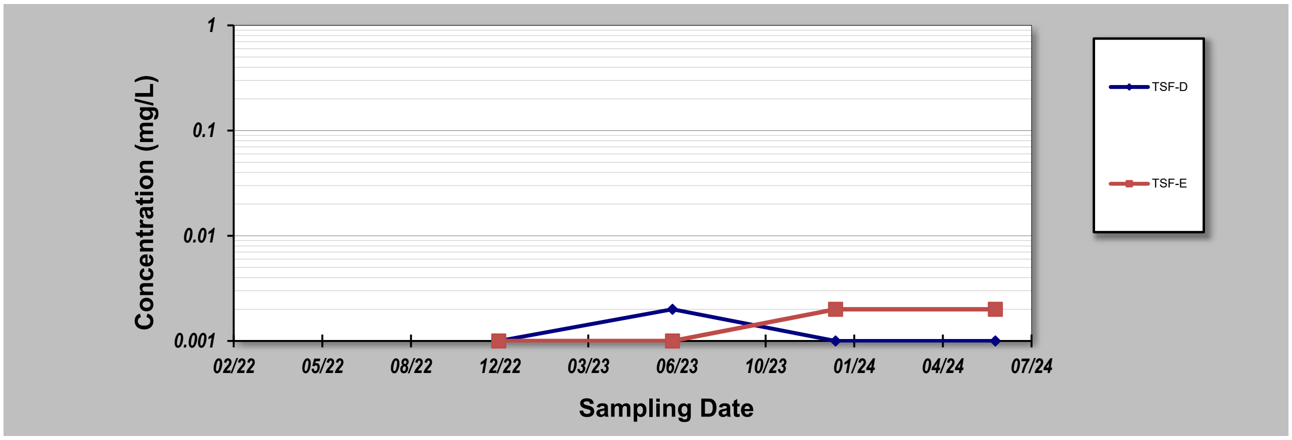
19								
20								
Coefficient of Variation:		0.40	0.38					
Mann-Kendall Statistic (S):		-1	4					
Confidence Factor:		50.0%	83.3%					
Concentration Trend:		Stable	No Trend					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Magnesium
Concentration Units: mg/L

Sampling Event	Sampling Date	TSF-D	TSF-E					
		DISSOLVED MAGNESIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	161	240					
3	18-Jun-23	166	217					
4	19-Dec-23	158	212					
5	16-Jun-24	146	219					
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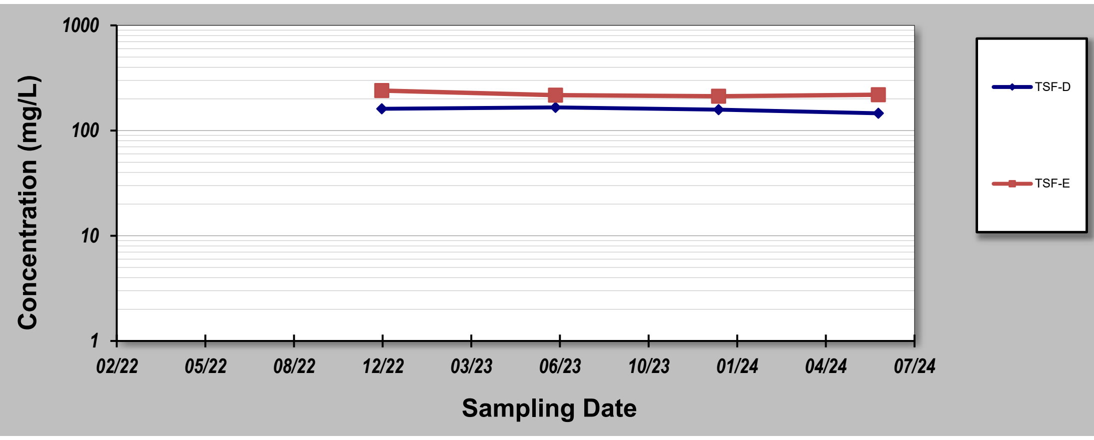
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.05	0.06					
Mann-Kendall Statistic (S):		-4	-2					
Confidence Factor:		83.3%	62.5%					
Concentration Trend:		Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Manganese
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED MANGANESE CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.433	0.352					
3	18-Jun-23	0.457	0.33					
4	19-Dec-23	0.418	0.262					
5	16-Jun-24	0.295	0.325					
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14								
15								
16								
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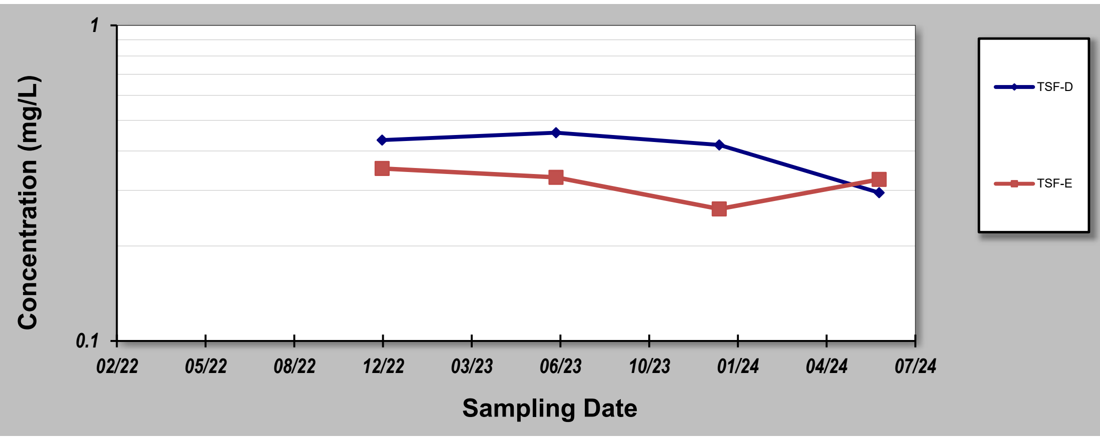
18								
19								
20								
	Coefficient of Variation:	0.18	0.12					
	Mann-Kendall Statistic (S):	-4	-4					
	Confidence Factor:	83.3%	83.3%					
	Concentration Trend:	Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Molybdenum
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED MOLYBDENUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.002	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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11								
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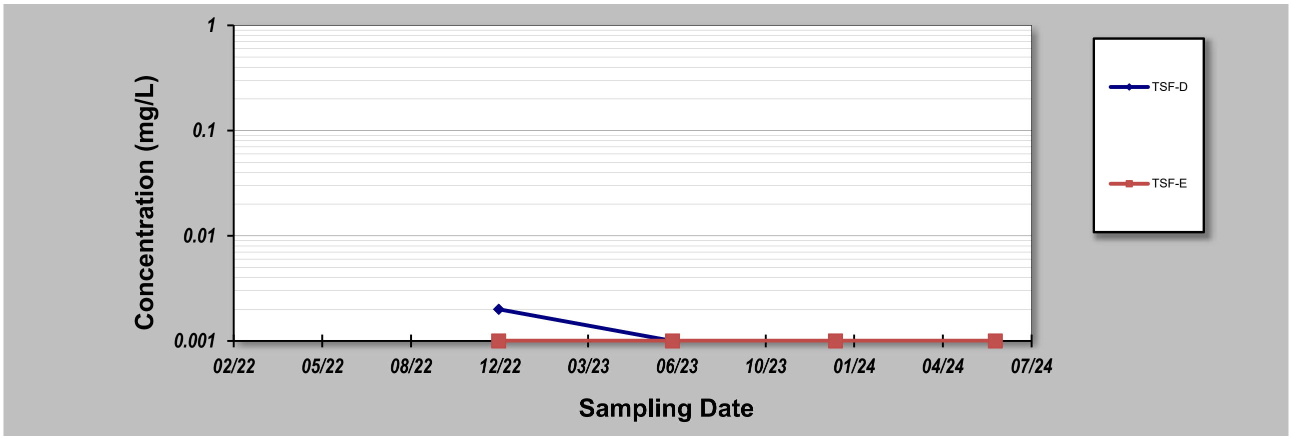
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.40	0.00					
Mann-Kendall Statistic (S):		-3	0					
Confidence Factor:		72.9%	37.5%					
Concentration Trend:		Stable	Stable					



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.
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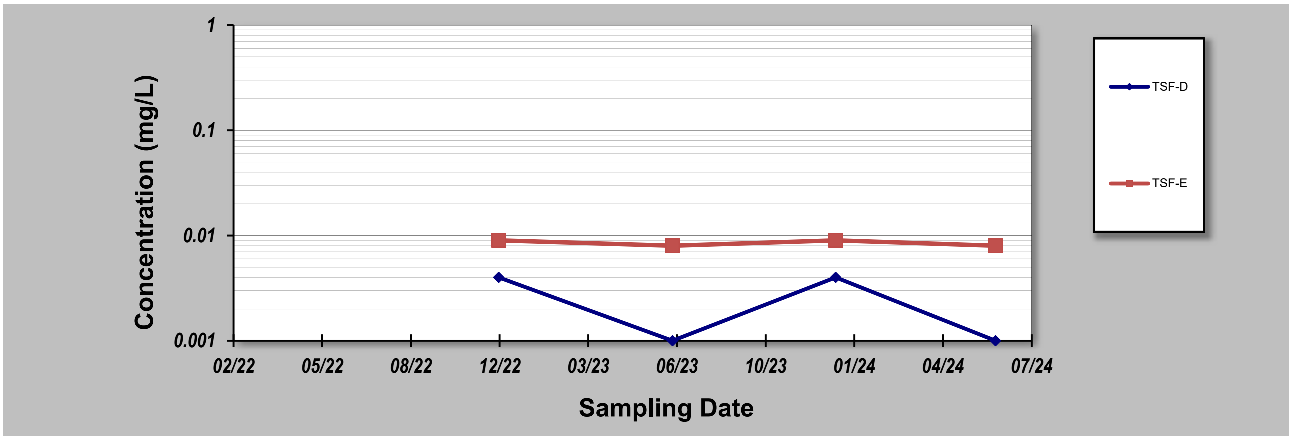
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Nickel
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED NICKEL CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.004	0.009					
3	18-Jun-23	0.001	0.008					
4	19-Dec-23	0.004	0.009					
5	16-Jun-24	0.001	0.008					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.69	0.07					
	Mann-Kendall Statistic (S):	-2	-2					
	Confidence Factor:	62.5%	62.5%					
	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Dissolved Potassium
Concentration Units: mg/L

	Sampling Point ID:	**TSF-D**	**TSF-E**					
Sampling Event	**Sampling Date**	**DISSOLVED POTASSIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	54	68					
3	18-Jun-23	54	66					
4	19-Dec-23	53	67					
5	16-Jun-24	45	65					
6								
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14								
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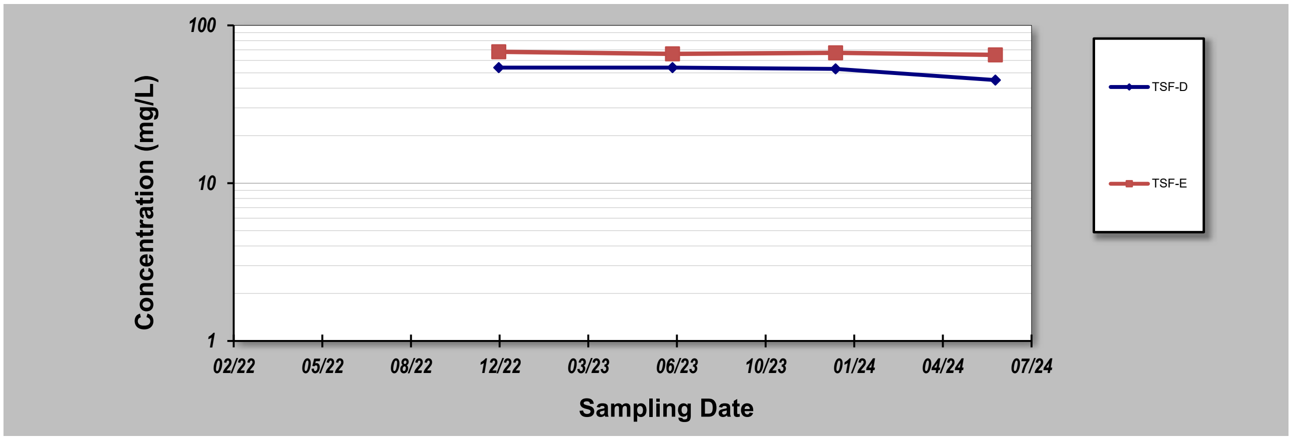
17								
18								
19								
20								
Coefficient of Variation:		0.08	0.02					
Mann-Kendall Statistic (S):		-5	-4					
Confidence Factor:		89.6%	83.3%					
Concentration Trend:		Stable	Stable					



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.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED SELENIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
6								
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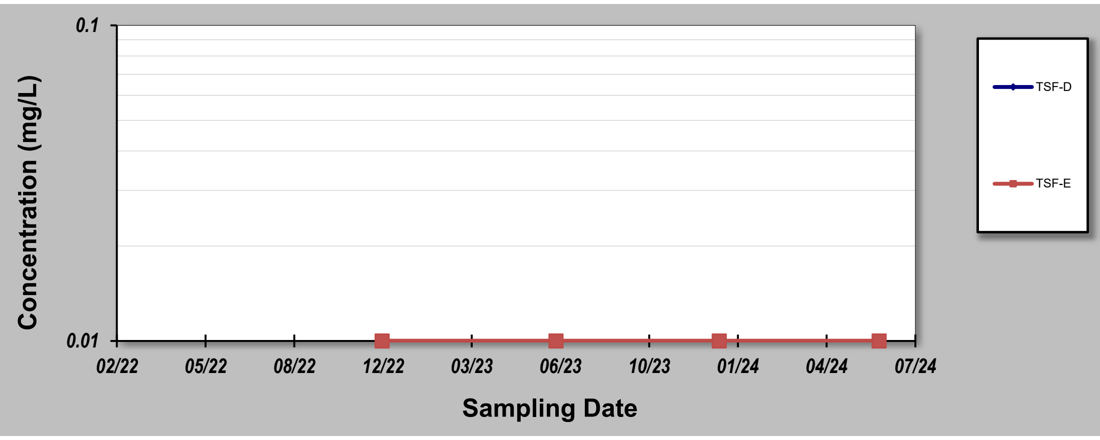
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Silver
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED SILVER CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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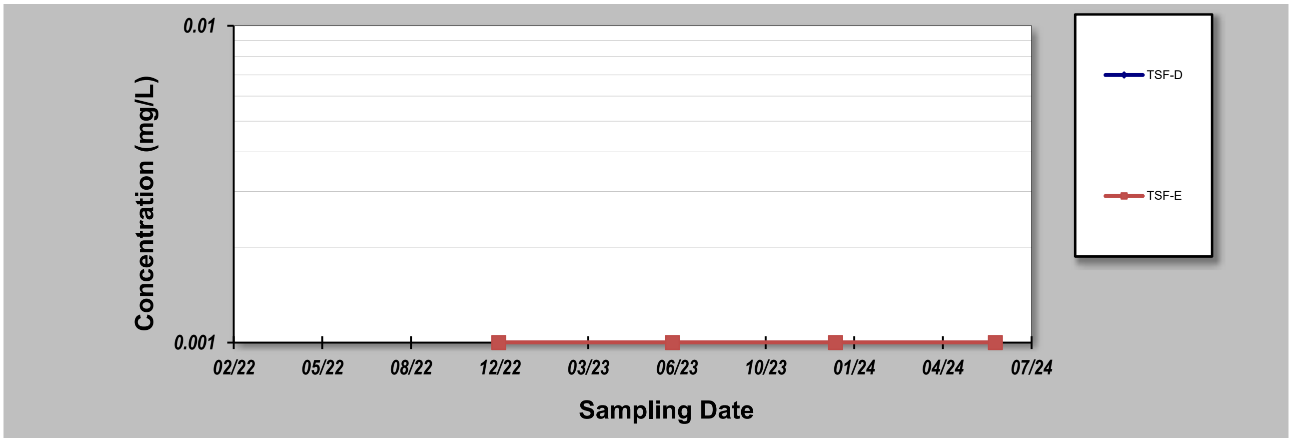
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Sodium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED SODIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	1420	2000					
3	18-Jun-23	1470	1970					
4	19-Dec-23	1360	1910					
5	16-Jun-24	1150	1920					
6								
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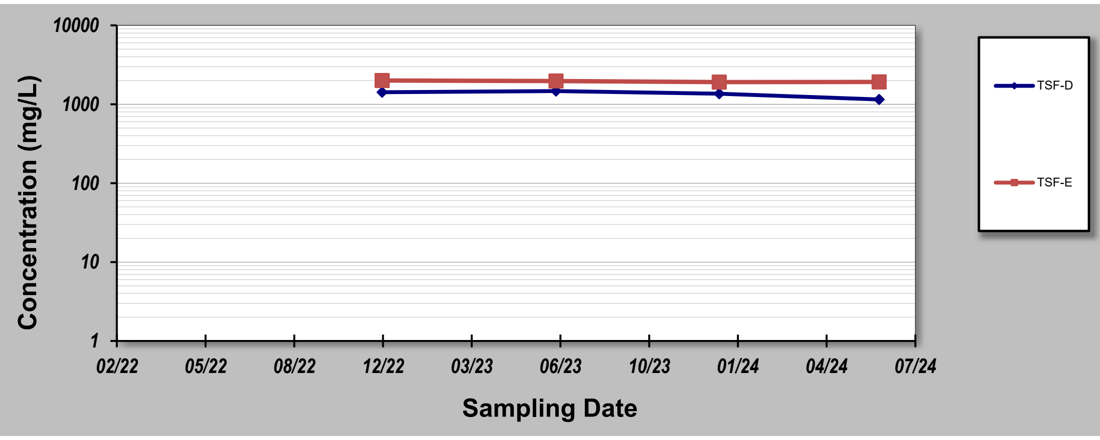
19								
20								
	Coefficient of Variation:	0.10	0.02					
	Mann-Kendall Statistic (S):	-4	-4					
	Confidence Factor:	83.3%	83.3%					
	Concentration Trend:	Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Strontium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED STRONTIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.35	4.33					
3	18-Jun-23	3.64	4.66					
4	19-Dec-23	3.31	4.27					
5	16-Jun-24	3.03	4.36					
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14								
15								
16								
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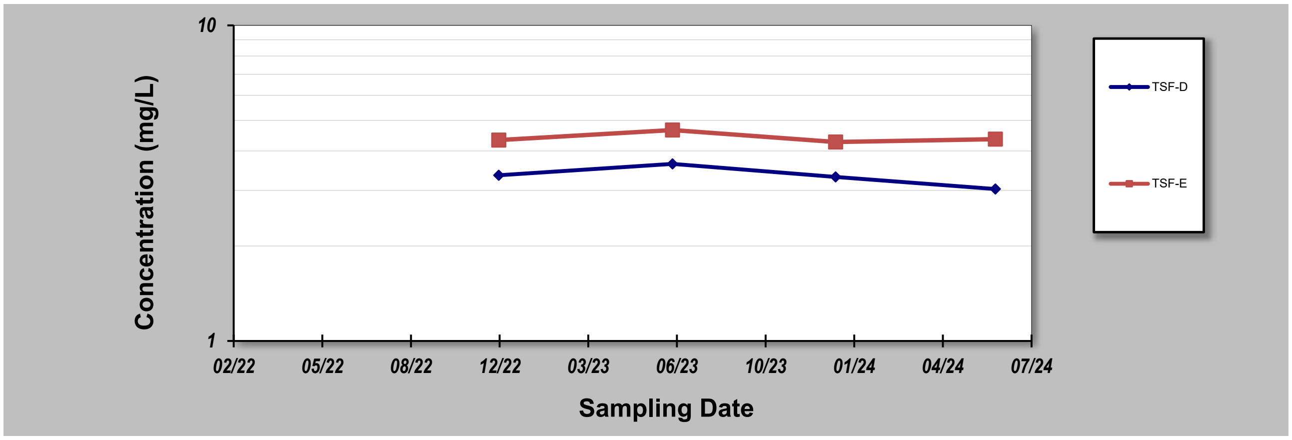
19								
20								
Coefficient of Variation:		0.07	0.04					
Mann-Kendall Statistic (S):		-4	0					
Confidence Factor:		83.3%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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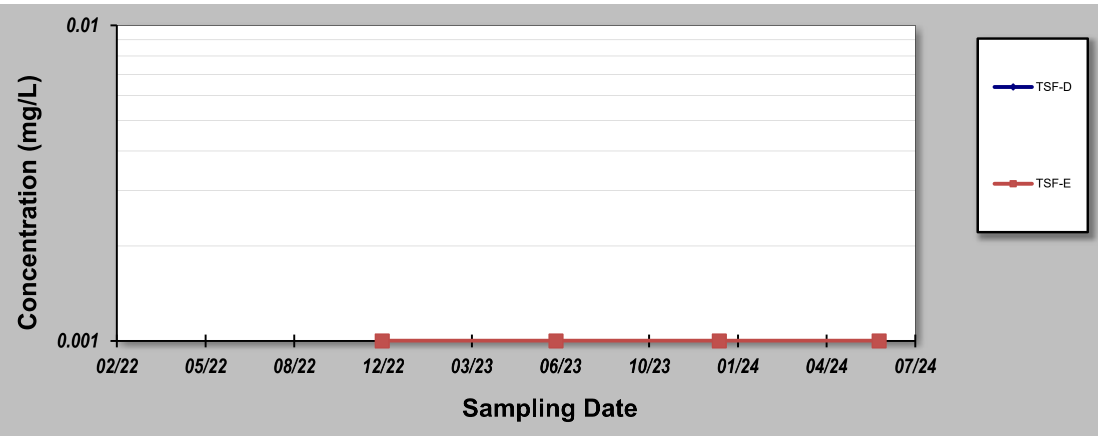
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Tin
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED TIN CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Titanium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**DISSOLVED TITANIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
6								
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10								
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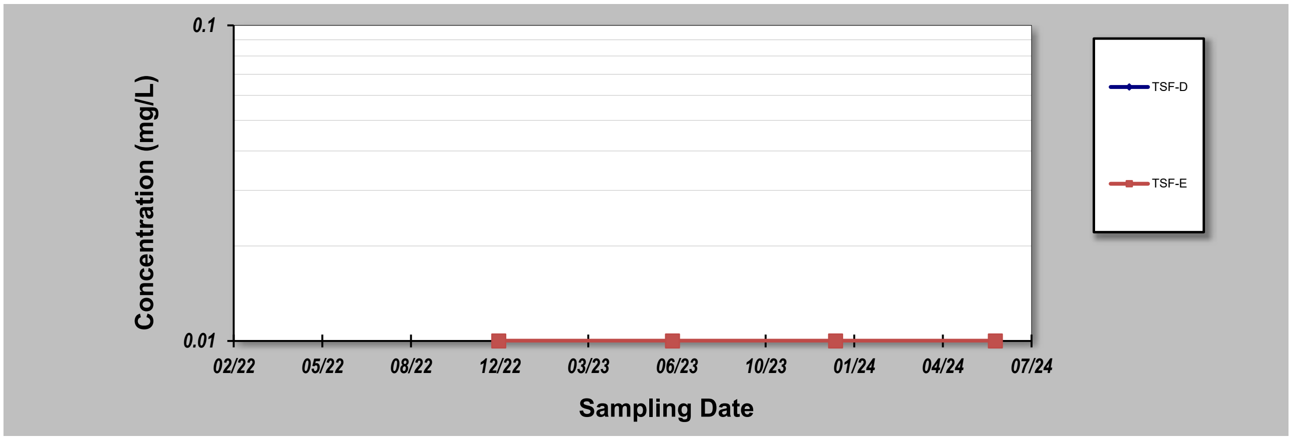
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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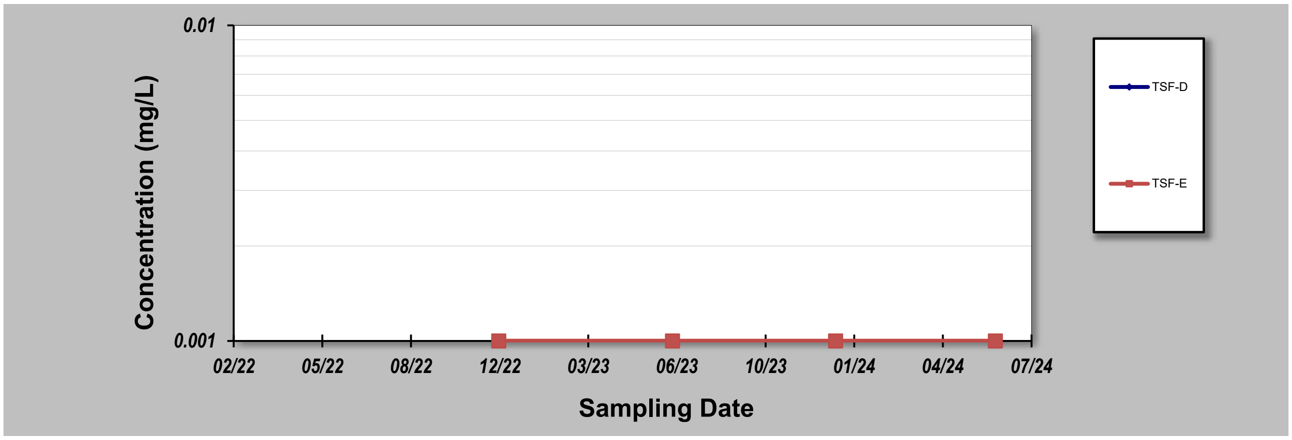
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Uranium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED URANIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
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: 1-Aug-24

Facility Name: Land & Water Consulting

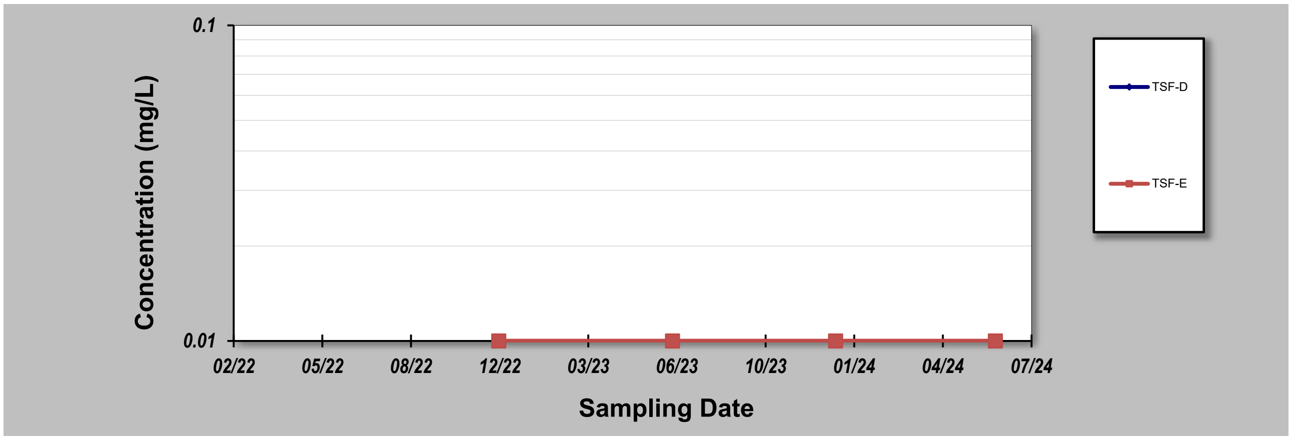
Conducted By: Levi Wilkins

Job ID: FD-01-21

Constituent: Dissolved Vanadium

Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED VANADIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:		37.5%	37.5%					
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Dissolved Zinc
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	DISSOLVED ZINC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.017	0.015					
3	18-Jun-23	0.012	0.012					
4	19-Dec-23	0.02	0.017					
5	16-Jun-24	0.011	0.015					
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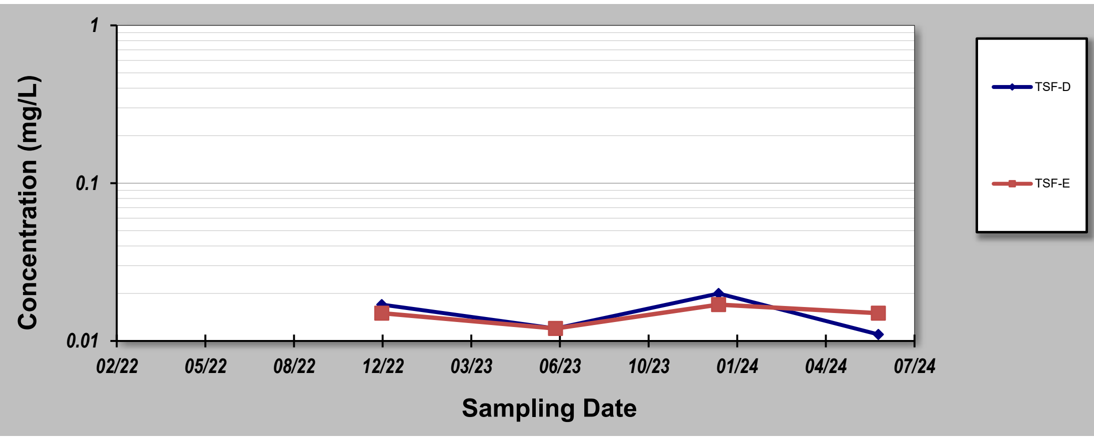
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.28	0.14					
	Mann-Kendall Statistic (S):	-2	1					
	Confidence Factor:	62.5%	50.0%					
	Concentration Trend:	Stable	No Trend					



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.

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Electrical Conductivity
Concentration Units: S/cm

	Sampling Point ID:	**TSF-D**	**TSF-E**					
Sampling Event	**Sampling Date**	**ELECTRICAL CONDUCTIVITY CONCENTRATION (S/cm)**						
1	19-Jun-22							
2	4-Dec-22	10300	12500					
3	18-Jun-23	9730	11800					
4	19-Dec-23	11400	13300					
5	16-Jun-24	8340	12200					
6								
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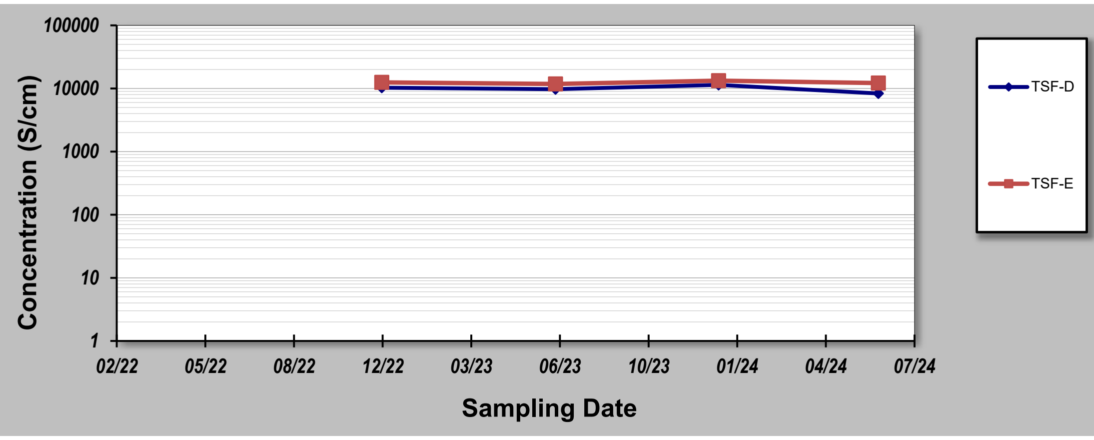
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.13	0.05					
	Mann-Kendall Statistic (S):	-2	0					
	Confidence Factor:	62.5%	37.5%					
	Concentration Trend:	Stable	Stable					



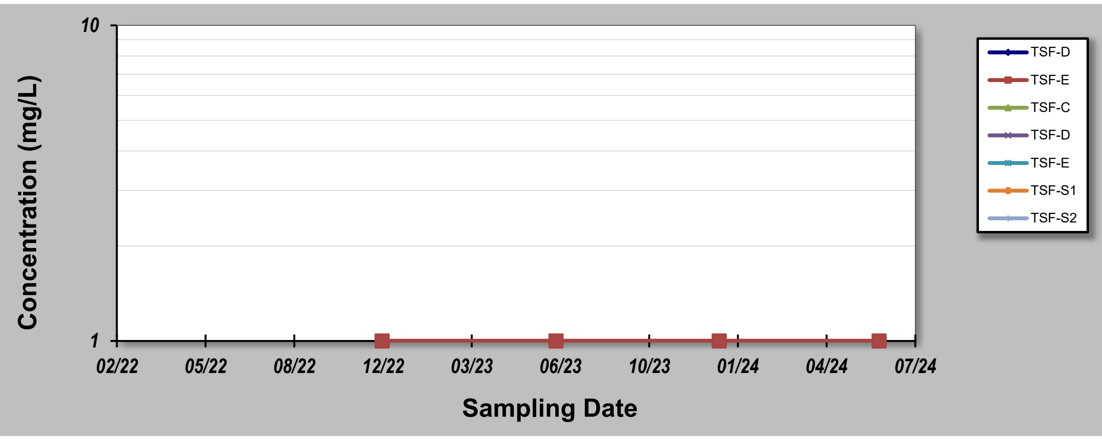
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Hydroxide Alkalinity as CaCO3
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E	TSF-C	TSF-D	TSF-E	TSF-S1	TSF-S2
Sampling Event	Sampling Date	HYDROXIDE ALKALINITY AS CACO3 CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	1	1					
3	18-Jun-23	1	1					
4	19-Dec-23	1	1					
5	16-Jun-24	1	1					
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:	37.5%	37.5%					
	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: pH
Concentration Units: pH Unit

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**PH CONCENTRATION (pH Unit)**						
1	19-Jun-22							
2	4-Dec-22	7.91	7.94					
3	18-Jun-23	7.47	7.44					
4	17-Dec-23	7.9	7.97					
5	16-Jun-24	7.62	7.6					
6								
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9								
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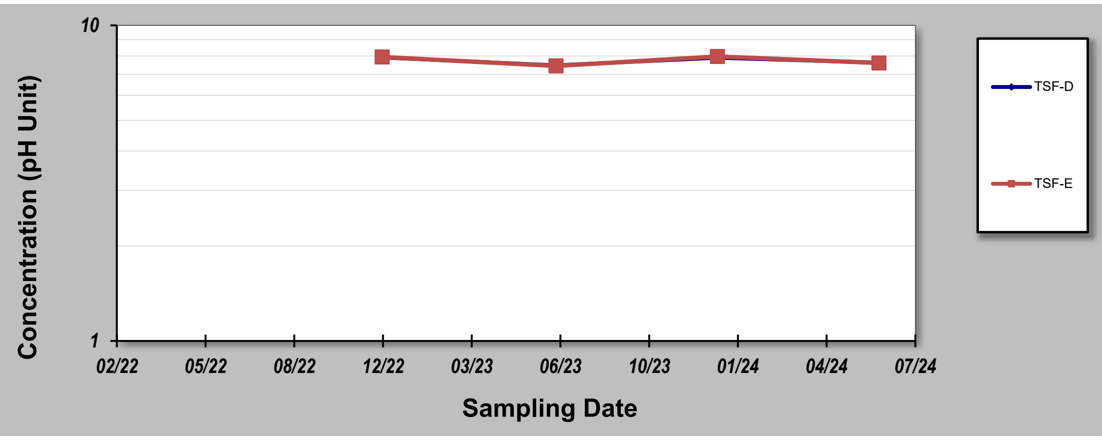
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.03	0.03					
	Mann-Kendall Statistic (S):	-2	0					
	Confidence Factor:	62.5%	37.5%					
	Concentration Trend:	Stable	Stable					



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.
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Sulfate as SO4 - Turbidimetric (Dissolved)
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**SULFATE AS SO4 - TURBIDIMETRIC (DISSOLVED) CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	1070	1540					
3	18-Jun-23	1030	1460					
4	19-Dec-23	1000	1450					
5	16-Jun-24	922	1370					
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7								
8								
9								
10								
11								
12								
13								
14								
15								
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17								
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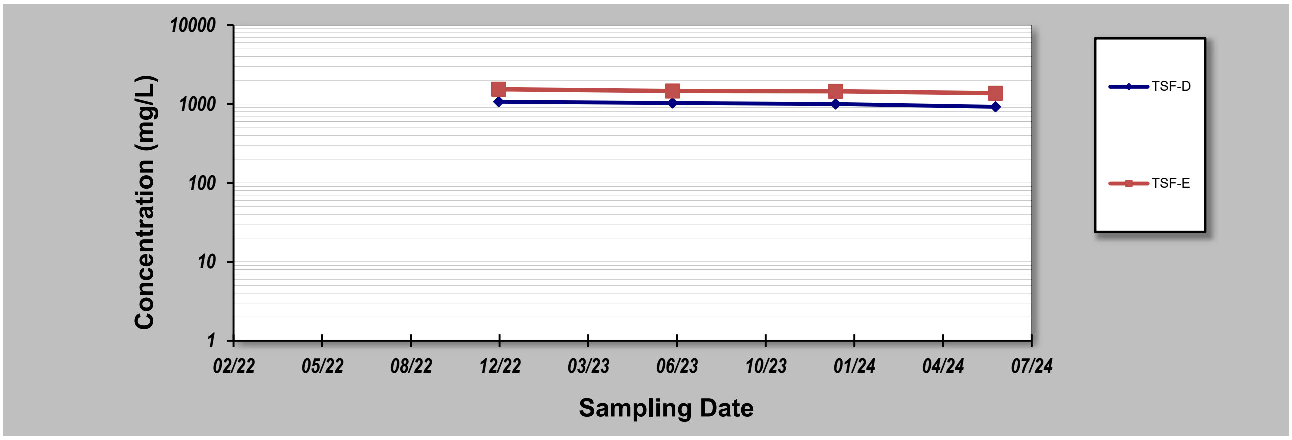
19								
20								
	Coefficient of Variation:	0.06	0.05					
	Mann-Kendall Statistic (S):	-6	-6					
	Confidence Factor:	95.8%	95.8%					
	Concentration Trend:	Decreasing	Decreasing					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Dissolved Solids
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL DISSOLVED SOLIDS CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	5760	7510					
3	18-Jun-23	6770	8060					
4	19-Dec-23	6350	7460					
5	16-Jun-24	4640	7110					
6								
7								
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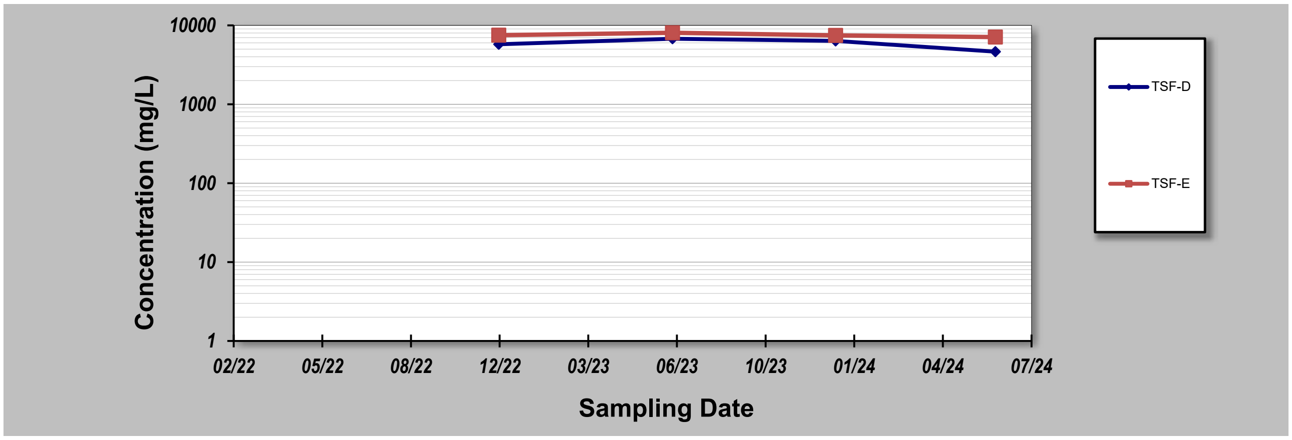
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.16	0.05					
	Mann-Kendall Statistic (S):	-2	-4					
	Confidence Factor:	62.5%	83.3%					
	Concentration Trend:	Stable	Stable					



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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Alkalinity as CaCO3
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL ALKALINITY AS CACO3 CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	231	254					
3	18-Jun-23	232	255					
4	19-Dec-23	175	200					
5	16-Jun-24	217	255					
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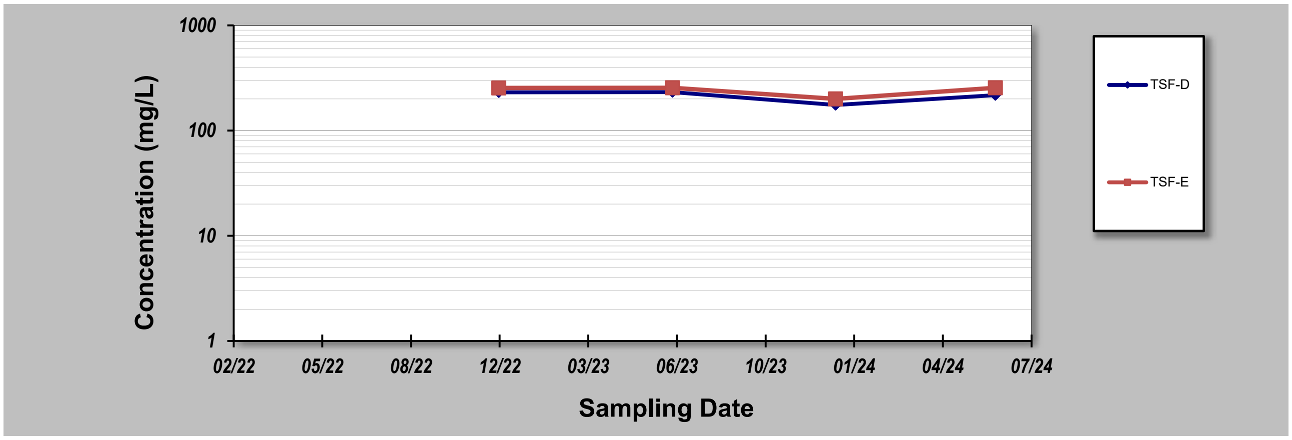
18								
19								
20								
Coefficient of Variation:		0.13	0.11					
Mann-Kendall Statistic (S):		-2	1					
Confidence Factor:		62.5%	50.0%					
Concentration Trend:		Stable	No Trend					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Antimony
Concentration Units: mg/L

	Sampling Point ID:	**TSF-D**	**TSF-E**					
Sampling Event	**Sampling Date**	**TOTAL ANTIMONY CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.002	0.002					
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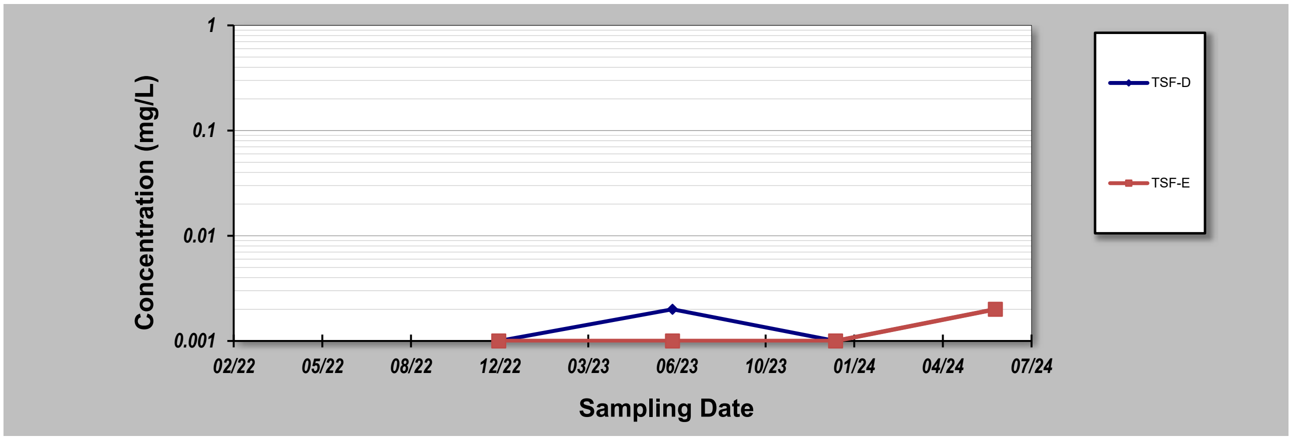
20								
	Coefficient of Variation:	0.38	0.40					
	Mann-Kendall Statistic (S):	2	3					
	Confidence Factor:	62.5%	72.9%					
	Concentration Trend:	No Trend	No Trend					



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.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Arsenic
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL ARSENIC CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.002					
5	16-Jun-24	0.001	0.001					
6								
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12								
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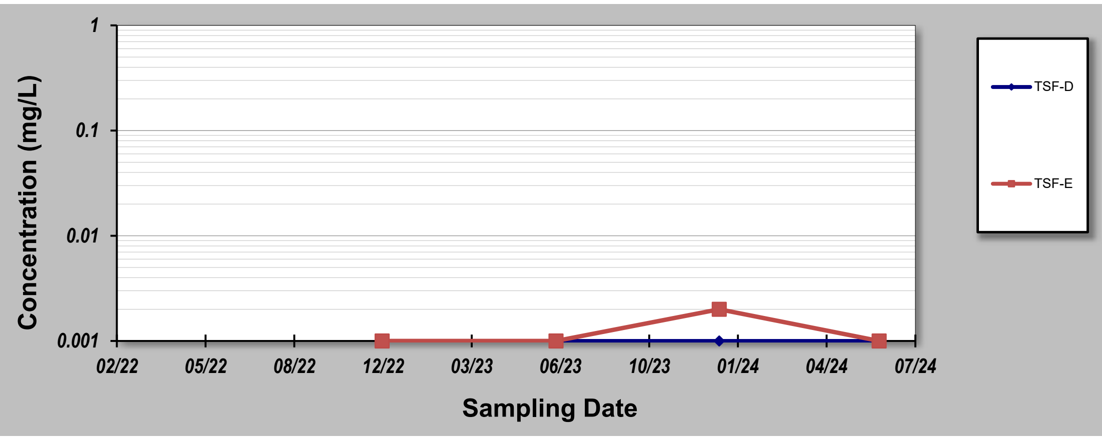
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.40					
Mann-Kendall Statistic (S):		0	1					
Confidence Factor:		37.5%	50.0%					
Concentration Trend:		Stable	No Trend					



Notes:

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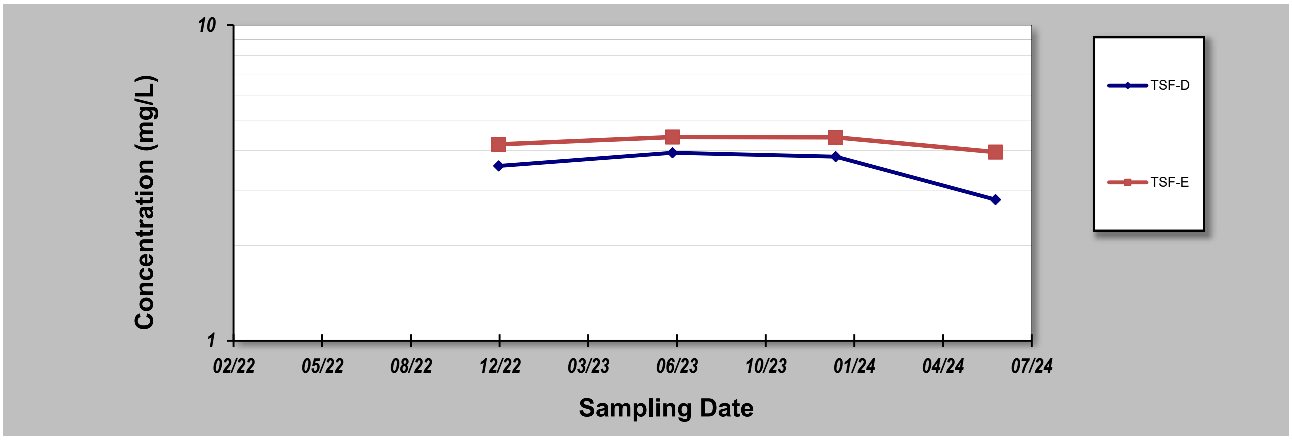
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Boron
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL BORON CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.58	4.19					
3	18-Jun-23	3.94	4.42					
4	19-Dec-23	3.83	4.41					
5	16-Jun-24	2.8	3.96					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.15	0.05					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:		62.5%	62.5%					
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.*
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cadmium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL CADMIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.0001	0.0001					
3	18-Jun-23	0.0001	0.0001					
4	19-Dec-23	0.0005	0.0005					
5	16-Jun-24	0.0001	0.0001					
6								
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14								
15								
16								
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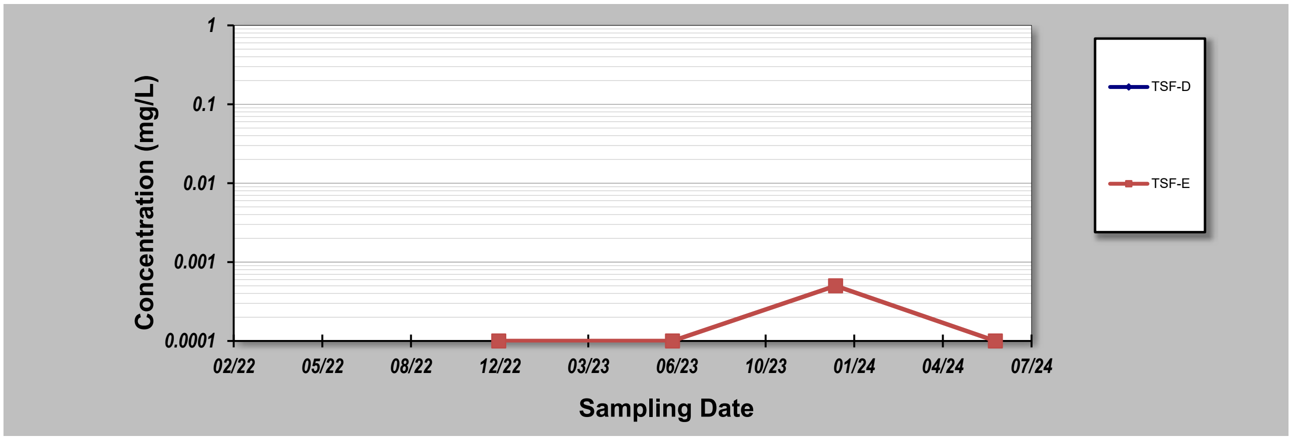
18								
19								
20								
Coefficient of Variation:		1.00	1.00					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		No Trend	No Trend					



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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Chromium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL CHROMIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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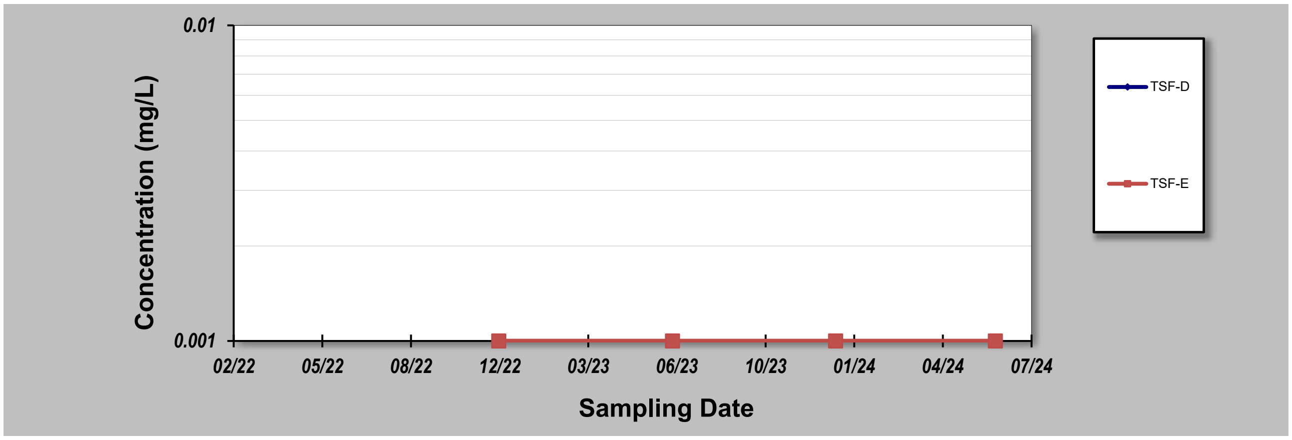
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



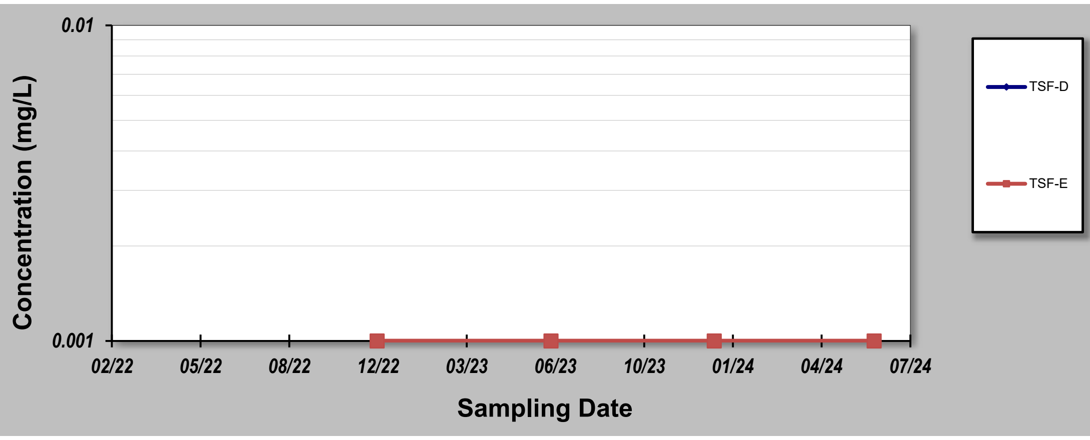
Notes:

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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Cobalt
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL COBALT CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:		37.5%	37.5%					
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.
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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Copper
Concentration Units: mg/L

Sampling Point ID:		**TSF-D**	**TSF-E**					
Sampling Event	**Sampling Date**	**TOTAL COPPER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.003	0.003					
3	18-Jun-23	0.015	0.006					
4	19-Dec-23	0.004	0.006					
5	16-Jun-24	0.004	0.004					
6								
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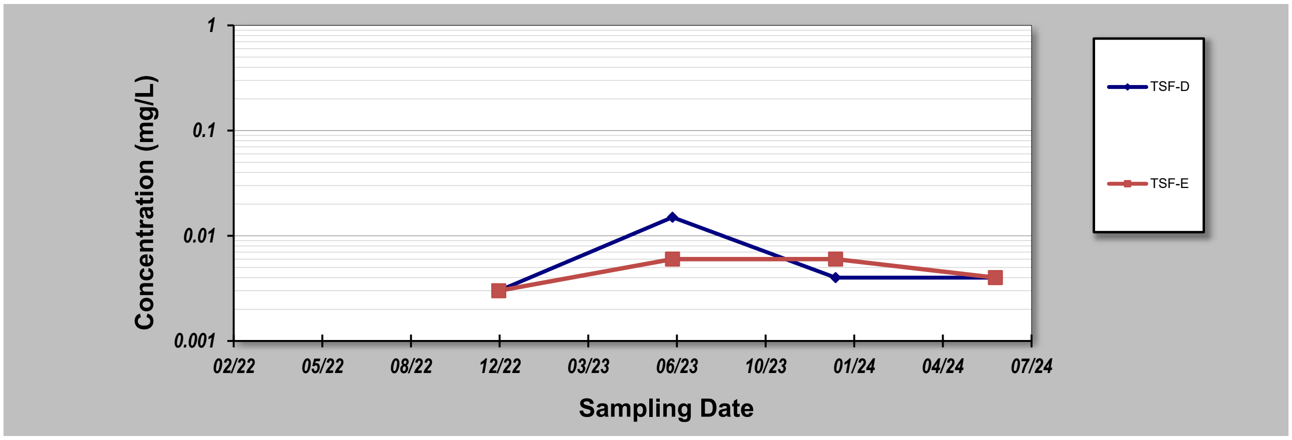
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.87	0.32					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		No Trend	No Trend					



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:	1-Aug-24	**Job ID:**	FD-01-21
Facility Name:	Land & Water Consulting	**Constituent:**	Total Lead
Conducted By:	Levi Wilkins	**Concentration Units:**	mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL LEAD CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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8								
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10								
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12								
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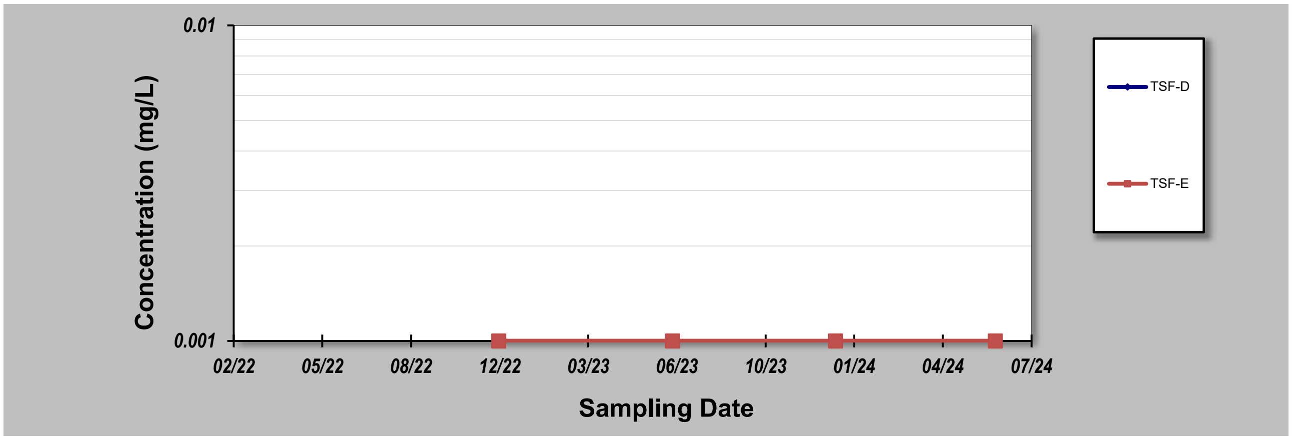
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	1-Aug-24	**Job ID:**	FD-01-21
Facility Name:	Land & Water Consulting	**Constituent:**	Total Manganese
Conducted By:	Levi Wilkins	**Concentration Units:**	mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL MANGANESE CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.476	0.376					
3	18-Jun-23	0.502	0.311					
4	19-Dec-23	0.472	0.332					
5	16-Jun-24	0.311	0.386					
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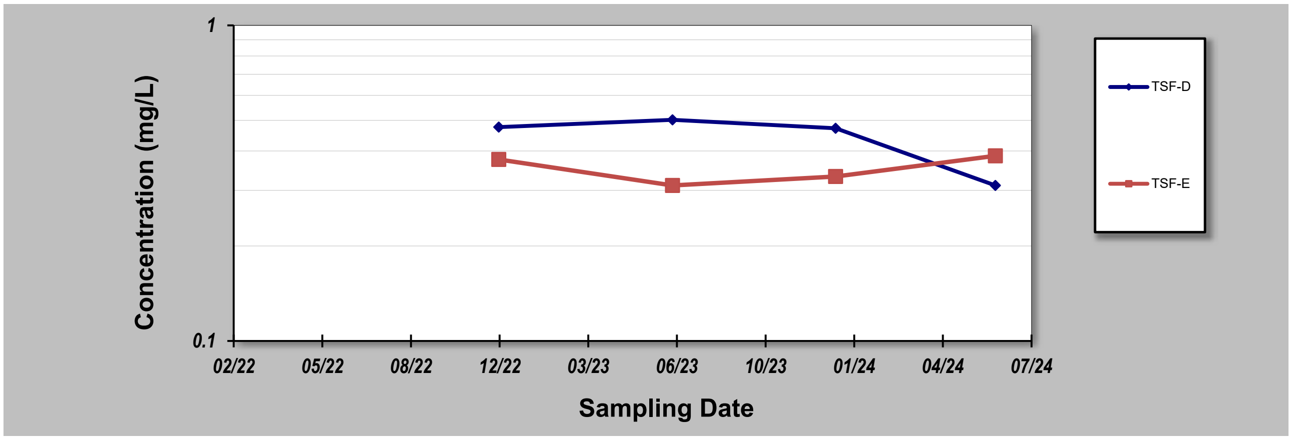
19								
20								
	Coefficient of Variation:	0.20	0.10					
	Mann-Kendall Statistic (S):	-4	2					
	Confidence Factor:	83.3%	62.5%					
	Concentration Trend:	Stable	No Trend					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Molybdenum
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL MOLYBDENUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.002	0.002					
3	18-Jun-23	0.002	0.002					
4	19-Dec-23	0.001	0.003					
5	16-Jun-24	0.002	0.002					
6								
7								
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12								
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15								
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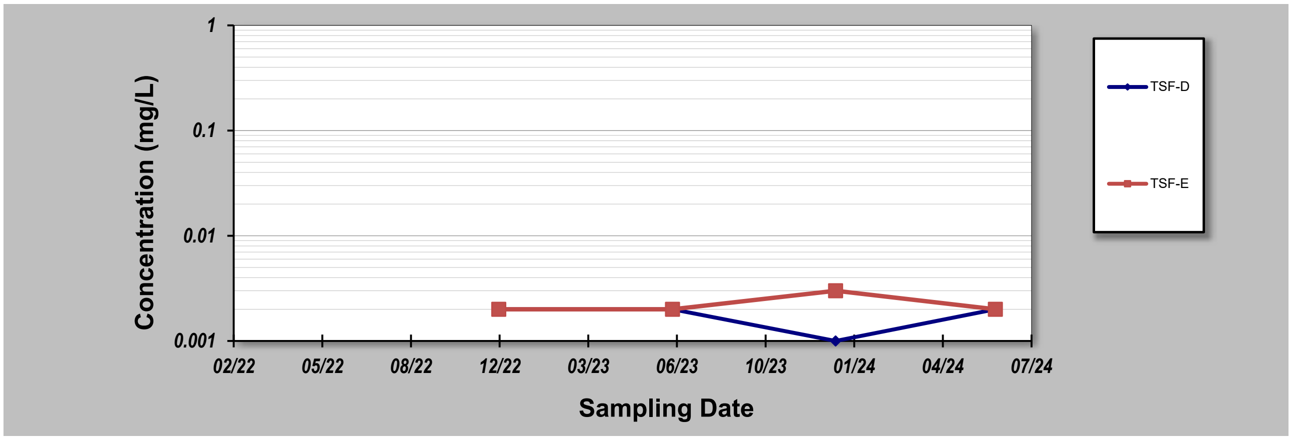
17								
18								
19								
20								
	Coefficient of Variation:	0.29	0.22					
	Mann-Kendall Statistic (S):	-1	1					
	Confidence Factor:	50.0%	50.0%					
	Concentration Trend:	Stable	No Trend					



Notes:

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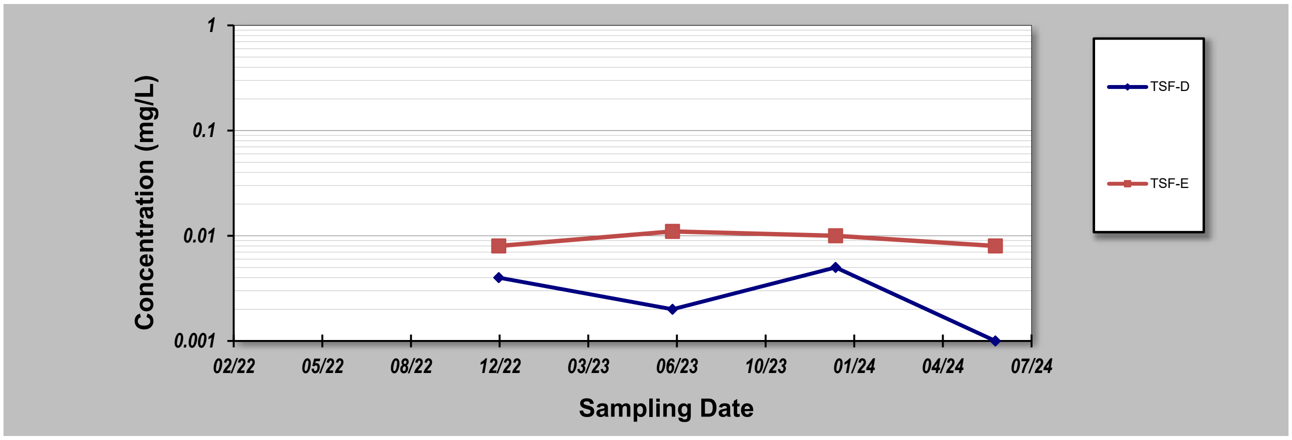
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Nickel
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL NICKEL CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.004	0.008					
3	18-Jun-23	0.002	0.011					
4	19-Dec-23	0.005	0.01					
5	16-Jun-24	0.001	0.008					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.61	0.16					
	Mann-Kendall Statistic (S):	-2	-1					
	Confidence Factor:	62.5%	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: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Selenium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL SELENIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
6								
7								
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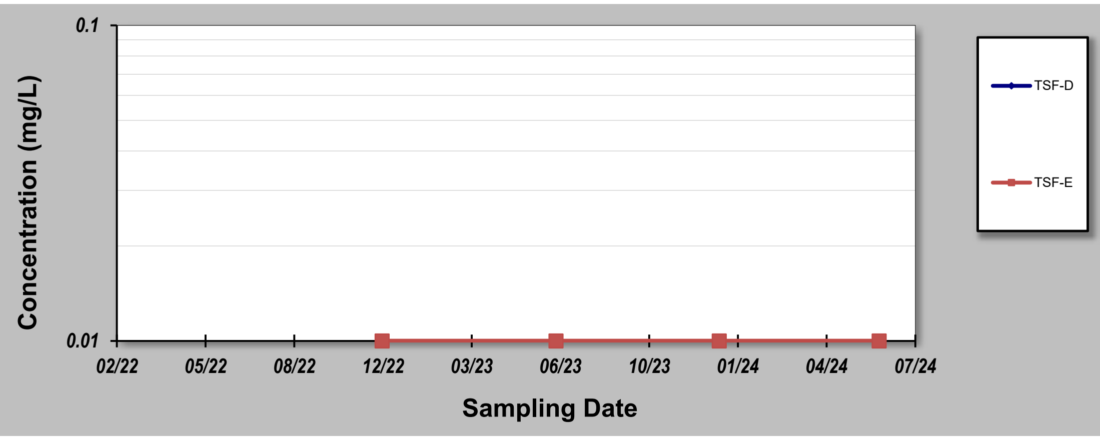
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	1-Aug-24	**Job ID:**	FD-01-21
Facility Name:	Land & Water Consulting	**Constituent:**	Total Silver
Conducted By:	Levi Wilkins	**Concentration Units:**	mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL SILVER CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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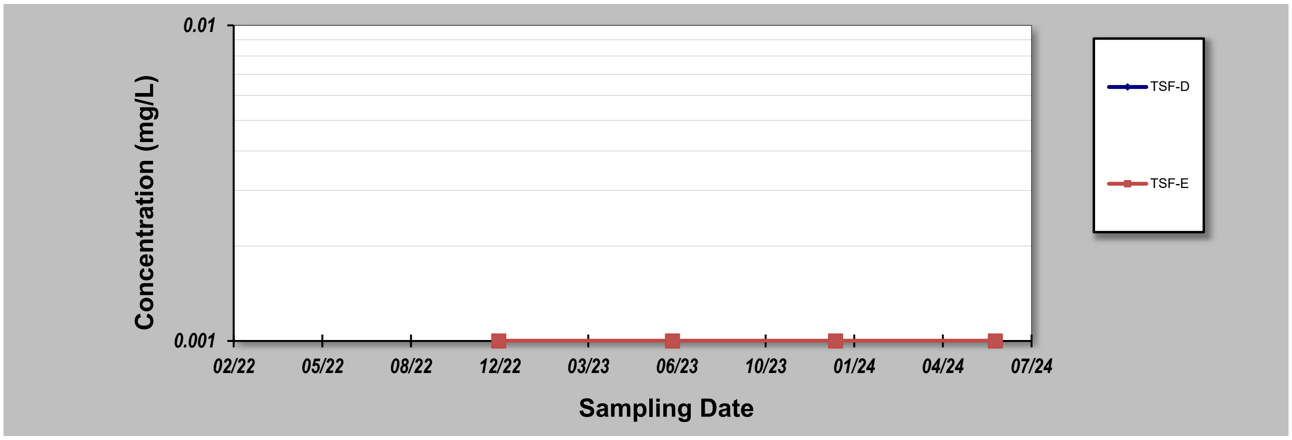
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Strontium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL STRONTIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	3.73	4.85					
3	18-Jun-23	3.48	4.34					
4	19-Dec-23	3.06	3.92					
5	16-Jun-24	2.93	4.17					
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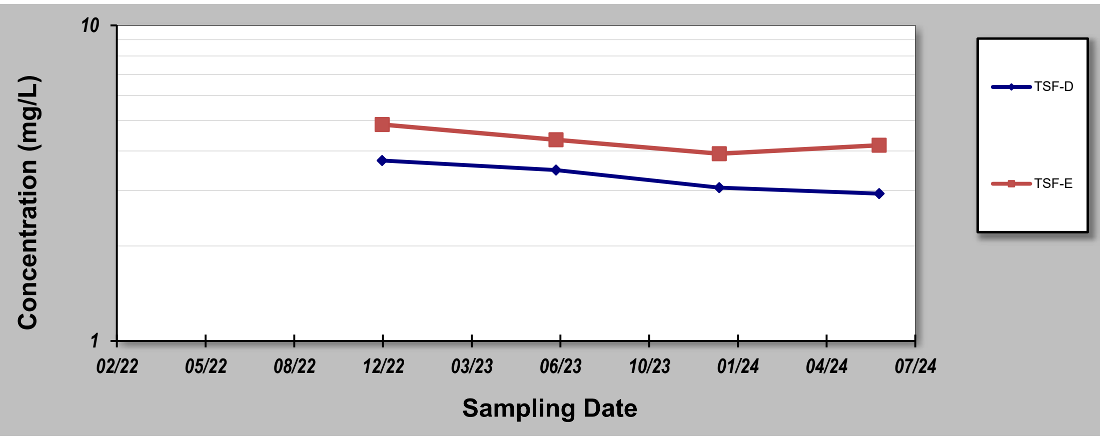
18								
19								
20								
	Coefficient of Variation:	0.11	0.09					
	Mann-Kendall Statistic (S):	-6	-4					
	Confidence Factor:	95.8%	83.3%					
	Concentration Trend:	Decreasing	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Tin
Concentration Units: mg/L

Sampling Event	Sampling Date	TSF-D	TSF-E					
		TOTAL TIN CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.002	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
6								
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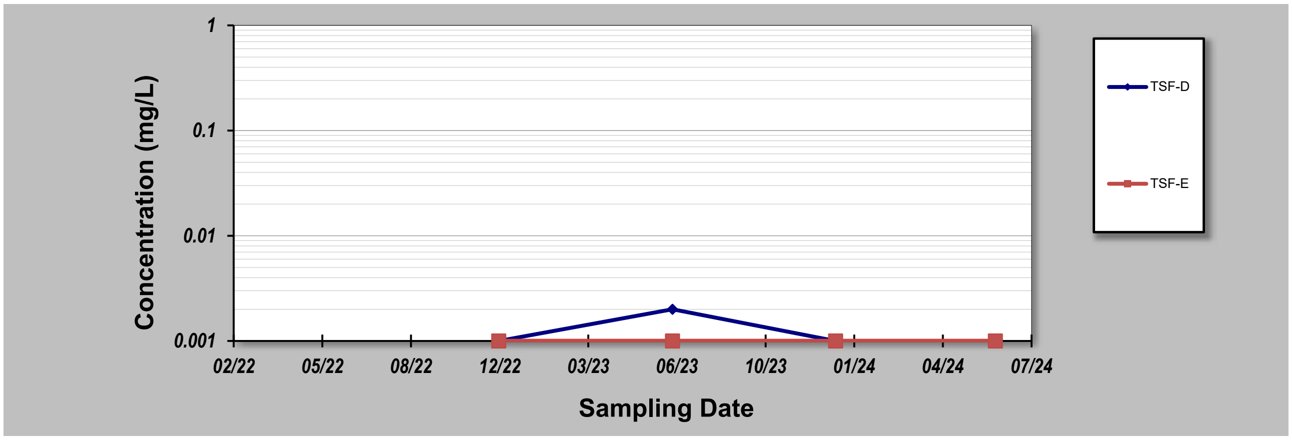
18								
19								
20								
Coefficient of Variation:		0.40	0.00					
Mann-Kendall Statistic (S):		-1	0					
Confidence Factor:		50.0%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Titanium
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL TITANIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
6								
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12								
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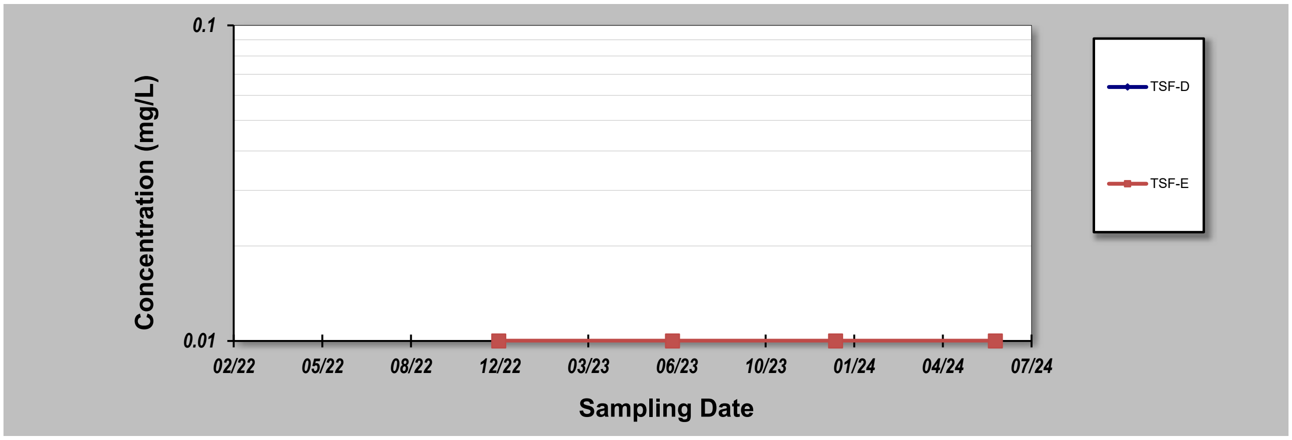
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		37.5%	37.5%					
Concentration Trend:		Stable	Stable					



Notes:

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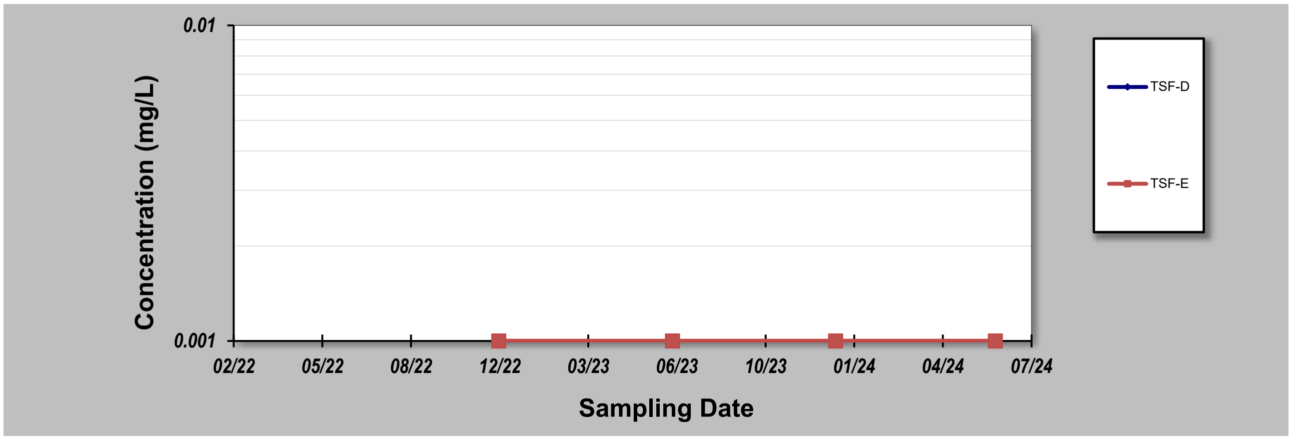
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Uranium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL URANIUM CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.001	0.001					
3	18-Jun-23	0.001	0.001					
4	19-Dec-23	0.001	0.001					
5	16-Jun-24	0.001	0.001					
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:	37.5%	37.5%					
	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.

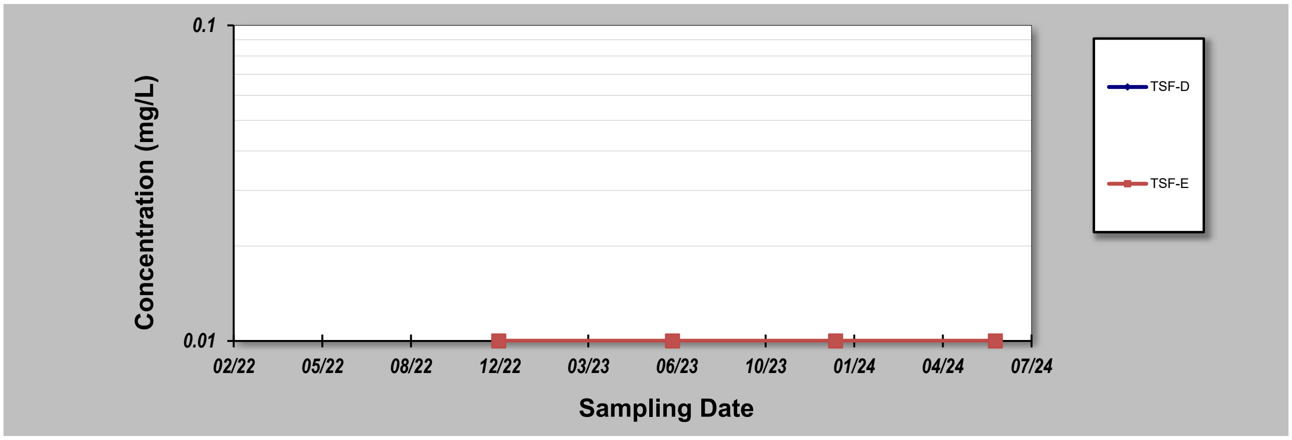
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins

Job ID: FD-01-21
Constituent: Total Vanadium
Concentration Units: mg/L

	Sampling Point ID:	TSF-D	TSF-E					
Sampling Event	Sampling Date	TOTAL VANADIUM CONCENTRATION (mg/L)						
1	19-Jun-22							
2	4-Dec-22	0.01	0.01					
3	18-Jun-23	0.01	0.01					
4	19-Dec-23	0.01	0.01					
5	16-Jun-24	0.01	0.01					
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:	37.5%	37.5%					
	Concentration Trend:	Stable	Stable					



Notes:

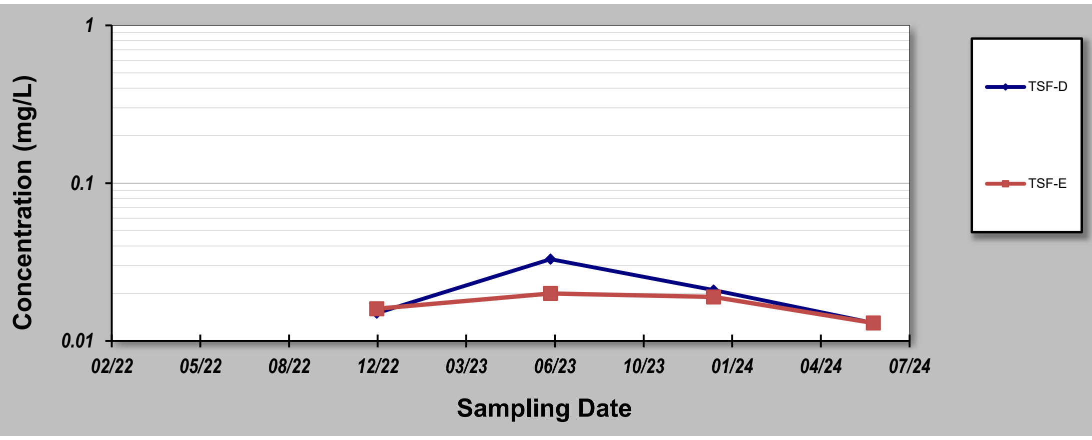
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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 Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Aug-24
Facility Name: Land & Water Consulting
Conducted By: Levi Wilkins
Job ID: FD-01-21
Constituent: Total Zinc
Concentration Units: mg/L

Sampling Point ID:		TSF-D	TSF-E					
Sampling Event	**Sampling Date**	**TOTAL ZINC CONCENTRATION (mg/L)**						
1	19-Jun-22							
2	4-Dec-22	0.015	0.016					
3	18-Jun-23	0.033	0.02					
4	19-Dec-23	0.021	0.019					
5	16-Jun-24	0.013	0.013					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.44	0.19					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:		62.5%	62.5%					
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.

APPENDIX B – PRO UCL OUTPUT – 95TH PERCENTILES

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.2 12/08/2024 2:09:04 PM

User Selected Options

From File TSF A.xls

Full Precision OFF

From File: TSF A.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	6	0	0.00%	N/A	N/A	33833	55766667	7468	0.221
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	33.83	55.77	7.468	0.221
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	6	0	0.00%	N/A	N/A	67.47	2461	49.61	0.735
Chloride (mg/L)	6	15	6	0	0.00%	N/A	N/A	2205	2439142	1562	0.708
Depth to Water (m)	12	9	12	0	0.00%	N/A	N/A	5.258	0.385	0.62	0.118
Dissolved Antimony (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00133	2.6667E-7	5.1640E-4	0.387
Dissolved Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.303	3.35	1.83	0.795
Dissolved Cadmium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	6	0	0.00%	N/A	N/A	269500	3.152E+10	177544	0.659
Dissolved Calcium (mg/L)	6	15	6	0	0.00%	N/A	N/A	269.5	31522	177.5	0.659
Dissolved Chromium (mg/L)	4	17	4	0	0.00%	N/A	N/A	0.00225	2.5000E-7	5.0000E-4	0.222
Dissolved Cobalt (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0025	5.0000E-7	7.0711E-4	0.283
Dissolved Copper (mg/L)	12	9	12	0	0.00%	N/A	N/A	0.0176	2.2045E-4	0.0148	0.844
Dissolved Lead (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	6	15	6	0	0.00%	N/A	N/A	119167	9.298E+9	96427	0.809
Dissolved Magnesium (mg/L)	6	15	6	0	0.00%	N/A	N/A	119.2	9298	96.43	0.809
Dissolved Manganese (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.0145	2.4500E-5	0.00495	0.341
Dissolved Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00767	2.6667E-6	0.00163	0.213
Dissolved Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00367	6.2667E-6	0.0025	0.683
Dissolved Potassium (µg/L)	6	15	6	0	0.00%	N/A	N/A	30000	3.980E+8	19950	0.665
Dissolved Potassium (mg/L)	6	15	6	0	0.00%	N/A	N/A	30	398	19.95	0.665
Dissolved Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.0167	3.3333E-5	0.00577	0.346
Dissolved Silver (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	6	15	6	0	0.00%	N/A	N/A	999667	5.534E+11	743931	0.744
Dissolved Sodium (mg/L)	6	15	6	0	0.00%	N/A	N/A	999.7	553433	743.9	0.744
Dissolved Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	3.081	5.312	2.305	0.748
Dissolved Thorium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	3	0	0.00%	N/A	N/A	6.6667E-4	3.3333E-7	5.7735E-4	0.866
Dissolved Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0173	2.3905E-5	0.00489	0.283
Electrical Conductivity @ 25°C (µS/cm)	4	17	4	0	0.00%	N/A	N/A	8833	26263558	5125	0.58
FLS EC	4	17	4	0	0.00%	N/A	N/A	8.446	22.95	4.791	0.567
FLS pH	4	17	4	0	0.00%	N/A	N/A	6.923	0.184	0.429	0.0619
FLS Temp	4	17	4	0	0.00%	N/A	N/A	22.78	27.41	5.235	0.23
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	14	0	0.00%	N/A	N/A	9.716	71.66	8.465	0.871
pH (no unit)	14	7	14	0	0.00%	N/A	N/A	7.309	0.0393	0.198	0.0271
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	6	0	0.00%	N/A	N/A	940833	3.664E+11	605313	0.643
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	6	0	0.00%	N/A	N/A	940.8	366404	605.3	0.643
Total Alkalinity as CaCO3 (mg/L)	6	15	6	0	0.00%	N/A	N/A	33.17	70.97	8.424	0.254
Total Anions (meq/L)	6	15	6	0	0.00%	N/A	N/A	82.43	3240	56.92	0.691
Total Antimony (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00167	2.6667E-7	5.1640E-4	0.31
Total Beryllium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	6	0	0.00%	N/A	N/A	2.322	3.245	1.801	0.776
Total Cadmium (µg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	5	0	0.00%	N/A	N/A	0.002	5.0000E-7	7.0711E-4	0.354
Total Cobalt (mg/L)	2	19	2	0	0.00%	N/A	N/A	0.003	2.0000E-6	0.00141	0.471
Total Copper (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0305	1.9430E-4	0.0139	0.457
Total Dissolved Solids @180°C-Total (µg/L)	6	15	6	0	0.00%	N/A	N/A	6248333	3.134E+13	5598555	0.896
Total Dissolved Solids @180°C-Total (mg/L)	6	15	6	0	0.00%	N/A	N/A	6248	31343817	5599	0.896
Total Lead (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.001	0	0	N/A
Total Manganese (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.00817	5.4967E-5	0.00741	0.908
Total Mercury (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.0107	1.0667E-5	0.00327	0.306
Total Nickel (mg/L)	6	15	6	0	0.00%	N/A	N/A	0.004	6.0000E-6	0.00245	0.612
Total Selenium (mg/L)	3	18	3	0	0.00%	N/A	N/A	0.0167	3.3333E-5	0.00577	0.346
Total Silver (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	6	0	0.00%	N/A	N/A	3.208	5.548	2.355	0.734
Total Thorium (mg/L)	1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	5	0	0.00%	N/A	N/A	0.0012	7.0000E-7	8.3666E-4	0.697
Total Vanadium (mg/L)	0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	7	0	0.00%	N/A	N/A	0.0156	2.8619E-5	0.00535	0.344

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	23000	41000	33833	37000	55766667	7468	4448	-0.838	0.221
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	23	41	33.83	37	55.77	7.468	4.448	-0.838	0.221
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	9.79	120	67.47	74.35	2461	49.61	63.97	-0.249	0.735
Chloride (mg/L)	6	15	266	3650	2205	2765	2439142	1562	1208	-0.664	0.708
Depth to Water (m)	12	9	4.45	6.28	5.258	5.26	0.385	0.62	0.623	0.131	0.118
Dissolved Antimony (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	0.001	0.002	0.00133	0.001	2.6667E-7	5.1640E-4	0	0.968	0.387
Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	0.18	4.29	2.303	2.5	3.35	1.83	2.543	-0.216	0.795
Dissolved Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	64000	463000	269500	294500	3.152E+10	177544	226093	-0.232	0.659
Dissolved Calcium (mg/L)	6	15	64	463	269.5	294.5	31522	177.5	226.1	-0.232	0.659
Dissolved Chromium (mg/L)	4	17	0.002	0.003	0.00225	0.002	2.5000E-7	5.0000E-4	0	2	0.222
Dissolved Cobalt (mg/L)	2	19	0.002	0.003	0.0025	0.0025	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.283
Dissolved Copper (mg/L)	12	9	0.002	0.044	0.0176	0.011	2.2045E-4	0.0148	0.0119	0.901	0.844
Dissolved Lead (mg/L)	1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Magnesium (µg/L)	6	15	8000	221000	119167	130500	9.298E+9	96427	128984	-0.211	0.809
Dissolved Magnesium (mg/L)	6	15	8	221	119.2	130.5	9298	96.43	129	-0.211	0.809
Dissolved Manganese (mg/L)	2	19	0.011	0.018	0.0145	0.0145	2.4500E-5	0.00495	0.00519	N/A	0.341
Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	0.006	0.01	0.00767	0.0075	2.6667E-6	0.00163	0.00222	0.383	0.213
Dissolved Nickel (mg/L)	6	15	0.001	0.008	0.00367	0.003	6.2667E-6	0.0025	0.00222	1.139	0.683
Dissolved Potassium (µg/L)	6	15	6000	52000	30000	31500	3.980E+8	19950	28910	-0.153	0.665
Dissolved Potassium (mg/L)	6	15	6	52	30	31.5	398	19.95	28.91	-0.153	0.665
Dissolved Selenium (mg/L)	3	18	0.01	0.02	0.0167	0.02	3.3333E-5	0.00577	0	-1.732	0.346
Dissolved Silver (mg/L)	1	20	0.004	0.004	0.004	0.004	N/A	N/A	0	N/A	N/A
Dissolved Sodium (µg/L)	6	15	133000	1780000	999667	1105500	5.534E+11	743931	955523	-0.26	0.744
Dissolved Sodium (mg/L)	6	15	133	1780	999.7	1106	553433	743.9	955.5	-0.26	0.744
Dissolved Strontium (mg/L)	6	15	0.431	6.03	3.081	3.31	5.312	2.305	3.18	-0.0779	0.748
Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	0	0.001	6.6667E-4	0.001	3.3333E-7	5.7735E-4	0	-1.732	0.866
Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	0.01	0.024	0.0173	0.016	2.3905E-5	0.00489	0.00741	-0.0621	0.283
Electrical Conductivity @ 25°C (µS/cm)	4	17	1230	12400	8833	10850	26263558	5125	1334	-1.866	0.58
FLS EC	4	17	1.635	12.81	8.446	9.67	22.95	4.791	2.669	-1.38	0.567
FLS pH	4	17	6.54	7.51	6.923	6.82	0.184	0.429	0.311	1.121	0.0619
FLS Temp	4	17	18.2	27.7	22.78	22.6	27.41	5.235	6.449	0.0199	0.23
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	1.15	35.2	9.716	8.6	71.66	8.465	4.581	2.249	0.871
pH (no unit)	14	7	6.8	7.66	7.309	7.34	0.0393	0.198	0.104	-1.127	0.0271
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	185000	1530000	940833	1160000	3.664E+11	605313	467013	-0.681	0.643
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	185	1530	940.8	1160	366404	605.3	467	-0.681	0.643
Total Alkalinity as CaCO3 (mg/L)	6	15	22	41	33.17	37	70.97	8.424	4.448	-0.817	0.254
Total Anions (meq/L)	6	15	11.7	136	82.43	103	3240	56.92	43.74	-0.67	0.691
Total Antimony (mg/L)	1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Total Arsenic (mg/L)	6	15	0.001	0.002	0.00167	0.002	2.6667E-7	5.1640E-4	0	-0.968	0.31
Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	0.24	4.32	2.322	2.54	3.245	1.801	2.439	-0.234	0.776
Total Cadmium (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	0.001	0.003	0.002	0.002	5.0000E-7	7.0711E-4	0	0	0.354
Total Cobalt (mg/L)	2	19	0.002	0.004	0.003	0.003	2.0000E-6	0.00141	0.00148	N/A	0.471
Total Copper (mg/L)	6	15	0.016	0.051	0.0305	0.026	1.9430E-4	0.0139	0.0119	0.729	0.457
Total Dissolved Solids @180°C-Total (µg/L)	6	15	700000	16000000	6248333	6000000	3.134E+13	5598555	5003706	1.054	0.896
Total Dissolved Solids @180°C-Total (mg/L)	6	15	700	16000	6248	6000	31343817	5599	5004	1.054	0.896
Total Lead (mg/L)	3	18	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
Total Manganese (mg/L)	6	15	0.003	0.022	0.00817	0.005	5.4967E-5	0.00741	0.00297	1.702	0.908
Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	0.007	0.015	0.0107	0.011	1.0667E-5	0.00327	0.00445	-0.0211	0.306
Total Nickel (mg/L)	6	15	0.002	0.008	0.004	0.003	6.0000E-6	0.00245	0.00148	1.102	0.612
Total Selenium (mg/L)	3	18	0.01	0.02	0.0167	0.02	3.3333E-5	0.00577	0	-1.732	0.346
Total Silver (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	0.466	5.77	3.208	3.455	5.548	2.355	3.291	-0.214	0.734
Total Thorium (mg/L)	1	20	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
Total Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	0	0.002	0.0012	0.001	7.0000E-7	8.3666E-4	0.00148	-0.512	0.697
Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	0.011	0.025	0.0156	0.013	2.8619E-5	0.00535	0.00297	1.028	0.344

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	24500	26000	28500	37000	38750	39000	40000	40500	40900
Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	24.5	26	28.5	37	38.75	39	40	40.5	40.9
Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	6	15	10.55	11.3	22.35	74.35	109.6	115	117.5	118.8	119.8
Chloride (mg/L)	6	15	269	272	801.5	2765	3418	3510	3580	3615	3643
Depth to Water (m)	12	9	4.492	4.59	4.81	5.26	5.645	5.722	6.02	6.154	6.255
Dissolved Antimony (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.001	0.00175	0.002	0.002	0.002	0.002
Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	6	15	0.195	0.21	0.663	2.5	3.85	4.14	4.215	4.253	4.283
Dissolved Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	6	15	67000	70000	107750	294500	415250	431000	447000	455000	461400
Dissolved Calcium (mg/L)	6	15	67	70	107.8	294.5	415.3	431	447	455	461.4
Dissolved Chromium (mg/L)	4	17	0.002	0.002	0.002	0.002	0.00225	0.0024	0.0027	0.00285	0.00297
Dissolved Cobalt (mg/L)	2	19	0.0021	0.0022	0.00225	0.0025	0.00275	0.0028	0.0029	0.00295	0.00299
Dissolved Copper (mg/L)	12	9	0.0042	0.0062	0.00675	0.011	0.0258	0.0296	0.0418	0.0435	0.0439
Dissolved Lead (mg/L)	1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved Magnesium (µg/L)	6	15	9500	11000	31500	130500	202500	214000	217500	219250	220650
Dissolved Magnesium (mg/L)	6	15	9.5	11	31.5	130.5	202.5	214	217.5	219.3	220.7
Dissolved Manganese (mg/L)	2	19	0.0117	0.0124	0.0128	0.0145	0.0163	0.0166	0.0173	0.0177	0.0179
Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	6	15	0.006	0.006	0.00625	0.0075	0.00875	0.009	0.0095	0.00975	0.00995
Dissolved Nickel (mg/L)	6	15	0.0015	0.002	0.00225	0.003	0.0045	0.005	0.0065	0.00725	0.00785
Dissolved Potassium (µg/L)	6	15	7500	9000	13000	31500	47000	50000	51000	51500	51900
Dissolved Potassium (mg/L)	6	15	7.5	9	13	31.5	47	50	51	51.5	51.9
Dissolved Selenium (mg/L)	3	18	0.012	0.014	0.015	0.02	0.02	0.02	0.02	0.02	0.02
Dissolved Silver (mg/L)	1	20	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Dissolved Sodium (µg/L)	6	15	143500	154000	323250	1105500	1635000	1720000	1750000	1765000	1777000
Dissolved Sodium (mg/L)	6	15	143.5	154	323.3	1106	1635	1720	1750	1765	1777
Dissolved Strontium (mg/L)	6	15	0.477	0.522	1.047	3.31	4.66	4.88	5.455	5.743	5.973
Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	3	18	2.0000E-4	4.0000E-4	5.0000E-4	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	7	14	0.0124	0.0142	0.0145	0.016	0.021	0.021	0.0222	0.0231	0.0238
Electrical Conductivity @ 25°C (µS/cm)	4	17	4041	6852	8258	10850	11425	11620	12010	12205	12361
FLS EC	4	17	3.908	6.18	7.316	9.67	10.8	11.2	12.01	12.41	12.73
FLS pH	4	17	6.582	6.624	6.645	6.82	7.098	7.18	7.345	7.428	7.494
FLS Temp	4	17	18.23	18.26	18.28	22.6	27.1	27.22	27.46	27.58	27.68
Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	14	7	2.182	3.542	4.62	8.6	9.69	11.76	15.12	22.27	32.61
pH (no unit)	14	7	7.111	7.242	7.26	7.34	7.408	7.41	7.445	7.53	7.634
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	187500	190000	405000	1160000	1382500	1420000	1475000	1502500	1524500
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	187.5	190	405	1160	1383	1420	1475	1503	1525
Total Alkalinity as CaCO3 (mg/L)	6	15	22.5	23	26.25	37	38.75	39	40	40.5	40.9
Total Anions (meq/L)	6	15	11.8	11.9	31.43	103	125.8	129	132.5	134.3	135.7
Total Antimony (mg/L)	1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Arsenic (mg/L)	6	15	0.001	0.001	0.00125	0.002	0.002	0.002	0.002	0.002	0.002
Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	6	15	0.24	0.24	0.693	2.54	3.795	4.05	4.185	4.253	4.307
Total Cadmium (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	5	16	0.0014	0.0018	0.002	0.002	0.002	0.0022	0.0026	0.0028	0.00296
Total Cobalt (mg/L)	2	19	0.0022	0.0024	0.0025	0.003	0.0035	0.0036	0.0038	0.0039	0.00398
Total Copper (mg/L)	6	15	0.018	0.02	0.021	0.026	0.04	0.044	0.0475	0.0493	0.0507
Total Dissolved Solids @180°C-Total (µg/L)	6	15	860000	1020000	2082500	6000000	7510000	7770000	11885000	13942500	15588500
Total Dissolved Solids @180°C-Total (mg/L)	6	15	860	1020	2083	6000	7510	7770	11885	13943	15589
Total Lead (mg/L)	3	18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Manganese (mg/L)	6	15	0.003	0.003	0.00325	0.005	0.00975	0.011	0.0165	0.0193	0.0215
Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	6	15	0.007	0.007	0.00775	0.011	0.0128	0.013	0.014	0.0145	0.0149
Total Nickel (mg/L)	6	15	0.002	0.002	0.00225	0.003	0.00525	0.006	0.007	0.0075	0.0079
Total Selenium (mg/L)	3	18	0.012	0.014	0.015	0.02	0.02	0.02	0.02	0.02	0.02
Total Silver (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	6	15	0.493	0.52	1.108	3.455	5.195	5.58	5.675	5.723	5.761
Total Thorium (mg/L)	1	20	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Total Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	5	16	4.0000E-4	8.0000E-4	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	7	14	0.011	0.0112	0.0115	0.013	0.0185	0.0194	0.022	0.0235	0.0247

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.2 12/08/2024 2:11:10 PM

User Selected Options

From File TSF B.xls

Full Precision OFF

From File: TSF B.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

	Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Total Zinc (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0146	8.3300E-5	0.00913	0.625
13	Bicarbonate Alkalinity as CaCO3 (µg/L)	5	15	5	0	0.00%	N/A	N/A	83600	1.063E+8	10310	0.123
14	Bicarbonate Alkalinity as CaCO3 (mg/L)	5	15	5	0	0.00%	N/A	N/A	83.6	106.3	10.31	0.123
15	Carbonate Alkalinity as CaCO3 (µg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Carbonate Alkalinity as CaCO3 (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
17	Cations Total (meq/L)	5	15	5	0	0.00%	N/A	N/A	64.62	602.5	24.55	0.38
18	Chloride (mg/L)	11	9	11	0	0.00%	N/A	N/A	2021	318109	564	0.279
19	Depth to Water (m)	11	9	11	0	0.00%	N/A	N/A	5.364	0.0914	0.302	0.0564
20	Dissolved Antimony (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
21	Dissolved Arsenic (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.001	0	0	N/A
22	Dissolved Beryllium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
23	Dissolved Boron (mg/L)	5	15	5	0	0.00%	N/A	N/A	1.08	0.0247	0.157	0.145
24	Dissolved Cadmium (mg/L)	2	18	2	0	0.00%	N/A	N/A	2.0000E-4	0	0	N/A
25	Dissolved Calcium (µg/L)	11	9	11	0	0.00%	N/A	N/A	429364	1.559E+10	124868	0.291
26	Dissolved Calcium (mg/L)	11	9	11	0	0.00%	N/A	N/A	429.4	15592	124.9	0.291
27	Dissolved Chromium (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.002	0	0	N/A
28	Dissolved Cobalt (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
29	Dissolved Copper (mg/L)	10	10	10	0	0.00%	N/A	N/A	0.0019	5.4444E-7	7.3786E-4	0.388
30	Dissolved Lead (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
31	Dissolved Magnesium (µg/L)	5	15	5	0	0.00%	N/A	N/A	165000	5.609E+9	74890	0.454
32	Dissolved Magnesium (mg/L)	11	9	11	0	0.00%	N/A	N/A	187.3	2878	53.65	0.286
33	Dissolved Manganese (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.0025	5.0000E-7	7.0711E-4	0.283
34	Dissolved Mercury (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
35	Dissolved Molybdenum (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0054	8.3000E-6	0.00288	0.534
36	Dissolved Nickel (mg/L)	4	16	4	0	0.00%	N/A	N/A	0.00275	2.5000E-7	5.0000E-4	0.182
37	Dissolved Potassium (µg/L)	5	15	5	0	0.00%	N/A	N/A	28200	64700000	8044	0.285
38	Dissolved Potassium (mg/L)	11	9	11	0	0.00%	N/A	N/A	31.27	38.22	6.182	0.198
39	Dissolved Selenium (mg/L)	9	11	9	0	0.00%	N/A	N/A	0.0156	2.7778E-5	0.00527	0.339
40	Dissolved Silver (mg/L)	1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
41	Dissolved Sodium (µg/L)	11	9	11	0	0.00%	N/A	N/A	822455	2.953E+10	171847	0.209
42	Dissolved Sodium (mg/L)	11	9	11	0	0.00%	N/A	N/A	822.5	29531	171.8	0.209
43	Dissolved Strontium (mg/L)	11	9	11	0	0.00%	N/A	N/A	4.081	1.386	1.177	0.288
44	Dissolved Thorium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Tin (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Titanium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
47	Dissolved Uranium (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.001	5.0000E-7	7.0711E-4	0.707
48	Dissolved Vanadium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
49	Dissolved Zinc (mg/L)	12	8	12	0	0.00%	N/A	N/A	0.0121	4.3902E-5	0.00663	0.548
50	Electrical Conductivity @ 25°C (µS/cm)	3	17	3	0	0.00%	N/A	N/A	5677	7431433	2726	0.48
51	FLS EC	4	16	4	0	0.00%	N/A	N/A	6.75	12.61	3.551	0.526
52	FLS pH	4	16	4	0	0.00%	N/A	N/A	6.743	0.161	0.402	0.0596
53	FLS Temp	4	16	4	0	0.00%	N/A	N/A	25	6.787	2.605	0.104
54	Hydroxide Alkalinity as CaCO3 (µg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Hydroxide Alkalinity as CaCO3 (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
56	Ionic Balance (Percent)	16	4	16	0	0.00%	N/A	N/A	3.054	3.422	1.85	0.606
57	pH (no unit)	16	4	16	0	0.00%	N/A	N/A	7.443	0.047	0.217	0.0291
58	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	11	9	11	0	0.00%	N/A	N/A	708545	7.270E+10	269631	0.381
59	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	11	9	11	0	0.00%	N/A	N/A	708.5	72701	269.6	0.381
60	Total Alkalinity as CaCO3 (mg/L)	6	14	6	0	0.00%	N/A	N/A	74	638	25.26	0.341
61	Total Anions (meq/L)	6	14	6	0	0.00%	N/A	N/A	56.47	986.3	31.4	0.556
62	Total Antimony (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
63	Total Arsenic (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
64	Total Beryllium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
65	Total Boron (mg/L)	6	14	6	0	0.00%	N/A	N/A	1.048	0.146	0.382	0.365
66	Total Cadmium (µg/L)	2	18	2	0	0.00%	N/A	N/A	0.2	0	0	N/A
67	Total Cadmium (mg/L)	2	18	2	0	0.00%	N/A	N/A	2.0000E-4	0	0	N/A
68	Total Chromium (mg/L)	4	16	4	0	0.00%	N/A	N/A	0.002	0	0	N/A
69	Total Cobalt (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
70	Total Copper (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00636	7.4855E-5	0.00865	1.36
71	Total Dissolved Solids @180°C-Total (µg/L)	11	9	11	0	0.00%	N/A	N/A	4572727	1.280E+12	1131416	0.247
72	Total Dissolved Solids @180°C-Total (mg/L)	11	9	11	0	0.00%	N/A	N/A	4573	1280102	1131	0.247
73	Total Lead (mg/L)	2	18	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
74	Total Manganese (mg/L)	5	15	5	0	0.00%	N/A	N/A	0.0154	3.0480E-4	0.0175	1.134
75	Total Mercury (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
76	Total Molybdenum (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00582	1.3636E-6	0.00117	0.201
77	Total Nickel (mg/L)	11	9	11	0	0.00%	N/A	N/A	0.00309	1.0909E-6	0.00104	0.338
78	Total Selenium (mg/L)	9	11	9	0	0.00%	N/A	N/A	0.02	0	0	N/A
79	Total Silver (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
80	Total Strontium (mg/L)	11	9	11	0	0.00%	N/A	N/A	4.416	1.426	1.194	0.27
81	Total Thorium (mg/L)	1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
82	Total Tin (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Titanium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
84	Total Uranium (mg/L)	3	17	3	0	0.00%	N/A	N/A	0.00133	1.3333E-6	0.00115	0.866
85	Total Vanadium (mg/L)	0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

	Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Total Zinc (mg/L)	5	15	0.007	0.026	0.0146	0.009	8.3300E-5	0.00913	0.00297	0.642	0.625
91	Bicarbonate Alkalinity as CaCO3 (µg/L)	5	15	70000	96000	83600	83000	1.063E+8	10310	11861	-0.144	0.123
92	Bicarbonate Alkalinity as CaCO3 (mg/L)	5	15	70	96	83.6	83	106.3	10.31	11.86	-0.144	0.123
93	Carbonate Alkalinity as CaCO3 (µg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Carbonate Alkalinity as CaCO3 (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
95	Cations Total (meq/L)	5	15	37.7	87.9	64.62	77.3	602.5	24.55	15.72	-0.502	0.38
96	Chloride (mg/L)	11	9	1030	2660	2021	2050	318109	564	429.9	-0.736	0.279
97	Depth to Water (m)	11	9	4.93	5.71	5.364	5.43	0.0914	0.302	0.371	-0.238	0.0564
98	Dissolved Antimony (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
99	Dissolved Arsenic (mg/L)	2	18	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
100	Dissolved Beryllium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
101	Dissolved Boron (mg/L)	5	15	0.84	1.25	1.08	1.14	0.0247	0.157	0.163	-0.922	0.145
102	Dissolved Cadmium (mg/L)	2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	0	0	0	N/A	N/A
103	Dissolved Calcium (µg/L)	11	9	184000	531000	429364	459000	1.559E+10	124868	62268	-1.612	0.291
104	Dissolved Calcium (mg/L)	11	9	184	531	429.4	459	15592	124.9	62.27	-1.612	0.291
105	Dissolved Chromium (mg/L)	3	17	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
106	Dissolved Cobalt (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
107	Dissolved Copper (mg/L)	10	10	0.001	0.003	0.0019	0.002	5.4444E-7	7.3786E-4	7.4129E-4	0.166	0.388
108	Dissolved Lead (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
109	Dissolved Magnesium (µg/L)	5	15	85000	250000	165000	196000	5.609E+9	74890	80059	-0.266	0.454
110	Dissolved Magnesium (mg/L)	11	9	85	250	187.3	196	2878	53.65	16.31	-1.325	0.286
111	Dissolved Manganese (mg/L)	2	18	0.002	0.003	0.0025	0.0025	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.283
112	Dissolved Mercury (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
113	Dissolved Molybdenum (mg/L)	5	15	0.003	0.01	0.0054	0.005	8.3000E-6	0.00288	0.00297	1.217	0.534
114	Dissolved Nickel (mg/L)	4	16	0.002	0.003	0.00275	0.003	2.5000E-7	5.0000E-4	0	-2	0.182
115	Dissolved Potassium (µg/L)	5	15	19000	35000	28200	32000	64700000	8044	4448	-0.517	0.285
116	Dissolved Potassium (mg/L)	11	9	19	38	31.27	34	38.22	6.182	2.965	-1.439	0.198
117	Dissolved Selenium (mg/L)	9	11	0.01	0.02	0.0156	0.02	2.7778E-5	0.00527	0	-0.271	0.339
118	Dissolved Silver (mg/L)	1	19	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
119	Dissolved Sodium (µg/L)	11	9	484000	960000	822455	908000	2.953E+10	171847	71164	-1.611	0.209
120	Dissolved Sodium (mg/L)	11	9	484	960	822.5	908	29531	171.8	71.16	-1.611	0.209
121	Dissolved Strontium (mg/L)	11	9	2.22	5.56	4.081	4.5	1.386	1.177	0.771	-0.741	0.288
122	Dissolved Thorium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Tin (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Titanium (mg/L)	0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Uranium (mg/L)		5	15	0	0.002	0.001	0.001	5.0000E-7	7.0711E-4	0	0	0.707
126	Dissolved Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
127	Dissolved Zinc (mg/L)		12	8	0.006	0.028	0.0121	0.01	4.3902E-5	0.00663	0.00222	1.796	0.548
128	Electrical Conductivity @ 25°C (µS/cm)		3	17	3960	8820	5677	4250	7431433	2726	429.9	1.71	0.48
129	FLS EC		4	16	1.44	8.72	6.75	8.42	12.61	3.551	0.437	-1.965	0.526
130	FLS pH		4	16	6.42	7.33	6.743	6.61	0.161	0.402	0.141	1.692	0.0596
131	FLS Temp		4	16	22.1	27.3	25	25.3	6.787	2.605	2.817	-0.239	0.104
132	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
134	Ionic Balance (Percent)		16	4	0.17	5.94	3.054	3.06	3.422	1.85	2.209	-0.0742	0.606
135	pH (no unit)		16	4	6.78	7.65	7.443	7.495	0.047	0.217	0.0964	-2.183	0.0291
136	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		11	9	193000	980000	708545	832000	7.270E+10	269631	65234	-1.145	0.381
137	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		11	9	193	980	708.5	832	72701	269.6	65.23	-1.145	0.381
138	Total Alkalinity as CaCO3 (mg/L)		6	14	26	96	74	80.5	638	25.26	15.57	-1.756	0.341
139	Total Anions (meq/L)		6	14	12.2	96.8	56.47	57.75	986.3	31.4	27.95	-0.167	0.556
140	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Arsenic (mg/L)		2	18	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
142	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
143	Total Boron (mg/L)		6	14	0.27	1.24	1.048	1.185	0.146	0.382	0.0519	-2.415	0.365
144	Total Cadmium (µg/L)		2	18	0.2	0.2	0.2	0.2	0	0	0	N/A	N/A
145	Total Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	0	0	0	N/A	N/A
146	Total Chromium (mg/L)		4	16	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
147	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
148	Total Copper (mg/L)		11	9	0.002	0.032	0.00636	0.004	7.4855E-5	0.00865	0.00297	3.116	1.36
149	Total Dissolved Solids @180°C-Total (µg/L)		11	9	2280000	5600000	4572727	4940000	1.280E+12	1131416	504077	-1.636	0.247
150	Total Dissolved Solids @180°C-Total (mg/L)		11	9	2280	5600	4573	4940	1280102	1131	504.1	-1.636	0.247
151	Total Lead (mg/L)		2	18	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
152	Total Manganese (mg/L)		5	15	0.002	0.044	0.0154	0.007	3.0480E-4	0.0175	0.00741	1.489	1.134
153	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
154	Total Molybdenum (mg/L)		11	9	0.004	0.008	0.00582	0.006	1.3636E-6	0.00117	0	-0.0381	0.201
155	Total Nickel (mg/L)		11	9	0.001	0.005	0.00309	0.003	1.0909E-6	0.00104	0	-0.213	0.338
156	Total Selenium (mg/L)		9	11	0.02	0.02	0.02	0.02	0	0	0	N/A	N/A
157	Total Silver (mg/L)		3	17	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
158	Total Strontium (mg/L)		11	9	2.29	6.23	4.416	4.52	1.426	1.194	0.697	-0.755	0.27
159	Total Thorium (mg/L)		1	19	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
160	Total Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
162	Total Uranium (mg/L)		3	17	0	0.002	0.00133	0.002	1.3333E-6	0.00115	0	-1.732	0.866
163	Total Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Total Zinc (mg/L)		5	15	0.0074	0.0078	0.008	0.009	0.023	0.0236	0.0248	0.0254	0.0259
169	Bicarbonate Alkalinity as CaCO3 (µg/L)		5	15	73200	76400	78000	83000	91000	92000	94000	95000	95800
170	Bicarbonate Alkalinity as CaCO3 (mg/L)		5	15	73.2	76.4	78	83	91	92	94	95	95.8
171	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
173	Cations Total (meq/L)		5	15	37.98	38.26	38.4	77.3	81.8	83.02	85.46	86.68	87.66
174	Chloride (mg/L)		11	9	1090	1760	1815	2050	2460	2580	2650	2655	2659
175	Depth to Water (m)		11	9	4.97	5.07	5.105	5.43	5.655	5.67	5.68	5.695	5.707
176	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Arsenic (mg/L)		2	18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
178	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
179	Dissolved Boron (mg/L)		5	15	0.912	0.984	1.02	1.14	1.15	1.17	1.21	1.23	1.246
180	Dissolved Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4
181	Dissolved Calcium (µg/L)		11	9	188000	422000	438500	459000	509500	518000	522000	526500	530100
182	Dissolved Calcium (mg/L)		11	9	188	422	438.5	459	509.5	518	522	526.5	530.1
183	Dissolved Chromium (mg/L)		3	17	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
184	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
185	Dissolved Copper (mg/L)		10	10	0.001	0.001	0.00125	0.002	0.002	0.0022	0.003	0.003	0.003
186	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
187	Dissolved Magnesium (µg/L)		5	15	85800	86600	87000	196000	207000	215600	232800	241400	248280
188	Dissolved Magnesium (mg/L)		11	9	87	185	188	196	217.5	228	229	239.5	247.9
189	Dissolved Manganese (mg/L)		2	18	0.0021	0.0022	0.00225	0.0025	0.00275	0.0028	0.0029	0.00295	0.00299
190	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
191	Dissolved Molybdenum (mg/L)		5	15	0.003	0.003	0.003	0.005	0.006	0.0068	0.0084	0.0092	0.00984
192	Dissolved Nickel (mg/L)		4	16	0.0023	0.0026	0.00275	0.003	0.003	0.003	0.003	0.003	0.003
193	Dissolved Potassium (µg/L)		5	15	19400	19800	20000	32000	35000	35000	35000	35000	35000
194	Dissolved Potassium (mg/L)		11	9	20	30	31	34	35	35	35	36.5	37.7
195	Dissolved Selenium (mg/L)		9	11	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
196	Dissolved Silver (mg/L)		1	19	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
197	Dissolved Sodium (µg/L)		11	9	492000	806000	820500	908000	922000	933000	948000	954000	958800
198	Dissolved Sodium (mg/L)		11	9	492	806	820.5	908	922	933	948	954	958.8
199	Dissolved Strontium (mg/L)		11	9	2.4	2.46	3.26	4.5	4.855	5.02	5.11	5.335	5.515
200	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
203	Dissolved Uranium (mg/L)		5	15	4.0000E-4	8.0000E-4	0.001	0.001	0.001	0.0012	0.0016	0.0018	0.00196
204	Dissolved Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
205	Dissolved Zinc (mg/L)		12	8	0.0063	0.009	0.009	0.01	0.012	0.012	0.0219	0.0253	0.0275
206	Electrical Conductivity @ 25°C (µS/cm)		3	17	4018	4076	4105	4250	6535	6992	7906	8363	8729
207	FLS EC		4	16	3.447	5.454	6.458	8.42	8.713	8.714	8.717	8.719	8.72
208	FLS pH		4	16	6.477	6.534	6.563	6.61	6.79	6.898	7.114	7.222	7.308
209	FLS Temp		4	16	22.52	22.94	23.15	25.3	27.15	27.18	27.24	27.27	27.29
210	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
212	Ionic Balance (Percent)		16	4	0.555	1.13	1.715	3.06	4.405	4.84	5.375	5.813	5.915
213	pH (no unit)		16	4	7.23	7.42	7.435	7.495	7.558	7.61	7.625	7.635	7.647
214	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		11	9	353000	358000	577000	832000	869000	876000	905000	942500	972500
215	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		11	9	353	358	577	832	869	876	905	942.5	972.5
216	Total Alkalinity as CaCO3 (mg/L)		6	14	48	70	72	80.5	89	91	93.5	94.75	95.75
217	Total Anions (meq/L)		6	14	25.25	38.3	38.73	57.75	75.88	76	86.4	91.6	95.76
218	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Arsenic (mg/L)		2	18	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
220	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
221	Total Boron (mg/L)		6	14	0.72	1.17	1.173	1.185	1.228	1.24	1.24	1.24	1.24
222	Total Cadmium (µg/L)		2	18	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
223	Total Cadmium (mg/L)		2	18	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4
224	Total Chromium (mg/L)		4	16	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
225	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
226	Total Copper (mg/L)		11	9	0.002	0.002	0.0025	0.004	0.005	0.006	0.007	0.0195	0.0295
227	Total Dissolved Solids @180°C-Total (µg/L)		11	9	2440000	4600000	4715000	4940000	5175000	5290000	5440000	5520000	5584000
228	Total Dissolved Solids @180°C-Total (mg/L)		11	9	2440	4600	4715	4940	5175	5290	5440	5520	5584
229	Total Lead (mg/L)		2	18	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
230	Total Manganese (mg/L)		5	15	0.0028	0.0036	0.004	0.007	0.02	0.0248	0.0344	0.0392	0.043
231	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
232	Total Molybdenum (mg/L)		11	9	0.004	0.005	0.0055	0.006	0.006	0.006	0.007	0.0075	0.0079
233	Total Nickel (mg/L)		11	9	0.002	0.003	0.003	0.003	0.0035	0.004	0.004	0.0045	0.0049
234	Total Selenium (mg/L)		9	11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
235	Total Silver (mg/L)		3	17	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
236	Total Strontium (mg/L)		11	9	2.35	4.18	4.26	4.52	5.02	5.05	5.56	5.895	6.163
237	Total Thorium (mg/L)		1	19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
238	Total Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
240	Total Uranium (mg/L)		3	17	4.0000E-4	8.0000E-4	0.001	0.002	0.002	0.002	0.002	0.002	0.002
241	Total Vanadium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2			Date/Time of Computation	ProUCL 5.2 12/08/2024 2:16:54 PM									
3			User Selected Options										
4			From File	TSF C.xls									
5			Full Precision	OFF									
6													
7	From File: TSF C.xls												
8													
9	General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method												
10													
11	Variable		NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	6	0	0.00%	N/A	N/A	71833	8966667	2994	0.0417
13	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	6	0	0.00%	N/A	N/A	71.83	8.967	2.994	0.0417
14	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)		12	8	12	0	0.00%	N/A	N/A	69.66	26.28	5.126	0.0736
17	Chloride (mg/L)		12	8	12	0	0.00%	N/A	N/A	1844	15917	126.2	0.0684
18	Depth to Water (m)		12	8	12	0	0.00%	N/A	N/A	12.5	0.125	0.353	0.0283
19	Dissolved Antimony (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
20	Dissolved Arsenic (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
21	Dissolved Beryllium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)		6	14	6	0	0.00%	N/A	N/A	1.495	0.0145	0.12	0.0806
23	Dissolved Cadmium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
24	Dissolved Calcium (µg/L)		6	14	6	0	0.00%	N/A	N/A	362167	2.002E+8	14148	0.0391
25	Dissolved Calcium (mg/L)		6	14	6	0	0.00%	N/A	N/A	362.2	200.2	14.15	0.0391
26	Dissolved Chromium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00417	1.6667E-7	4.0825E-4	0.098
27	Dissolved Cobalt (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)		4	16	4	0	0.00%	N/A	N/A	0.0015	3.3333E-7	5.7735E-4	0.385
29	Dissolved Lead (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
30	Dissolved Magnesium (µg/L)		12	8	12	0	0.00%	N/A	N/A	158000	1.724E+8	13129	0.0831
31	Dissolved Magnesium (mg/L)		6	14	6	0	0.00%	N/A	N/A	159.3	37.47	6.121	0.0384
32	Dissolved Manganese (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
33	Dissolved Mercury (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.003	1.2000E-6	0.0011	0.365
35	Dissolved Nickel (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
36	Dissolved Potassium (µg/L)		12	8	12	0	0.00%	N/A	N/A	32000	4181818	2045	0.0639
37	Dissolved Potassium (mg/L)		12	8	12	0	0.00%	N/A	N/A	32	4.182	2.045	0.0639
38	Dissolved Selenium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
39	Dissolved Silver (mg/L)		1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
40	Dissolved Sodium (µg/L)		6	14	6	0	0.00%	N/A	N/A	865333	3.119E+8	17660	0.0204
41	Dissolved Sodium (mg/L)		12	8	12	0	0.00%	N/A	N/A	867.5	3963	62.95	0.0726
42	Dissolved Strontium (mg/L)		12	8	12	0	0.00%	N/A	N/A	3.791	0.414	0.643	0.17
43	Dissolved Thorium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00133	6.6667E-7	8.1650E-4	0.612
47	Dissolved Vanadium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
48	Dissolved Zinc (mg/L)		12	8	12	0	0.00%	N/A	N/A	0.00958	1.2447E-5	0.00353	0.368
49	Electrical Conductivity @ 25°C (µS/cm)		4	16	4	0	0.00%	N/A	N/A	7185	576433	759.2	0.106
50	FLS EC		4	16	4	0	0.00%	N/A	N/A	6.265	0.62	0.788	0.126
51	FLS pH		4	16	4	0	0.00%	N/A	N/A	6.935	0.0294	0.172	0.0247
52	FLS Temp		4	16	4	0	0.00%	N/A	N/A	26.13	9.109	3.018	0.116
53	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)		17	3	17	0	0.00%	N/A	N/A	2.672	2.602	1.613	0.604
56	pH (no unit)		17	3	17	0	0.00%	N/A	N/A	7.576	0.0296	0.172	0.0227
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	6	0	0.00%	N/A	N/A	745333	1.560E+9	39495	0.053
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	6	0	0.00%	N/A	N/A	745.3	1560	39.5	0.053
59	Total Alkalinity as CaCO3 (mg/L)		6	14	6	0	0.00%	N/A	N/A	71.83	8.967	2.994	0.0417
60	Total Anions (meq/L)		6	14	6	0	0.00%	N/A	N/A	68.25	5.027	2.242	0.0329
61	Total Antimony (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
62	Total Arsenic (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00183	1.6667E-7	4.0825E-4	0.223
63	Total Beryllium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)		6	14	6	0	0.00%	N/A	N/A	1.602	0.00218	0.0467	0.0291
65	Total Cadmium (µg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
66	Total Cadmium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
67	Total Chromium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00417	1.6667E-7	4.0825E-4	0.098
68	Total Cobalt (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.00233	6.6667E-7	8.1650E-4	0.35
70	Total Dissolved Solids @180°C-Total (µg/L)		5	15	5	0	0.00%	N/A	N/A	4406000	3.040E+11	551344	0.125
71	Total Dissolved Solids @180°C-Total (mg/L)		5	15	5	0	0.00%	N/A	N/A	4406	303980	551.3	0.125
72	Total Lead (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
73	Total Manganese (mg/L)		9	11	9	0	0.00%	N/A	N/A	0.002	2.5000E-7	5.0000E-4	0.25
74	Total Mercury (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0035	3.0000E-7	5.4772E-4	0.156
76	Total Nickel (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
77	Total Selenium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0117	1.6667E-5	0.00408	0.35
78	Total Silver (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
79	Total Strontium (mg/L)		6	14	6	0	0.00%	N/A	N/A	4.03	0.214	0.462	0.115
80	Total Thorium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
81	Total Tin (mg/L)		1	19	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
82	Total Titanium (mg/L)		0	20	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0015	7.0000E-7	8.3666E-4	0.558
84	Total Vanadium (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.01	0	0	N/A
85	Total Zinc (mg/L)		6	14	6	0	0.00%	N/A	N/A	0.0095	2.9500E-5	0.00543	0.572
86													
87	General Statistics for Raw Data Sets using Detected Data Only												
88													
89	Variable		NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	68000	76000	71833	71500	8966667	2994	2965	0.173	0.0417
91	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	68	76	71.83	71.5	8.967	2.994	2.965	0.173	0.0417
92	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)		12	8	58.2	80.2	69.66	70.15	26.28	5.126	2.891	-0.274	0.0736
95	Chloride (mg/L)		12	8	1620	2060	1844	1820	15917	126.2	103.8	0.0948	0.0684
96	Depth to Water (m)		12	8	11.92	12.87	12.5	12.6	0.125	0.353	0.341	-0.489	0.0283
97	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
98	Dissolved Arsenic (mg/L)		6	14	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
99	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)		6	14	1.32	1.63	1.495	1.5	0.0145	0.12	0.148	-0.334	0.0806
101	Dissolved Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
102	Dissolved Calcium (µg/L)		6	14	342000	378000	362167	364000	2.002E+8	14148	17050	-0.377	0.0391
103	Dissolved Calcium (mg/L)		6	14	342	378	362.2	364	200.2	14.15	17.05	-0.377	0.0391
104	Dissolved Chromium (mg/L)		6	14	0.004	0.005	0.00417	0.004	1.6667E-7	4.0825E-4	0	2.449	0.098
105	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)		4	16	0.001	0.002	0.0015	0.0015	3.3333E-7	5.7735E-4	7.4129E-4	0	0.385
107	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
108	Dissolved Magnesium (µg/L)		12	8	128000	183000	158000	159500	1.724E+8	13129	10378	-0.485	0.0831
109	Dissolved Magnesium (mg/L)		6	14	152	170	159.3	159.5	37.47	6.121	3.706	0.966	0.0384
110	Dissolved Manganese (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
111	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)		6	14	0.002	0.005	0.003	0.003	1.2000E-6	0.0011	7.4129E-4	1.369	0.365
113	Dissolved Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
114	Dissolved Potassium (µg/L)		12	8	28000	36000	32000	32000	4181818	2045	1483	0	0.0639
115	Dissolved Potassium (mg/L)		12	8	28	36	32	32	4.182	2.045	1.483	0	0.0639
116	Dissolved Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
117	Dissolved Silver (mg/L)		1	19	0.004	0.004	0.004	0.004	N/A	N/A	0	N/A	N/A
118	Dissolved Sodium (µg/L)		6	14	838000	884000	865333	869000	3.119E+8	17660	18532	-0.657	0.0204
119	Dissolved Sodium (mg/L)		12	8	727	998	867.5	869	3963	62.95	34.84	-0.236	0.0726
120	Dissolved Strontium (mg/L)		12	8	1.89	4.45	3.791	3.85	0.414	0.643	0.193	-2.617	0.17
121	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)		6	14	0	0.002	0.00133	0.0015	6.6667E-7	8.1650E-4	7.4129E-4	-0.857	0.612

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
126	Dissolved Zinc (mg/L)		12	8	0.006	0.019	0.00958	0.0085	1.2447E-5	0.00353	0.00222	1.95	0.368
127	Electrical Conductivity @ 25°C (µS/cm)		4	16	6410	8230	7185	7050	576433	759.2	481.8	1.022	0.106
128	FLS EC		4	16	5.1	6.81	6.265	6.575	0.62	0.788	0.237	-1.837	0.126
129	FLS pH		4	16	6.72	7.14	6.935	6.94	0.0294	0.172	0.148	-0.175	0.0247
130	FLS Temp		4	16	21.7	28.5	26.13	27.15	9.109	3.018	1.038	-1.724	0.116
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		17	3	0.24	6.16	2.672	2.19	2.602	1.613	1.557	0.698	0.604
134	pH (no unit)		17	3	7.19	7.75	7.576	7.63	0.0296	0.172	0.0741	-1.489	0.0227
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	693000	792000	745333	747000	1.560E+9	39495	42254	-0.145	0.053
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	693	792	745.3	747	1560	39.5	42.25	-0.145	0.053
137	Total Alkalinity as CaCO3 (mg/L)		6	14	68	76	71.83	71.5	8.967	2.994	2.965	0.173	0.0417
138	Total Anions (meq/L)		6	14	66.3	72	68.25	67.35	5.027	2.242	1.26	1.107	0.0329
139	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		6	14	0.001	0.002	0.00183	0.002	1.6667E-7	4.0825E-4	0	-2.449	0.223
141	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		6	14	1.56	1.66	1.602	1.585	0.00218	0.0467	0.0371	0.711	0.0291
143	Total Cadmium (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
144	Total Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
145	Total Chromium (mg/L)		6	14	0.004	0.005	0.00417	0.004	1.6667E-7	4.0825E-4	0	2.449	0.098
146	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		6	14	0.001	0.003	0.00233	0.0025	6.6667E-7	8.1650E-4	7.4129E-4	-0.857	0.35
148	Total Dissolved Solids @180°C-Total (µg/L)		5	15	3740000	5260000	4406000	4340000	3.040E+11	551344	192735	0.798	0.125
149	Total Dissolved Solids @180°C-Total (mg/L)		5	15	3740	5260	4406	4340	303980	551.3	192.7	0.798	0.125
150	Total Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
151	Total Manganese (mg/L)		9	11	0.001	0.003	0.002	0.002	2.5000E-7	5.0000E-4	0	0	0.25
152	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		6	14	0.003	0.004	0.0035	0.0035	3.0000E-7	5.4772E-4	7.4129E-4	3.681E-15	0.156
154	Total Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
155	Total Selenium (mg/L)		6	14	0.01	0.02	0.0117	0.01	1.6667E-5	0.00408	0	2.449	0.35
156	Total Silver (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		6	14	3.52	4.64	4.03	3.935	0.214	0.462	0.497	0.323	0.115
158	Total Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
159	Total Tin (mg/L)		1	19	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		6	14	0	0.002	0.0015	0.002	7.0000E-7	8.3666E-4	0	-1.537	0.558
162	Total Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
163	Total Zinc (mg/L)		6	14	0.005	0.02	0.0095	0.008	2.9500E-5	0.00543	0.00297	1.904	0.572
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	14	69000	70000	70000	71500	73750	74000	75000	75500	75900
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	14	69	70	70	71.5	73.75	74	75	75.5	75.9
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		12	8	66.11	67.32	67.93	70.15	71.5	71.94	73.09	76.35	79.43
173	Chloride (mg/L)		12	8	1717	1780	1780	1820	1933	1960	1997	2027	2053
174	Depth to Water (m)		12	8	12.07	12.1	12.14	12.6	12.83	12.83	12.83	12.85	12.87
175	Dissolved Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		6	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
177	Dissolved Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		6	14	1.365	1.41	1.423	1.5	1.593	1.61	1.62	1.625	1.629
179	Dissolved Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		6	14	346500	351000	352750	364000	373000	374000	376000	377000	377800
181	Dissolved Calcium (mg/L)		6	14	346.5	351	352.8	364	373	374	376	377	377.8
182	Dissolved Chromium (mg/L)		6	14	0.004	0.004	0.004	0.004	0.004	0.004	0.0045	0.00475	0.00495
183	Dissolved Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		4	16	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
185	Dissolved Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	Dissolved Magnesium (µg/L)		12	8	150200	152000	152000	159500	162250	165000	169600	175850	181570
187	Dissolved Magnesium (mg/L)		6	14	153.5	155	156	159.5	160	160	165	167.5	169.5
188	Dissolved Manganese (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
189	Dissolved Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		6	14	0.002	0.002	0.00225	0.003	0.003	0.003	0.004	0.0045	0.0049
191	Dissolved Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
192	Dissolved Potassium (µg/L)		12	8	30100	31000	31000	32000	33000	33000	33900	34900	35780
193	Dissolved Potassium (mg/L)		12	8	30.1	31	31	32	33	33	33.9	34.9	35.78
194	Dissolved Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
195	Dissolved Silver (mg/L)		1	19	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
196	Dissolved Sodium (µg/L)		6	14	845500	853000	855250	869000	878250	879000	881500	882750	883750
197	Dissolved Sodium (mg/L)		12	8	824.5	841	849.3	869	889.5	901.6	907.8	948.5	988.1
198	Dissolved Strontium (mg/L)		12	8	3.696	3.756	3.773	3.85	4.11	4.198	4.239	4.335	4.427
199	Dissolved Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		6	14	5.0000E-4	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
203	Dissolved Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
204	Dissolved Zinc (mg/L)		12	8	0.007	0.0072	0.00775	0.0085	0.0103	0.0108	0.0128	0.0157	0.0183
205	Electrical Conductivity @ 25°C (µS/cm)		4	16	6599	6788	6883	7050	7353	7528	7879	8055	8195
206	FLS EC		4	16	5.517	5.934	6.143	6.575	6.698	6.72	6.765	6.788	6.806
207	FLS pH		4	16	6.786	6.852	6.885	6.94	6.99	7.02	7.08	7.11	7.134
208	FLS Temp		4	16	23.32	24.94	25.75	27.15	27.53	27.72	28.11	28.31	28.46
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		17	3	1.056	1.506	1.57	2.19	3.4	4.104	4.7	5.448	6.018
212	pH (no unit)		17	3	7.266	7.558	7.59	7.63	7.68	7.688	7.716	7.742	7.748
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	14	705500	718000	719000	747000	774250	775000	783500	787750	791150
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	14	705.5	718	719	747	774.3	775	783.5	787.8	791.2
215	Total Alkalinity as CaCO3 (mg/L)		6	14	69	70	70	71.5	73.75	74	75	75.5	75.9
216	Total Anions (meq/L)		6	14	66.5	66.7	66.7	67.35	69.35	69.8	70.9	71.45	71.89
217	Total Antimony (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		6	14	0.0015	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
219	Total Beryllium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		6	14	1.56	1.56	1.565	1.585	1.643	1.66	1.66	1.66	1.66
221	Total Cadmium (µg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
222	Total Cadmium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
223	Total Chromium (mg/L)		6	14	0.004	0.004	0.004	0.004	0.004	0.004	0.0045	0.00475	0.00495
224	Total Cobalt (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		6	14	0.0015	0.002	0.002	0.0025	0.003	0.003	0.003	0.003	0.003
226	Total Dissolved Solids @180°C-Total (µg/L)		5	15	3932000	4124000	4220000	4340000	4470000	4628000	4944000	5102000	5228400
227	Total Dissolved Solids @180°C-Total (mg/L)		5	15	3932	4124	4220	4340	4470	4628	4944	5102	5228
228	Total Lead (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
229	Total Manganese (mg/L)		9	11	0.0018	0.002	0.002	0.002	0.002	0.002	0.0022	0.0026	0.00292
230	Total Mercury (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		6	14	0.003	0.003	0.003	0.0035	0.004	0.004	0.004	0.004	0.004
232	Total Nickel (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
233	Total Selenium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.015	0.0175	0.0195
234	Total Silver (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		6	14	3.6	3.68	3.688	3.935	4.393	4.47	4.555	4.598	4.632
236	Total Thorium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
237	Total Tin (mg/L)		1	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
238	Total Titanium (mg/L)		0	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		6	14	5.0000E-4	0.001	0.00125	0.002	0.002	0.002	0.002	0.002	0.002
240	Total Vanadium (mg/L)		6	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
241	Total Zinc (mg/L)		6	14	0.0055	0.006	0.0065	0.008	0.0095	0.01	0.015	0.0175	0.0195

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.2 12/08/2024 2:18:58 PM

User Selected Options

From File TSF D.xls

Full Precision OFF

From File: TSF D.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
kalinity as CaCO3 (µg/L)	5	10	5	0	0.00%	N/A	N/A	226600	9.173E+8	30287	0.134
alinity as CaCO3 (mg/L)	5	10	5	0	0.00%	N/A	N/A	226.6	917.3	30.29	0.134
kalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	10	5	0	0.00%	N/A	N/A	92.88	28.27	5.317	0.0572
Chloride (mg/L)	5	10	5	0	0.00%	N/A	N/A	2884	19430	139.4	0.0483
Depth to Water (m)	3	12	3	0	0.00%	N/A	N/A	90.42	0.00173	0.0416	4.6046E-4
ssolved Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
ssolved Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.568	0.118	0.343	0.0961
ssolved Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Calcium (µg/L)	5	10	5	0	0.00%	N/A	N/A	270400	2.508E+8	15837	0.0586
issolved Calcium (mg/L)	5	10	5	0	0.00%	N/A	N/A	270.4	250.8	15.84	0.0586
solved Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Copper (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
Dissolved Lead (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
olved Magnesium (µg/L)	5	10	5	0	0.00%	N/A	N/A	167600	74300000	8620	0.0514
lved Magnesium (mg/L)	5	10	5	0	0.00%	N/A	N/A	167.6	74.3	8.62	0.0514
lved Manganese (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.452	7.0070E-4	0.0265	0.0585
issolved Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
ved Molybdenum (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.002	6.6667E-7	8.1650E-4	0.408
Dissolved Nickel (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0026	1.8000E-6	0.00134	0.516
solved Potassium (µg/L)	5	10	5	0	0.00%	N/A	N/A	55000	4000000	2000	0.0364
solved Potassium (mg/L)	5	10	5	0	0.00%	N/A	N/A	55	4	2	0.0364
ssolved Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	5	10	5	0	0.00%	N/A	N/A	1476000	8.230E+9	90719	0.0615
issolved Sodium (mg/L)	5	10	5	0	0.00%	N/A	N/A	1476	8230	90.72	0.0615
ssolved Strontium (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.394	0.0311	0.176	0.052
ssolved Thorium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
issolved Uranium (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.001	2.0000E-6	0.00141	1.414
solved Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	6	9	6	0	0.00%	N/A	N/A	0.0135	1.7100E-5	0.00414	0.306
uctivity @ 25°C (µS/cm)	3	12	3	0	0.00%	N/A	N/A	10477	720633	848.9	0.081
FLS EC	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
FLS pH	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
FLS Temp	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
kalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	13	2	13	0	0.00%	N/A	N/A	7.041	14.94	3.865	0.549
pH (no unit)	14	1	14	0	0.00%	N/A	N/A	7.771	0.0329	0.181	0.0233
dimetric-Dissolved (µg/L)	5	10	5	0	0.00%	N/A	N/A	1036000	1.080E+9	32863	0.0317
imetric-Dissolved (mg/L)	5	10	5	0	0.00%	N/A	N/A	1036	1080	32.86	0.0317
alinity as CaCO3 (mg/L)	5	10	5	0	0.00%	N/A	N/A	226.6	917.3	30.29	0.134
Total Anions (meq/L)	5	10	5	0	0.00%	N/A	N/A	107.4	26.3	5.128	0.0478
Total Antimony (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	5	10	5	0	0.00%	N/A	N/A	4.052	0.164	0.405	0.1
Total Cadmium (µg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
Total Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0056	2.7800E-5	0.00527	0.942
ids @180°C-Total (µg/L)	5	10	5	0	0.00%	N/A	N/A	6048000	2.416E+11	491498	0.0813
ds @180°C-Total (mg/L)	5	10	5	0	0.00%	N/A	N/A	6048	241570	491.5	0.0813
Total Lead (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Manganese (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.494	3.6920E-4	0.0192	0.0389
Total Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
otal Molybdenum (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0028	5.7000E-6	0.00239	0.853
Total Nickel (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.003	2.0000E-6	0.00141	0.471
Total Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	5	10	5	0	0.00%	N/A	N/A	3.446	0.0681	0.261	0.0757
Total Thorium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	6	9	6	0	0.00%	N/A	N/A	0.0182	6.2567E-5	0.00791	0.435

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
kalinity as CaCO3 (µg/L)	5	10	175000	254000	226600	232000	9.173E+8	30287	13343	-1.704	0.134
alinity as CaCO3 (mg/L)	5	10	175	254	226.6	232	917.3	30.29	13.34	-1.704	0.134
kalinity as CaCO3 (µg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
alinity as CaCO3 (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	5	10	85.7	98.9	92.88	92.2	28.27	5.317	7.413	-0.241	0.0572
Chloride (mg/L)	5	10	2730	3080	2884	2820	19430	139.4	133.4	0.614	0.0483
Depth to Water (m)	3	12	90.37	90.45	90.42	90.43	0.00173	0.0416	0.0297	-1.293	4.6046E-4
ssolved Antimony (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Arsenic (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ssolved Beryllium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	5	10	3.16	4.07	3.568	3.59	0.118	0.343	0.341	0.52	0.0961
ssolved Cadmium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Calcium (µg/L)	5	10	245000	283000	270400	278000	2.508E+8	15837	7413	-1.355	0.0586
issolved Calcium (mg/L)	5	10	245	283	270.4	278	250.8	15.84	7.413	-1.355	0.0586
solved Chromium (mg/L)	1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Copper (mg/L)	2	13	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
Dissolved Lead (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
olved Magnesium (µg/L)	5	10	158000	177000	167600	166000	74300000	8620	11861	0.161	0.0514
lved Magnesium (mg/L)	5	10	158	177	167.6	166	74.3	8.62	11.86	0.161	0.0514
lved Manganese (mg/L)	5	10	0.418	0.482	0.452	0.457	7.0070E-4	0.0265	0.0356	-0.311	0.0585
issolved Mercury (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ved Molybdenum (mg/L)	4	11	0.001	0.003	0.002	0.002	6.6667E-7	8.1650E-4	7.4129E-4	0	0.408
Dissolved Nickel (mg/L)	5	10	0.001	0.004	0.0026	0.002	1.8000E-6	0.00134	0.00148	0.166	0.516
solved Potassium (µg/L)	5	10	53000	58000	55000	54000	4000000	2000	1483	0.938	0.0364
solved Potassium (mg/L)	5	10	53	58	55	54	4	2	1.483	0.938	0.0364
ssolved Selenium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	5	10	1360000	1580000	1476000	1470000	8.230E+9	90719	118606	-0.115	0.0615
issolved Sodium (mg/L)	5	10	1360	1580	1476	1470	8230	90.72	118.6	-0.115	0.0615
ssolved Strontium (mg/L)	5	10	3.18	3.64	3.394	3.35	0.0311	0.176	0.208	0.402	0.052
ssolved Thorium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Titanium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
issolved Uranium (mg/L)	2	13	0	0.002	0.001	0.001	2.0000E-6	0.00141	0.00148	N/A	1.414

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	solved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		6	9	0.009	0.02	0.0135	0.012	1.7100E-5	0.00414	0.00297	0.865	0.306
127	luctivity @ 25°C (µS/cm)		3	12	9730	11400	10477	10300	720633	848.9	845.1	0.896	0.081
128	FLS EC		1	14	7.18	7.18	7.18	7.18	N/A	N/A	0	N/A	N/A
129	FLS pH		1	14	6.82	6.82	6.82	6.82	N/A	N/A	0	N/A	N/A
130	FLS Temp		1	14	32.1	32.1	32.1	32.1	N/A	N/A	0	N/A	N/A
131	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		13	2	0.18	13.1	7.041	8.32	14.94	3.865	2.372	-0.511	0.549
134	pH (no unit)		14	1	7.46	8.09	7.771	7.79	0.0329	0.181	0.163	-0.316	0.0233
135	dimetric-Dissolved (µg/L)		5	10	1000000	1070000	1036000	1030000	1.080E+9	32863	44477	0.166	0.0317
136	imetric-Dissolved (mg/L)		5	10	1000	1070	1036	1030	1080	32.86	44.48	0.166	0.0317
137	alinity as CaCO3 (mg/L)		5	10	175	254	226.6	232	917.3	30.29	13.34	-1.704	0.134
138	Total Anions (meq/L)		5	10	101	114	107.4	106	26.3	5.128	7.413	0.171	0.0478
139	Total Antimony (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
140	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		5	10	3.58	4.61	4.052	3.94	0.164	0.405	0.534	0.447	0.1
143	Total Cadmium (µg/L)		1	14	0.5	0.5	0.5	0.5	N/A	N/A	0	N/A	N/A
144	Total Cadmium (mg/L)		1	14	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	N/A	N/A	0	N/A	N/A
145	Total Chromium (mg/L)		2	13	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
146	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		5	10	0.003	0.015	0.0056	0.003	2.7800E-5	0.00527	0	2.2	0.942
148	ids @180°C-Total (µg/L)		5	10	5680000	6770000	6048000	5760000	2.416E+11	491498	118606	0.984	0.0813
149	ds @180°C-Total (mg/L)		5	10	5680	6770	6048	5760	241570	491.5	118.6	0.984	0.0813
150	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
151	Total Manganese (mg/L)		5	10	0.472	0.516	0.494	0.502	3.6920E-4	0.0192	0.0208	-0.286	0.0389
152	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	otal Molybdenum (mg/L)		5	10	0.001	0.007	0.0028	0.002	5.7000E-6	0.00239	0	2.043	0.853
154	Total Nickel (mg/L)		5	10	0.002	0.005	0.003	0.002	2.0000E-6	0.00141	0	0.884	0.471
155	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		5	10	3.06	3.73	3.446	3.48	0.0681	0.261	0.208	-0.715	0.0757
158	Total Thorium (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		1	14	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		1	14	0.01	0.01	0.01	0.01	N/A	N/A	0	N/A	N/A
161	Total Uranium (mg/L)		1	14	0	0	0	0	N/A	N/A	0	N/A	N/A
162	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		6	9	0.012	0.033	0.0182	0.015	6.2567E-5	0.00791	0.00371	1.728	0.435
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	kalinity as CaCO3 (µg/L)		5	10	197400	219800	231000	232000	241000	243600	248800	251400	253480
169	alinity as CaCO3 (mg/L)		5	10	197.4	219.8	231	232	241	243.6	248.8	251.4	253.5
170	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		5	10	87.58	89.46	90.4	92.2	97.2	97.54	98.22	98.56	98.83
173	Chloride (mg/L)		5	10	2766	2802	2820	2820	2970	2992	3036	3058	3076
174	Depth to Water (m)		3	12	90.38	90.39	90.4	90.43	90.44	90.44	90.45	90.45	90.45
175	ssolved Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	ssolved Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		5	10	3.24	3.32	3.36	3.59	3.66	3.742	3.906	3.988	4.054
179	ssolved Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		5	10	253000	261000	265000	278000	281000	281400	282200	282600	282920
181	issolved Calcium (mg/L)		5	10	253	261	265	278	281	281.4	282.2	282.6	282.9
182	solved Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
183	Dissolved Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		2	13	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
185	Dissolved Lead (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	olved Magnesium (µg/L)		5	10	159200	160400	161000	166000	176000	176200	176600	176800	176960
187	olved Magnesium (mg/L)		5	10	159.2	160.4	161	166	176	176.2	176.6	176.8	177
188	olved Manganese (mg/L)		5	10	0.424	0.43	0.433	0.457	0.471	0.473	0.478	0.48	0.482
189	issolved Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	ved Molybdenum (mg/L)		4	11	0.0013	0.0016	0.00175	0.002	0.00225	0.0024	0.0027	0.00285	0.00297
191	Dissolved Nickel (mg/L)		5	10	0.0014	0.0018	0.002	0.002	0.004	0.004	0.004	0.004	0.004
192	solved Potassium (µg/L)		5	10	53400	53800	54000	54000	56000	56400	57200	57600	57920
193	solved Potassium (mg/L)		5	10	53.4	53.8	54	54	56	56.4	57.2	57.6	57.92
194	ssolved Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
196	Dissolved Sodium (µg/L)		5	10	1384000	1408000	1420000	1470000	1550000	1556000	1568000	1574000	1578800
197	Dissolved Sodium (mg/L)		5	10	1384	1408	1420	1470	1550	1556	1568	1574	1579
198	ssolved Strontium (mg/L)		5	10	3.232	3.284	3.31	3.35	3.49	3.52	3.58	3.61	3.634
199	ssolved Thorium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	issolved Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	issolved Uranium (mg/L)		2	13	2.0000E-4	4.0000E-4	5.0000E-4	0.001	0.0015	0.0016	0.0018	0.0019	0.00198
203	solved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		6	9	0.01	0.011	0.0113	0.012	0.0158	0.017	0.0185	0.0193	0.0199
205	luctivity @ 25°C (µS/cm)		3	12	9844	9958	10015	10300	10850	10960	11180	11290	11378
206	FLS EC		1	14	7.18	7.18	7.18	7.18	7.18	7.18	7.18	7.18	7.18
207	FLS pH		1	14	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82
208	FLS Temp		1	14	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
209	kalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	alinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		13	2	1.788	2.972	4.04	8.32	9.67	9.82	10.06	11.3	12.74
212	pH (no unit)		14	1	7.506	7.644	7.683	7.79	7.9	7.904	7.917	7.98	8.068
213	dimetric-Dissolved (µg/L)		5	10	1004000	1008000	1010000	1030000	1070000	1070000	1070000	1070000	1070000
214	imetric-Dissolved (mg/L)		5	10	1004	1008	1010	1030	1070	1070	1070	1070	1070
215	alinity as CaCO3 (mg/L)		5	10	197.4	219.8	231	232	241	243.6	248.8	251.4	253.5
216	Total Anions (meq/L)		5	10	102.6	104.2	105	106	111	111.6	112.8	113.4	113.9
217	Total Antimony (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
218	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		5	10	3.68	3.78	3.83	3.94	4.3	4.362	4.486	4.548	4.598
221	Total Cadmium (µg/L)		1	14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
222	Total Cadmium (mg/L)		1	14	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4	5.0000E-4
223	Total Chromium (mg/L)		2	13	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
224	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		5	10	0.003	0.003	0.003	0.003	0.004	0.0062	0.0106	0.0128	0.0146
226	ids @180°C-Total (µg/L)		5	10	5680000	5680000	5680000	5760000	6350000	6434000	6602000	6686000	6753200
227	ds @180°C-Total (mg/L)		5	10	5680	5680	5680	5760	6350	6434	6602	6686	6753
228	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
229	Total Manganese (mg/L)		5	10	0.474	0.475	0.476	0.502	0.505	0.507	0.512	0.514	0.516
230	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	otal Molybdenum (mg/L)		5	10	0.0014	0.0018	0.002	0.002	0.002	0.003	0.005	0.006	0.0068
232	Total Nickel (mg/L)		5	10	0.002	0.002	0.002	0.002	0.004	0.0042	0.0046	0.0048	0.00496
233	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		5	10	3.172	3.284	3.34	3.48	3.62	3.642	3.686	3.708	3.726
236	Total Thorium (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
237	Total Tin (mg/L)		1	14	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
238	Total Titanium (mg/L)		1	14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
239	Total Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
240	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		6	9	0.0125	0.013	0.0135	0.015	0.0195	0.021	0.027	0.03	0.0324

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.2 12/08/2024 2:21:01 PM
User Selected Options	
From File	TSF E.xls
Full Precision	OFF

From File: TSF E.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	4	11	4	0	0.00%	N/A	N/A	267750	2.449E+8	15650	0.0584
Bicarbonate Alkalinity as CaCO3 (mg/L)	4	11	4	0	0.00%	N/A	N/A	267.8	244.9	15.65	0.0584
Carbonate Alkalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	4	11	4	0	0.00%	N/A	N/A	121.5	7	2.646	0.0218
Chloride (mg/L)	4	11	4	0	0.00%	N/A	N/A	3465	7500	86.6	0.025
Depth to Water (m)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	4	11	4	0	0.00%	N/A	N/A	4	0.173	0.416	0.104
Dissolved Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	4	11	4	0	0.00%	N/A	N/A	308500	91000000	9539	0.0309
Dissolved Calcium (mg/L)	4	11	4	0	0.00%	N/A	N/A	308.5	91	9.539	0.0309
Dissolved Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	2	0	0.00%	N/A	N/A	0.001	0	0	N/A
Dissolved Lead (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	4	11	4	0	0.00%	N/A	N/A	223500	1.297E+8	11387	0.0509
Dissolved Magnesium (mg/L)	4	11	4	0	0.00%	N/A	N/A	223.5	129.7	11.39	0.0509
Dissolved Manganese (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.351	9.1158E-4	0.0302	0.0861
Dissolved Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	3	12	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
Dissolved Nickel (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.01	3.3333E-6	0.00183	0.183
Dissolved Potassium (µg/L)	4	11	4	0	0.00%	N/A	N/A	67250	4916667	2217	0.033
Dissolved Potassium (mg/L)	4	11	4	0	0.00%	N/A	N/A	67.25	4.917	2.217	0.033
Dissolved Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	4	11	4	0	0.00%	N/A	N/A	1977500	1.892E+9	43493	0.022
Dissolved Sodium (mg/L)	4	11	4	0	0.00%	N/A	N/A	1978	1892	43.49	0.022
Dissolved Strontium (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.323	0.0819	0.286	0.0662
Dissolved Thorium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.014	2.0000E-6	0.00141	0.101
Electrical Conductivity @ 25°C (µS/cm)	2	13	2	0	0.00%	N/A	N/A	12150	245000	495	0.0407
FLS EC	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
FLS pH	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
FLS Temp	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxide Alkalinity as CaCO3 (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Ionic Balance (Percent)	12	3	12	0	0.00%	N/A	N/A	6.065	4.506	2.123	0.35
pH (no unit)	13	2	13	0	0.00%	N/A	N/A	7.798	0.0415	0.204	0.0261
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	4	11	4	0	0.00%	N/A	N/A	1485000	1.633E+9	40415	0.0272
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	4	11	4	0	0.00%	N/A	N/A	1485	1633	40.41	0.0272
Total Alkalinity as CaCO3 (mg/L)	4	11	4	0	0.00%	N/A	N/A	267.8	244.9	15.65	0.0584
Total Anions (meq/L)	4	11	4	0	0.00%	N/A	N/A	133.8	10.92	3.304	0.0247
Total Antimony (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Arsenic (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Beryllium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Boron (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.235	0.0214	0.146	0.0345
Total Cadmium (µg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Cobalt (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.00475	4.2500E-6	0.00206	0.434
Total Dissolved Solids @180°C-Total (µg/L)	4	11	4	0	0.00%	N/A	N/A	7507500	1.548E+11	393393	0.0524
Total Dissolved Solids @180°C-Total (mg/L)	4	11	4	0	0.00%	N/A	N/A	7508	154758	393.4	0.0524
Total Lead (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Manganese (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.361	0.00162	0.0403	0.112
Total Mercury (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Molybdenum (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.002	0	0	N/A
Total Nickel (mg/L)	4	11	4	0	0.00%	N/A	N/A	0.011	4.6667E-6	0.00216	0.196
Total Selenium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Silver (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Strontium (mg/L)	4	11	4	0	0.00%	N/A	N/A	4.245	0.227	0.477	0.112
Total Thorium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Tin (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Titanium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Uranium (mg/L)	1	14	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
Total Vanadium (mg/L)	0	15	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc (mg/L)	5	10	5	0	0.00%	N/A	N/A	0.0198	5.3200E-5	0.00729	0.368

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Bicarbonate Alkalinity as CaCO3 (µg/L)	4	11	254000	285000	267750	266000	2.449E+8	15650	17050	0.218	0.0584
Bicarbonate Alkalinity as CaCO3 (mg/L)	4	11	254	285	267.8	266	244.9	15.65	17.05	0.218	0.0584
Carbonate Alkalinity as CaCO3 (µg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbonate Alkalinity as CaCO3 (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cations Total (meq/L)	4	11	118	124	121.5	122	7	2.646	2.224	-0.864	0.0218
Chloride (mg/L)	4	11	3360	3550	3465	3475	7500	86.6	88.95	-0.431	0.025
Depth to Water (m)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Antimony (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Arsenic (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Beryllium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Boron (mg/L)	4	11	3.54	4.4	4	4.03	0.173	0.416	0.474	-0.187	0.104
Dissolved Cadmium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Calcium (µg/L)	4	11	298000	321000	308500	307500	91000000	9539	8154	0.599	0.0309
Dissolved Calcium (mg/L)	4	11	298	321	308.5	307.5	91	9.539	8.154	0.599	0.0309
Dissolved Chromium (mg/L)	1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
Dissolved Cobalt (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper (mg/L)	2	13	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
Dissolved Lead (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Magnesium (µg/L)	4	11	215000	240000	223500	219500	1.297E+8	11387	5189	1.625	0.0509
Dissolved Magnesium (mg/L)	4	11	215	240	223.5	219.5	129.7	11.39	5.189	1.625	0.0509
Dissolved Manganese (mg/L)	4	11	0.328	0.393	0.351	0.341	9.1158E-4	0.0302	0.0178	1.325	0.0861
Dissolved Mercury (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Molybdenum (mg/L)	3	12	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
Dissolved Nickel (mg/L)	4	11	0.008	0.012	0.01	0.01	3.3333E-6	0.00183	0.00222	-5.44E-16	0.183
Dissolved Potassium (µg/L)	4	11	65000	70000	67250	67000	4916667	2217	2224	0.482	0.033
Dissolved Potassium (mg/L)	4	11	65	70	67.25	67	4.917	2.217	2.224	0.482	0.033
Dissolved Selenium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Silver (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Sodium (µg/L)	4	11	1920000	2020000	1977500	1985000	1.892E+9	43493	37064	-0.83	0.022
Dissolved Sodium (mg/L)	4	11	1920	2020	1978	1985	1892	43.49	37.06	-0.83	0.022
Dissolved Strontium (mg/L)	4	11	3.96	4.66	4.323	4.335	0.0819	0.286	0.245	-0.261	0.0662
Dissolved Thorium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Tin (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Titanium (mg/L)	0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Uranium (mg/L)	1	14	0	0	0	0	N/A	N/A	0	N/A	N/A

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		5	10	0.012	0.015	0.014	0.015	2.0000E-6	0.00141	0	-0.884	0.101
127	Electrical Conductivity @ 25°C (µS/cm)		2	13	11800	12500	12150	12150	245000	495	518.9	N/A	0.0407
128	FLS EC		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
129	FLS pH		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
130	FLS Temp		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		12	3	2.46	10.5	6.065	5.57	4.506	2.123	1.809	0.516	0.35
134	pH (no unit)		13	2	7.44	8.1	7.798	7.75	0.0415	0.204	0.208	-0.0723	0.0261
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		4	11	1450000	1540000	1485000	1475000	1.633E+9	40415	29652	1.091	0.0272
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		4	11	1450	1540	1485	1475	1633	40.41	29.65	1.091	0.0272
137	Total Alkalinity as CaCO3 (mg/L)		4	11	254	285	267.8	266	244.9	15.65	17.05	0.218	0.0584
138	Total Anions (meq/L)		4	11	130	137	133.8	134	10.92	3.304	3.706	-0.229	0.0247
139	Total Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
141	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		4	11	4.07	4.42	4.235	4.225	0.0214	0.146	0.141	0.377	0.0345
143	Total Cadmium (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
144	Total Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
145	Total Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
146	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		4	11	0.003	0.007	0.00475	0.0045	4.2500E-6	0.00206	0.00222	0.2	0.434
148	Total Dissolved Solids @180°C-Total (µg/L)		4	11	7180000	8060000	7507500	7395000	1.548E+11	393393	244626	1.333	0.0524
149	Total Dissolved Solids @180°C-Total (mg/L)		4	11	7180	8060	7508	7395	154758	393.4	244.6	1.333	0.0524
150	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
151	Total Manganese (mg/L)		4	11	0.311	0.406	0.361	0.363	0.00162	0.0403	0.0415	-0.287	0.112
152	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		4	11	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
154	Total Nickel (mg/L)		4	11	0.008	0.013	0.011	0.0115	4.6667E-6	0.00216	0.00148	-1.19	0.196
155	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
157	Total Strontium (mg/L)		4	11	3.72	4.85	4.245	4.205	0.227	0.477	0.46	0.445	0.112
158	Total Thorium (mg/L)		1	14	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
160	Total Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		1	14	0	0	0	0	N/A	N/A	0	N/A	N/A
162	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		5	10	0.013	0.032	0.0198	0.018	5.3200E-5	0.00729	0.00297	1.547	0.368
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		4	11	254300	254600	254750	266000	279000	280200	282600	283800	284760
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		4	11	254.3	254.6	254.8	266	279	280.2	282.6	283.8	284.8
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		4	11	118.9	119.8	120.3	122	123.3	123.4	123.7	123.9	124
173	Chloride (mg/L)		4	11	3381	3402	3413	3475	3528	3532	3541	3546	3549
174	Depth to Water (m)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
175	Dissolved Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		4	11	3.606	3.672	3.705	4.03	4.325	4.34	4.37	4.385	4.397
179	Dissolved Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
180	Dissolved Calcium (µg/L)		4	11	300400	302800	304000	307500	312000	313800	317400	319200	320640
181	Dissolved Calcium (mg/L)		4	11	300.4	302.8	304	307.5	312	313.8	317.4	319.2	320.6
182	Dissolved Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
183	Dissolved Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		2	13	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
185	Dissolved Lead (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
186	Dissolved Magnesium (µg/L)		4	11	215600	216200	216500	219500	226500	229200	234600	237300	239460
187	Dissolved Magnesium (mg/L)		4	11	215.6	216.2	216.5	219.5	226.5	229.2	234.6	237.3	239.5
188	Dissolved Manganese (mg/L)		4	11	0.329	0.329	0.33	0.341	0.362	0.368	0.381	0.387	0.392
189	Dissolved Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		3	12	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
191	Dissolved Nickel (mg/L)		4	11	0.0083	0.0086	0.00875	0.01	0.0113	0.0114	0.0117	0.0119	0.012
192	Dissolved Potassium (µg/L)		4	11	65300	65600	65750	67000	68500	68800	69400	69700	69940
193	Dissolved Potassium (mg/L)		4	11	65.3	65.6	65.75	67	68.5	68.8	69.4	69.7	69.94
194	Dissolved Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
196	Dissolved Sodium (µg/L)		4	11	1935000	1950000	1957500	1985000	2005000	2008000	2014000	2017000	2019400
197	Dissolved Sodium (mg/L)		4	11	1935	1950	1958	1985	2005	2008	2014	2017	2019
198	Dissolved Strontium (mg/L)		4	11	4.071	4.182	4.238	4.335	4.42	4.468	4.564	4.612	4.65
199	Dissolved Thorium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
203	Dissolved Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		5	10	0.0124	0.0128	0.013	0.015	0.015	0.015	0.015	0.015	0.015
205	Electrical Conductivity @ 25°C (µS/cm)		2	13	11870	11940	11975	12150	12325	12360	12430	12465	12493
206	FLS EC		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
207	FLS pH		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
208	FLS Temp		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		12	3	3.951	5.048	5.07	5.57	6.938	7.13	8.469	9.461	10.29
212	pH (no unit)		13	2	7.546	7.698	7.71	7.75	7.94	7.994	8.07	8.088	8.098
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		4	11	1453000	1456000	1457500	1475000	1502500	1510000	1525000	1532500	1538500
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		4	11	1453	1456	1458	1475	1503	1510	1525	1533	1539
215	Total Alkalinity as CaCO3 (mg/L)		4	11	254.3	254.6	254.8	266	279	280.2	282.6	283.8	284.8
216	Total Anions (meq/L)		4	11	130.6	131.2	131.5	134	136.3	136.4	136.7	136.9	137
217	Total Antimony (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
219	Total Beryllium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		4	11	4.106	4.142	4.16	4.225	4.3	4.324	4.372	4.396	4.415
221	Total Cadmium (µg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
222	Total Cadmium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
223	Total Chromium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
224	Total Cobalt (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		4	11	0.003	0.003	0.003	0.0045	0.00625	0.0064	0.0067	0.00685	0.00697
226	Total Dissolved Solids @180°C-Total (µg/L)		4	11	7210000	7240000	7255000	7395000	7647500	7730000	7895000	7977500	8043500
227	Total Dissolved Solids @180°C-Total (mg/L)		4	11	7210	7240	7255	7395	7648	7730	7895	7978	8044
228	Total Lead (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
229	Total Manganese (mg/L)		4	11	0.323	0.334	0.34	0.363	0.384	0.388	0.397	0.402	0.405
230	Total Mercury (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		4	11	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
232	Total Nickel (mg/L)		4	11	0.0089	0.0098	0.0103	0.0115	0.0123	0.0124	0.0127	0.0129	0.013
233	Total Selenium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
235	Total Strontium (mg/L)		4	11	3.825	3.93	3.983	4.205	4.468	4.544	4.697	4.774	4.835
236	Total Thorium (mg/L)		1	14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
237	Total Tin (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
238	Total Titanium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		1	14	0	0	0	0	0	0	0	0	0
240	Total Vanadium (mg/L)		0	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		5	10	0.0142	0.0154	0.016	0.018	0.02	0.0224	0.0272	0.0296	0.0315

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2			Date/Time of Computation	ProUCL 5.2 12/08/2024 2:23:17 PM									
3			User Selected Options										
4			From File	TSF S1.xls									
5			Full Precision	OFF									
6													
7	From File: TSF S1.xls												
8													
9	General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method												
10													
11	Variable		NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	6	0	0.00%	N/A	N/A	97167	16566667	4070	0.0419
13	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	97.17	16.57	4.07	0.0419
14	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)		6	15	6	0	0.00%	N/A	N/A	36.7	2.516	1.586	0.0432
17	Chloride (mg/L)		6	15	6	0	0.00%	N/A	N/A	1047	1742	41.74	0.0399
18	Depth to Water (m)		12	9	12	0	0.00%	N/A	N/A	25.6	9.6061E-4	0.031	0.00121
19	Dissolved Antimony (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
20	Dissolved Arsenic (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
21	Dissolved Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	1.075	0.038	0.195	0.181
23	Dissolved Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.3333E-4	2.6667E-9	5.1640E-5	0.221
24	Dissolved Calcium (µg/L)		6	15	6	0	0.00%	N/A	N/A	177167	64966667	8060	0.0455
25	Dissolved Calcium (mg/L)		6	15	6	0	0.00%	N/A	N/A	177.2	64.97	8.06	0.0455
26	Dissolved Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
27	Dissolved Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)		5	16	5	0	0.00%	N/A	N/A	0.0024	2.8000E-6	0.00167	0.697
29	Dissolved Lead (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
30	Dissolved Magnesium (µg/L)		6	15	6	0	0.00%	N/A	N/A	83000	32400000	5692	0.0686
31	Dissolved Magnesium (mg/L)		6	15	6	0	0.00%	N/A	N/A	83	32.4	5.692	0.0686
32	Dissolved Manganese (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.00433	1.0333E-5	0.00321	0.742
33	Dissolved Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0163	5.4787E-4	0.0234	1.433
35	Dissolved Nickel (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
36	Dissolved Potassium (µg/L)		6	15	6	0	0.00%	N/A	N/A	18833	566667	752.8	0.04
37	Dissolved Potassium (mg/L)		6	15	6	0	0.00%	N/A	N/A	18.83	0.567	0.753	0.04
38	Dissolved Selenium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
39	Dissolved Silver (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
40	Dissolved Sodium (µg/L)		6	15	6	0	0.00%	N/A	N/A	472500	3.691E+8	19212	0.0407
41	Dissolved Sodium (mg/L)		6	15	6	0	0.00%	N/A	N/A	472.5	369.1	19.21	0.0407
42	Dissolved Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.11	0.099	0.315	0.149
43	Dissolved Thorium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00317	1.0967E-5	0.00331	1.046
47	Dissolved Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
48	Dissolved Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0231	8.8095E-6	0.00297	0.128
49	Electrical Conductivity @ 25°C (µS/cm)		4	17	4	0	0.00%	N/A	N/A	3973	47025	216.9	0.0546
50	FLS EC		4	17	4	0	0.00%	N/A	N/A	4.108	0.0456	0.214	0.052
51	FLS pH		4	17	4	0	0.00%	N/A	N/A	6.79	0.0525	0.229	0.0338
52	FLS Temp		4	17	4	0	0.00%	N/A	N/A	23.9	12.34	3.513	0.147
53	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)		17	4	17	0	0.00%	N/A	N/A	3.473	6.652	2.579	0.743
56	pH (no unit)		17	4	17	0	0.00%	N/A	N/A	7.645	0.0244	0.156	0.0204
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	6	0	0.00%	N/A	N/A	348333	4.619E+8	21491	0.0617
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	6	0	0.00%	N/A	N/A	348.3	461.9	21.49	0.0617
59	Total Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	97.17	16.57	4.07	0.0419
60	Total Anions (meq/L)		6	15	6	0	0.00%	N/A	N/A	38.72	2.262	1.504	0.0388
61	Total Antimony (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
62	Total Arsenic (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
63	Total Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	1.175	0.0147	0.121	0.103
65	Total Cadmium (µg/L)		6	15	6	0	0.00%	N/A	N/A	0.233	0.00267	0.0516	0.221
66	Total Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.3333E-4	2.6667E-9	5.1640E-5	0.221
67	Total Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.002	0	0	N/A
68	Total Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00417	6.1667E-6	0.00248	0.596
70	Total Dissolved Solids @180°C-Total (µg/L)		7	14	7	0	0.00%	N/A	N/A	2462857	2.156E+10	146824	0.0596
71	Total Dissolved Solids @180°C-Total (mg/L)		12	9	12	0	0.00%	N/A	N/A	2436	16736	129.4	0.0531
72	Total Lead (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.00167	3.3333E-7	5.7735E-4	0.346
73	Total Manganese (mg/L)		5	16	5	0	0.00%	N/A	N/A	0.0084	5.3300E-5	0.0073	0.869
74	Total Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0163	8.2787E-4	0.0288	1.762
76	Total Nickel (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
77	Total Selenium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
78	Total Silver (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.002	0	0	N/A
79	Total Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.183	0.0453	0.213	0.0975
80	Total Thorium (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
81	Total Tin (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
82	Total Titanium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00333	1.5067E-5	0.00388	1.164
84	Total Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
85	Total Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0237	1.9238E-5	0.00439	0.185
86													
87	General Statistics for Raw Data Sets using Detected Data Only												
88													
89	Variable		NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	91000	103000	97167	96500	16566667	4070	2965	-0.0732	0.0419
91	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	91	103	97.17	96.5	16.57	4.07	2.965	-0.0732	0.0419
92	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)		6	15	34.7	38.4	36.7	37.15	2.516	1.586	1.483	-0.465	0.0432
95	Chloride (mg/L)		6	15	992	1100	1047	1040	1742	41.74	50.41	0.154	0.0399
96	Depth to Water (m)		12	9	25.56	25.66	25.6	25.6	9.6061E-4	0.031	0.0371	0.78	0.00121
97	Dissolved Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
98	Dissolved Arsenic (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
99	Dissolved Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)		6	15	0.84	1.39	1.075	1.09	0.038	0.195	0.178	0.535	0.181
101	Dissolved Cadmium (mg/L)		6	15	2.0000E-4	3.0000E-4	2.3333E-4	2.0000E-4	2.6667E-9	5.1640E-5	0	0.968	0.221
102	Dissolved Calcium (µg/L)		6	15	168000	188000	177167	176500	64966667	8060	10378	0.231	0.0455
103	Dissolved Calcium (mg/L)		6	15	168	188	177.2	176.5	64.97	8.06	10.38	0.231	0.0455
104	Dissolved Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
105	Dissolved Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)		5	16	0.001	0.005	0.0024	0.002	2.8000E-6	0.00167	0.00148	1.089	0.697
107	Dissolved Lead (mg/L)		2	19	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
108	Dissolved Magnesium (µg/L)		6	15	76000	91000	83000	83000	32400000	5692	6672	0.176	0.0686
109	Dissolved Magnesium (mg/L)		6	15	76	91	83	83	32.4	5.692	6.672	0.176	0.0686
110	Dissolved Manganese (mg/L)		3	18	0.002	0.008	0.00433	0.003	1.0333E-5	0.00321	0.00148	1.545	0.742
111	Dissolved Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)		6	15	0.003	0.061	0.0163	0.0035	5.4787E-4	0.0234	7.4129E-4	1.885	1.433
113	Dissolved Nickel (mg/L)		1	20	0.002	0.002	0.002	0.002	N/A	N/A	0	N/A	N/A
114	Dissolved Potassium (µg/L)		6	15	18000	20000	18833	19000	566667	752.8	741.3	0.313	0.04
115	Dissolved Potassium (mg/L)		6	15	18	20	18.83	19	0.567	0.753	0.741	0.313	0.04
116	Dissolved Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
117	Dissolved Silver (mg/L)		1	20	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
118	Dissolved Sodium (µg/L)		6	15	449000	492000	472500	477500	3.691E+8	19212	19274	-0.463	0.0407
119	Dissolved Sodium (mg/L)		6	15	449	492	472.5	477.5	369.1	19.21	19.27	-0.463	0.0407
120	Dissolved Strontium (mg/L)		6	15	1.66	2.46	2.11	2.15	0.099	0.315	0.415	-0.407	0.149
121	Dissolved Thorium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)		6	15	0	0.009	0.00317	0.002	1.0967E-5	0.00331	0.00222	1.318	1.046

	A	B	C	D	E	F	G	H	I	J	K	L	M
125	Dissolved Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126	Dissolved Zinc (mg/L)		7	14	0.02	0.028	0.0231	0.023	8.8095E-6	0.00297	0.00445	0.663	0.128
127	Electrical Conductivity @ 25°C (µS/cm)		4	17	3720	4250	3973	3960	47025	216.9	177.9	0.344	0.0546
128	FLS EC		4	17	3.91	4.33	4.108	4.095	0.0456	0.214	0.252	0.103	0.052
129	FLS pH		4	17	6.57	7.11	6.79	6.74	0.0525	0.229	0.148	1.196	0.0338
130	FLS Temp		4	17	20.9	27.9	23.9	23.4	12.34	3.513	3.632	0.299	0.147
131	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133	Ionic Balance (Percent)		17	4	0.17	9.2	3.473	3.06	6.652	2.579	2.165	1.108	0.743
134	pH (no unit)		17	4	7.28	7.88	7.645	7.67	0.0244	0.156	0.089	-1.255	0.0204
135	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	318000	372000	348333	355500	4.619E+8	21491	17791	-0.654	0.0617
136	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	318	372	348.3	355.5	461.9	21.49	17.79	-0.654	0.0617
137	Total Alkalinity as CaCO3 (mg/L)		6	15	91	103	97.17	96.5	16.57	4.07	2.965	-0.0732	0.0419
138	Total Anions (meq/L)		6	15	36.8	40.7	38.72	38.7	2.262	1.504	1.927	0.0508	0.0388
139	Total Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
140	Total Arsenic (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
141	Total Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142	Total Boron (mg/L)		6	15	1.02	1.39	1.175	1.17	0.0147	0.121	0.0445	1.021	0.103
143	Total Cadmium (µg/L)		6	15	0.2	0.3	0.233	0.2	0.00267	0.0516	0	0.968	0.221
144	Total Cadmium (mg/L)		6	15	2.0000E-4	3.0000E-4	2.3333E-4	2.0000E-4	2.6667E-9	5.1640E-5	0	0.968	0.221
145	Total Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
146	Total Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147	Total Copper (mg/L)		6	15	0.001	0.008	0.00417	0.0035	6.1667E-6	0.00248	0.00222	0.54	0.596
148	Total Dissolved Solids @180°C-Total (µg/L)		7	14	2280000	2730000	2462857	2470000	2.156E+10	146824	74129	0.753	0.0596
149	Total Dissolved Solids @180°C-Total (mg/L)		12	9	2280	2730	2436	2440	16736	129.4	133.4	0.881	0.0531
150	Total Lead (mg/L)		3	18	0.001	0.002	0.00167	0.002	3.3333E-7	5.7735E-4	0	-1.732	0.346
151	Total Manganese (mg/L)		5	16	0.001	0.02	0.0084	0.007	5.3300E-5	0.0073	0.00445	1.148	0.869
152	Total Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153	Total Molybdenum (mg/L)		6	15	0.003	0.075	0.0163	0.0045	8.2787E-4	0.0288	0.00148	2.437	1.762
154	Total Nickel (mg/L)		2	19	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
155	Total Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
156	Total Silver (mg/L)		2	19	0.002	0.002	0.002	0.002	0	0	0	N/A	N/A
157	Total Strontium (mg/L)		6	15	1.89	2.35	2.183	2.305	0.0453	0.213	0.0445	-0.949	0.0975
158	Total Thorium (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
159	Total Tin (mg/L)		1	20	0.001	0.001	0.001	0.001	N/A	N/A	0	N/A	N/A
160	Total Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
161	Total Uranium (mg/L)		6	15	0	0.011	0.00333	0.002	1.5067E-5	0.00388	7.4129E-4	2.085	1.164
162	Total Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163	Total Zinc (mg/L)		7	14	0.018	0.032	0.0237	0.023	1.9238E-5	0.00439	0.00297	1.032	0.185
164													
165	Percentiles using all Detects (Ds) and Non-Detects (NDs)												
166													
167	Variable		NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	93500	96000	96000	96500	99250	100000	101500	102250	102850
169	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	93.5	96	96	96.5	99.25	100	101.5	102.3	102.9
170	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172	Cations Total (meq/L)		6	15	34.8	34.9	35.33	37.15	37.85	37.9	38.15	38.28	38.38
173	Chloride (mg/L)		6	15	1006	1020	1023	1040	1080	1090	1095	1098	1100
174	Depth to Water (m)		12	9	25.57	25.57	25.57	25.6	25.61	25.62	25.64	25.65	25.66
175	Dissolved Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
176	Dissolved Arsenic (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
177	Dissolved Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178	Dissolved Boron (mg/L)		6	15	0.87	0.9	0.945	1.09	1.13	1.14	1.265	1.328	1.378
179	Dissolved Cadmium (mg/L)		6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.0000E-4	3.0000E-4	3.0000E-4
180	Dissolved Calcium (µg/L)		6	15	169000	170000	170750	176500	183000	184000	186000	187000	187800
181	Dissolved Calcium (mg/L)		6	15	169	170	170.8	176.5	183	184	186	187	187.8
182	Dissolved Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
183	Dissolved Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184	Dissolved Copper (mg/L)		5	16	0.001	0.001	0.001	0.002	0.003	0.0034	0.0042	0.0046	0.00492
185	Dissolved Lead (mg/L)		2	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
186	Dissolved Magnesium (µg/L)		6	15	77000	78000	78750	83000	86500	87000	89000	90000	90800
187	Dissolved Magnesium (mg/L)		6	15	77	78	78.75	83	86.5	87	89	90	90.8
188	Dissolved Manganese (mg/L)		3	18	0.0022	0.0024	0.0025	0.003	0.0055	0.006	0.007	0.0075	0.0079
189	Dissolved Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Dissolved Molybdenum (mg/L)		6	15	0.003	0.003	0.003	0.0035	0.019	0.024	0.0425	0.0518	0.0592
191	Dissolved Nickel (mg/L)		1	20	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
192	Dissolved Potassium (µg/L)		6	15	18000	18000	18250	19000	19000	19000	19500	19750	19950
193	Dissolved Potassium (mg/L)		6	15	18	18	18.25	19	19	19	19.5	19.75	19.95
194	Dissolved Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
195	Dissolved Silver (mg/L)		1	20	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
196	Dissolved Sodium (µg/L)		6	15	449500	450000	455250	477500	487750	489000	490500	491250	491850
197	Dissolved Sodium (mg/L)		6	15	449.5	450	455.3	477.5	487.8	489	490.5	491.3	491.9
198	Dissolved Strontium (mg/L)		6	15	1.75	1.84	1.9	2.15	2.355	2.4	2.43	2.445	2.457
199	Dissolved Thorium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	Dissolved Tin (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201	Dissolved Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202	Dissolved Uranium (mg/L)		6	15	5.0000E-4	0.001	0.00125	0.002	0.00425	0.005	0.007	0.008	0.0088
203	Dissolved Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204	Dissolved Zinc (mg/L)		7	14	0.02	0.0204	0.021	0.023	0.0245	0.0254	0.0268	0.0274	0.0279
205	Electrical Conductivity @ 25°C (µS/cm)		4	17	3792	3864	3900	3960	4033	4076	4163	4207	4241
206	FLS EC		4	17	3.919	3.928	3.933	4.095	4.27	4.282	4.306	4.318	4.328
207	FLS pH		4	17	6.612	6.654	6.675	6.74	6.855	6.906	7.008	7.059	7.1
208	FLS Temp		4	17	20.93	20.96	20.98	23.4	26.33	26.64	27.27	27.59	27.84
209	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211	Ionic Balance (Percent)		17	4	0.642	1.584	1.6	3.06	3.85	4.866	6.782	9.056	9.171
212	pH (no unit)		17	4	7.436	7.602	7.61	7.67	7.73	7.754	7.784	7.808	7.866
213	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	322000	326000	332750	355500	361750	363000	367500	369750	371550
214	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	322	326	332.8	355.5	361.8	363	367.5	369.8	371.6
215	Total Alkalinity as CaCO3 (mg/L)		6	15	93.5	96	96	96.5	99.25	100	101.5	102.3	102.9
216	Total Anions (meq/L)		6	15	37.1	37.4	37.63	38.7	39.78	40	40.35	40.53	40.67
217	Total Antimony (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
218	Total Arsenic (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
219	Total Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220	Total Boron (mg/L)		6	15	1.07	1.12	1.133	1.17	1.178	1.18	1.285	1.338	1.38
221	Total Cadmium (µg/L)		6	15	0.2	0.2	0.2	0.2	0.275	0.3	0.3	0.3	0.3
222	Total Cadmium (mg/L)		6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.0000E-4	3.0000E-4	3.0000E-4
223	Total Chromium (mg/L)		6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
224	Total Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225	Total Copper (mg/L)		6	15	0.002	0.003	0.003	0.0035	0.0055	0.006	0.007	0.0075	0.0079
226	Total Dissolved Solids @180°C-Total (µg/L)		7	14	2304000	2344000	2380000	2470000	2500000	2512000	2604000	2667000	2717400
227	Total Dissolved Solids @180°C-Total (mg/L)		12	9	2284	2324	2335	2440	2490	2512	2547	2631	2710
228	Total Lead (mg/L)		3	18	0.0012	0.0014	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
229	Total Manganese (mg/L)		5	16	0.0022	0.0034	0.004	0.007	0.01	0.012	0.016	0.018	0.0196
230	Total Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231	Total Molybdenum (mg/L)		6	15	0.0035	0.004	0.004	0.0045	0.0065	0.007	0.041	0.058	0.0716
232	Total Nickel (mg/L)		2	19	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
233	Total Selenium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
234	Total Silver (mg/L)		2	19	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
235	Total Strontium (mg/L)		6	15	1.91	1.93	2.02	2.305	2.32	2.32	2.335	2.343	2.349
236	Total Thorium (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
237	Total Tin (mg/L)		1	20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
238	Total Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
239	Total Uranium (mg/L)		6	15	0.001	0.002	0.002	0.002	0.00275	0.003	0.007	0.009	0.0106
240	Total Vanadium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241	Total Zinc (mg/L)		7	14	0.0198	0.0214	0.022	0.023	0.0245	0.0254	0.0284	0.0302	0.0316

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				General Statistics on Uncensored Data									
2		Date/Time of Computation		ProUCL 5.2 12/08/2024 2:25:37 PM									
3		User Selected Options											
4		From File		TSF S2.xls									
5		Full Precision		OFF									
6													
7	From File: TSF S2.xls												
8													
9		General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method											
10													
11	Variable		NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	6	0	0.00%	N/A	N/A	80333	38666667	6218	0.0774
13	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	80.33	38.67	6.218	0.0774
14	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
15	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
16	Cations Total (meq/L)		6	15	6	0	0.00%	N/A	N/A	259.2	714.2	26.72	0.103
17	Chloride (mg/L)		6	15	6	0	0.00%	N/A	N/A	7962	505337	710.9	0.0893
18	Depth to Water (m)		4	17	4	0	0.00%	N/A	N/A	21.01	1.216	1.103	0.0525
19	Dissolved Antimony (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0163	1.5187E-4	0.0123	0.754
20	Dissolved Arsenic (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.001	0	0	N/A
21	Dissolved Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
22	Dissolved Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.125	0.036	0.19	0.0892
23	Dissolved Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.5000E-4	7.0000E-9	8.3666E-5	0.335
24	Dissolved Calcium (µg/L)		6	15	6	0	0.00%	N/A	N/A	1200833	1.678E+10	129554	0.108
25	Dissolved Calcium (mg/L)		6	15	6	0	0.00%	N/A	N/A	1201	16784	129.6	0.108
26	Dissolved Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00217	1.6667E-7	4.0825E-4	0.188
27	Dissolved Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
28	Dissolved Copper (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0115	2.4700E-5	0.00497	0.432
29	Dissolved Lead (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
30	Dissolved Magnesium (µg/L)		6	15	6	0	0.00%	N/A	N/A	494500	3.139E+9	56024	0.113
31	Dissolved Magnesium (mg/L)		6	15	6	0	0.00%	N/A	N/A	494.5	3139	56.02	0.113
32	Dissolved Manganese (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00217	1.3667E-6	0.00117	0.54
33	Dissolved Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
34	Dissolved Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00767	4.2667E-5	0.00653	0.852
35	Dissolved Nickel (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0155	6.4300E-5	0.00802	0.517
36	Dissolved Potassium (µg/L)		6	15	6	0	0.00%	N/A	N/A	76000	50800000	7127	0.0938
37	Dissolved Potassium (mg/L)		6	15	6	0	0.00%	N/A	N/A	76	50.8	7.127	0.0938
38	Dissolved Selenium (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.01	0	0	N/A
39	Dissolved Silver (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.004	2.7000E-5	0.0052	1.299
40	Dissolved Sodium (µg/L)		6	15	6	0	0.00%	N/A	N/A	3603333	1.369E+11	370063	0.103
41	Dissolved Sodium (mg/L)		6	15	6	0	0.00%	N/A	N/A	3603	136947	370.1	0.103
42	Dissolved Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	13.77	2.615	1.617	0.117
43	Dissolved Thorium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
44	Dissolved Tin (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
45	Dissolved Titanium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
46	Dissolved Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0055	9.5000E-6	0.00308	0.56
47	Dissolved Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
48	Dissolved Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0436	9.5286E-5	0.00976	0.224
49	Electrical Conductivity @ 25°C (µS/cm)		4	17	4	0	0.00%	N/A	N/A	23375	2375833	1541	0.0659
50	FLS EC		4	17	4	0	0.00%	N/A	N/A	18.39	42.14	6.492	0.353
51	FLS pH		4	17	4	0	0.00%	N/A	N/A	6.593	0.0191	0.138	0.021
52	FLS Temp		4	17	4	0	0.00%	N/A	N/A	25	24.42	4.942	0.198
53	Hydroxide Alkalinity as CaCO3 (µg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
54	Hydroxide Alkalinity as CaCO3 (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
55	Ionic Balance (Percent)		17	4	17	0	0.00%	N/A	N/A	3.789	6.7	2.588	0.683
56	pH (no unit)		17	4	17	0	0.00%	N/A	N/A	7.407	0.0534	0.231	0.0312
57	Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)		6	15	6	0	0.00%	N/A	N/A	2176667	5.167E+10	227303	0.104
58	Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)		6	15	6	0	0.00%	N/A	N/A	2177	51667	227.3	0.104
59	Total Alkalinity as CaCO3 (mg/L)		6	15	6	0	0.00%	N/A	N/A	80.33	38.67	6.218	0.0774
60	Total Anions (meq/L)		6	15	6	0	0.00%	N/A	N/A	271.5	607.1	24.64	0.0908
61	Total Antimony (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0232	2.0577E-4	0.0143	0.619
62	Total Arsenic (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0015	3.0000E-7	5.4772E-4	0.365
63	Total Beryllium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
64	Total Boron (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.297	0.00519	0.072	0.0314
65	Total Cadmium (µg/L)		6	15	6	0	0.00%	N/A	N/A	0.267	0.00667	0.0816	0.306
66	Total Cadmium (mg/L)		6	15	6	0	0.00%	N/A	N/A	2.6667E-4	6.6667E-9	8.1650E-5	0.306
67	Total Chromium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00283	5.6667E-7	7.5277E-4	0.266
68	Total Cobalt (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
69	Total Copper (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0678	0.00582	0.0763	1.124
70	Total Dissolved Solids @180°C-Total (µg/L)		7	14	7	0	0.00%	N/A	N/A	15742857	2.362E+11	485994	0.0309
71	Total Dissolved Solids @180°C-Total (mg/L)		7	14	7	0	0.00%	N/A	N/A	15743	236190	486	0.0309
72	Total Lead (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0075	3.9000E-6	0.00197	0.263
73	Total Manganese (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.0175	4.4300E-5	0.00666	0.38
74	Total Mercury (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
75	Total Molybdenum (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.009	5.1600E-5	0.00718	0.798
76	Total Nickel (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.019	1.1680E-4	0.0108	0.569
77	Total Selenium (mg/L)		3	18	3	0	0.00%	N/A	N/A	0.01	0	0	N/A
78	Total Silver (mg/L)		5	16	5	0	0.00%	N/A	N/A	0.0056	1.7300E-5	0.00416	0.743
79	Total Strontium (mg/L)		6	15	6	0	0.00%	N/A	N/A	13.93	2.579	1.606	0.115
80	Total Thorium (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.0025	4.5000E-6	0.00212	0.849
81	Total Tin (mg/L)		2	19	2	0	0.00%	N/A	N/A	0.0015	5.0000E-7	7.0711E-4	0.471
82	Total Titanium (mg/L)		1	20	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
83	Total Uranium (mg/L)		6	15	6	0	0.00%	N/A	N/A	0.00633	1.0267E-5	0.0032	0.506
84	Total Vanadium (mg/L)		0	21	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
85	Total Zinc (mg/L)		7	14	7	0	0.00%	N/A	N/A	0.0467	1.2490E-4	0.0112	0.239
86													
87		General Statistics for Raw Data Sets using Detected Data Only											
88													
89	Variable		NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
90	Bicarbonate Alkalinity as CaCO3 (µg/L)		6	15	73000	88000	80333	81000	38666667	6218	8154	-0.0743	0.0774
91	Bicarbonate Alkalinity as CaCO3 (mg/L)		6	15	73	88	80.33	81	38.67	6.218	8.154	-0.0743	0.0774
92	Carbonate Alkalinity as CaCO3 (µg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	Carbonate Alkalinity as CaCO3 (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	Cations Total (meq/L)		6	15	210	280	259.2	269	714.2	26.72	15.57	-1.592	0.103
95	Chloride (mg/L)		6	15	7060	8570	7962	8240	505337	710.9	481.8	-0.682	0.0893
96	Depth to Water (m)		4	17	19.7	22.34	21.01	21	1.216	1.103	1.171	0.0619	0.0525
97	Dissolved Antimony (mg/L)		6	15	0.009	0.041	0.0163	0.011	1.5187E-4	0.0123	0.00222	2.253	0.754
98	Dissolved Arsenic (mg/L)		6	15	0.001	0.001	0.001	0.001	0	0	0	N/A	N/A
99	Dissolved Beryllium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	Dissolved Boron (mg/L)		6	15	1.84	2.35	2.125	2.185	0.036	0.19	0.156	-0.626	0.0892
101	Dissolved Cadmium (mg/L)		6	15	2.0000E-4	4.0000E-4	2.5000E-4	2.0000E-4	7.0000E-9	8.3666E-5	0	1.537	0.335
102	Dissolved Calcium (µg/L)		6	15	995000	1340000	1200833	1200000	1.678E+10	129554	140845	-0.566	0.108
103	Dissolved Calcium (mg/L)		6	15	995	1340	1201	1200	16784	129.6	140.8	-0.566	0.108
104	Dissolved Chromium (mg/L)		6	15	0.002	0.003	0.00217	0.002	1.6667E-7	4.0825E-4	0	2.449	0.188
105	Dissolved Cobalt (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	Dissolved Copper (mg/L)		6	15	0.006	0.019	0.0115	0.01	2.4700E-5	0.00497	0.00445	0.726	0.432
107	Dissolved Lead (mg/L)		1	20	0.003	0.003	0.003	0.003	N/A	N/A	0	N/A	N/A
108	Dissolved Magnesium (µg/L)		6	15	398000	542000	494500	515500	3.139E+9	56024	34099	-1.218	0.113
109	Dissolved Magnesium (mg/L)		6	15	398	542	494.5	515.5	3139	56.02	34.1	-1.218	0.113
110	Dissolved Manganese (mg/L)		6	15	0.001	0.004	0.00217	0.002	1.3667E-6	0.00117	0.00148	0.668	0.54
111	Dissolved Mercury (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
112	Dissolved Molybdenum (mg/L)		6	15	0.003	0.02	0.00767	0.0045	4.2667E-5	0.00653	0.00148	1.797	0.852
113	Dissolved Nickel (mg/L)		6	15	0.008	0.03	0.0155	0.014	6.4300E-5	0.00802	0.00519	1.382	0.517
114	Dissolved Potassium (µg/L)		6	15	64000	82000	76000	78500	50800000	7127	5189	-1.148	0.0938
115	Dissolved Potassium (mg/L)		6	15	64	82	76	78.5	50.8	7.127	5.189	-1.148	0.0938
116	Dissolved Selenium (mg/L)		3	18	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
117	Dissolved Silver (mg/L)		3	18	0.001	0.01	0.004	0.001	2.7000E-5	0.0052	0	1.732	1.299
118	Dissolved Sodium (µg/L)		6	15	2900000	3850000	3603333	3775000	1.369E+11	370063	96368	-1.832	0.103
119	Dissolved Sodium (mg/L)		6	15	2900	3850	3603	3775	136947	370.1	96.37	-1.832	0.103
120	Dissolved Strontium (mg/L)		6	15	11.5	15.5	13.77	13.95	2.615	1.617	2.224	-0.369	0.117
121	Dissolved Thorium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	Dissolved Tin (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
123	Dissolved Titanium (mg/L)		0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
124	Dissolved Uranium (mg/L)		6	15	0	0.009	0.0055	0.006	9.5000E-6	0.00308	0.00148	-1.199	0.56

	A	B	C	D	E	F	G	H	I	J	K	L	M
125		Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
126		Dissolved Zinc (mg/L)	7	14	0.031	0.056	0.0436	0.048	9.5286E-5	0.00976	0.0119	-0.152	0.224
127		Electrical Conductivity @ 25°C (µS/cm)	4	17	21400	24600	23375	23750	2375833	1541	1260	-0.753	0.0659
128		FLS EC	4	17	9.21	23.29	18.39	20.53	42.14	6.492	3.625	-1.408	0.353
129		FLS pH	4	17	6.46	6.77	6.593	6.57	0.0191	0.138	0.126	0.697	0.021
130		FLS Temp	4	17	18.2	28.9	25	26.45	24.42	4.942	3.262	-1.193	0.198
131		Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
132		Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
133		Ionic Balance (Percent)	17	4	0.62	10.6	3.789	3.68	6.7	2.588	2.52	1.065	0.683
134		pH (no unit)	17	4	6.69	7.63	7.407	7.49	0.0534	0.231	0.104	-2.124	0.0312
135		Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	1890000	2460000	2176667	2230000	5.167E+10	227303	244626	-0.35	0.104
136		Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	1890	2460	2177	2230	51667	227.3	244.6	-0.35	0.104
137		Total Alkalinity as CaCO3 (mg/L)	6	15	73	88	80.33	81	38.67	6.218	8.154	-0.0743	0.0774
138		Total Anions (meq/L)	6	15	240	294	271.5	280.5	607.1	24.64	18.53	-0.665	0.0908
139		Total Antimony (mg/L)	6	15	0.009	0.043	0.0232	0.02	2.0577E-4	0.0143	0.0156	0.486	0.619
140		Total Arsenic (mg/L)	6	15	0.001	0.002	0.0015	0.0015	3.0000E-7	5.4772E-4	7.4129E-4	-1.60E-15	0.365
141		Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
142		Total Boron (mg/L)	6	15	2.2	2.4	2.297	2.31	0.00519	0.072	0.0741	-0.0437	0.0314
143		Total Cadmium (µg/L)	6	15	0.2	0.4	0.267	0.25	0.00667	0.0816	0.0741	0.857	0.306
144		Total Cadmium (mg/L)	6	15	2.0000E-4	4.0000E-4	2.6667E-4	2.5000E-4	6.6667E-9	8.1650E-5	7.4129E-5	0.857	0.306
145		Total Chromium (mg/L)	6	15	0.002	0.004	0.00283	0.003	5.6667E-7	7.5277E-4	7.4129E-4	0.313	0.266
146		Total Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
147		Total Copper (mg/L)	6	15	0.014	0.216	0.0678	0.0395	0.00582	0.0763	0.0341	1.98	1.124
148		Total Dissolved Solids @180°C-Total (µg/L)	7	14	14900000	16200000	15742857	16000000	2.362E+11	485994	296516	-0.914	0.0309
149		Total Dissolved Solids @180°C-Total (mg/L)	7	14	14900	16200	15743	16000	236190	486	296.5	-0.914	0.0309
150		Total Lead (mg/L)	6	15	0.004	0.01	0.0075	0.008	3.9000E-6	0.00197	7.4129E-4	-1.052	0.263
151		Total Manganese (mg/L)	6	15	0.011	0.03	0.0175	0.0155	4.4300E-5	0.00666	0.00371	1.648	0.38
152		Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
153		Total Molybdenum (mg/L)	6	15	0.003	0.023	0.009	0.007	5.1600E-5	0.00718	0.00297	1.972	0.798
154		Total Nickel (mg/L)	6	15	0.008	0.034	0.019	0.0165	1.1680E-4	0.0108	0.0119	0.549	0.569
155		Total Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0	0	0	N/A	N/A
156		Total Silver (mg/L)	5	16	0.001	0.011	0.0056	0.006	1.7300E-5	0.00416	0.00593	0.158	0.743
157		Total Strontium (mg/L)	6	15	11.5	15.6	13.93	14.6	2.579	1.606	0.964	-0.858	0.115
158		Total Thorium (mg/L)	2	19	0.001	0.004	0.0025	0.0025	4.5000E-6	0.00212	0.00222	N/A	0.849
159		Total Tin (mg/L)	2	19	0.001	0.002	0.0015	0.0015	5.0000E-7	7.0711E-4	7.4129E-4	N/A	0.471
160		Total Titanium (mg/L)	1	20	0.01	0.01	0.01	0.01	N/A	N/A	0	N/A	N/A
161		Total Uranium (mg/L)	6	15	0	0.009	0.00633	0.007	1.0267E-5	0.0032	7.4129E-4	-2.093	0.506
162		Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
163		Total Zinc (mg/L)	7	14	0.03	0.059	0.0467	0.047	1.2490E-4	0.0112	0.0148	-0.466	0.239
164													
165		Percentiles using all Detects (Ds) and Non-Detects (NDs)											
166													
167		Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
168		Bicarbonate Alkalinity as CaCO3 (µg/L)	6	15	73500	74000	75000	81000	84750	85000	86500	87250	87850
169		Bicarbonate Alkalinity as CaCO3 (mg/L)	6	15	73.5	74	75	81	84.75	85	86.5	87.25	87.85
170		Carbonate Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
171		Carbonate Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
172		Cations Total (meq/L)	6	15	229	248	252.8	269	277	279	279.5	279.8	280
173		Chloride (mg/L)	6	15	7080	7100	7333	8240	8533	8560	8565	8568	8570
174		Depth to Water (m)	4	17	20	20.31	20.46	21	21.55	21.7	22.02	22.18	22.31
175		Dissolved Antimony (mg/L)	6	15	0.0095	0.01	0.0103	0.011	0.0148	0.016	0.0285	0.0348	0.0398
176		Dissolved Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
177		Dissolved Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
178		Dissolved Boron (mg/L)	6	15	1.9	1.96	2.008	2.185	2.228	2.23	2.29	2.32	2.344
179		Dissolved Cadmium (mg/L)	6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.0000E-4	2.7500E-4	3.0000E-4	3.5000E-4	3.7500E-4	3.9500E-4
180		Dissolved Calcium (µg/L)	6	15	1067500	1140000	1147500	1200000	1305000	1330000	1335000	1337500	1339500
181		Dissolved Calcium (mg/L)	6	15	1068	1140	1148	1200	1305	1330	1335	1338	1340
182		Dissolved Chromium (mg/L)	6	15	0.002	0.002	0.002	0.002	0.002	0.002	0.0025	0.00275	0.00295
183		Dissolved Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
184		Dissolved Copper (mg/L)	6	15	0.007	0.008	0.0085	0.01	0.0145	0.016	0.0175	0.0183	0.0189
185		Dissolved Lead (mg/L)	1	20	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
186		Dissolved Magnesium (µg/L)	6	15	429500	461000	470750	515500	534000	535000	538500	540250	541650
187		Dissolved Magnesium (mg/L)	6	15	429.5	461	470.8	515.5	534	535	538.5	540.3	541.7
188		Dissolved Manganese (mg/L)	6	15	0.001	0.001	0.00125	0.002	0.00275	0.003	0.0035	0.00375	0.00395
189		Dissolved Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
190		Dissolved Molybdenum (mg/L)	6	15	0.0035	0.004	0.004	0.0045	0.00875	0.01	0.015	0.0175	0.0195
191		Dissolved Nickel (mg/L)	6	15	0.009	0.01	0.0103	0.014	0.017	0.017	0.0235	0.0268	0.0294
192		Dissolved Potassium (µg/L)	6	15	67500	71000	72750	78500	81250	82000	82000	82000	82000
193		Dissolved Potassium (mg/L)	6	15	67.5	71	72.75	78.5	81.25	82	82	82	82
194		Dissolved Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
195		Dissolved Silver (mg/L)	3	18	0.001	0.001	0.001	0.001	0.0055	0.0064	0.0082	0.0091	0.00982
196		Dissolved Sodium (µg/L)	6	15	3195000	3490000	3547500	3775000	3830000	3830000	3840000	3845000	3849000
197		Dissolved Sodium (mg/L)	6	15	3195	3490	3548	3775	3830	3830	3840	3845	3849
198		Dissolved Strontium (mg/L)	6	15	11.9	12.3	12.68	13.95	15.08	15.4	15.45	15.48	15.5
199		Dissolved Thorium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200		Dissolved Tin (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
201		Dissolved Titanium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
202		Dissolved Uranium (mg/L)	6	15	0.0025	0.005	0.005	0.006	0.007	0.007	0.008	0.0085	0.0089
203		Dissolved Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
204		Dissolved Zinc (mg/L)	7	14	0.0328	0.0344	0.035	0.048	0.05	0.0512	0.0536	0.0548	0.0558
205		Electrical Conductivity @ 25°C (µS/cm)	4	17	21850	22300	22525	23750	24600	24600	24600	24600	24600
206		FLS EC	4	17	11.97	14.72	16.1	20.53	22.81	22.91	23.1	23.19	23.27
207		FLS pH	4	17	6.475	6.49	6.498	6.57	6.665	6.686	6.728	6.749	6.766
208		FLS Temp	4	17	20.09	21.98	22.93	26.45	28.53	28.6	28.75	28.83	28.89
209		Hydroxide Alkalinity as CaCO3 (µg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
210		Hydroxide Alkalinity as CaCO3 (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
211		Ionic Balance (Percent)	17	4	1.27	1.57	1.65	3.68	5.06	5.196	6.02	7.704	10.02
212		pH (no unit)	17	4	7.18	7.284	7.34	7.49	7.55	7.558	7.56	7.574	7.619
213		Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	6	15	1905000	1920000	1992500	2230000	2310000	2330000	2395000	2427500	2453500
214		Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	6	15	1905	1920	1993	2230	2310	2330	2395	2428	2454
215		Total Alkalinity as CaCO3 (mg/L)	6	15	73.5	74	75	81	84.75	85	86.5	87.25	87.85
216		Total Anions (meq/L)	6	15	241	242	250	280.5	290.8	292	293	293.5	293.9
217		Total Antimony (mg/L)	6	15	0.0095	0.01	0.0113	0.02	0.034	0.037	0.04	0.0415	0.0427
218		Total Arsenic (mg/L)	6	15	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.002	0.002
219		Total Beryllium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
220		Total Boron (mg/L)	6	15	2.215	2.23	2.25	2.31	2.325	2.33	2.365	2.383	2.397
221		Total Cadmium (µg/L)	6	15	0.2	0.2	0.2	0.25	0.3	0.3	0.35	0.375	0.395
222		Total Cadmium (mg/L)	6	15	2.0000E-4	2.0000E-4	2.0000E-4	2.5000E-4	3.0000E-4	3.0000E-4	3.5000E-4	3.7500E-4	3.9500E-4
223		Total Chromium (mg/L)	6	15	0.002	0.002	0.00225	0.003	0.003	0.003	0.0035	0.00375	0.00395
224		Total Cobalt (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
225		Total Copper (mg/L)	6	15	0.0165	0.019	0.0223	0.0395	0.071	0.079	0.148	0.182	0.209
226		Total Dissolved Solids @180°C-Total (µg/L)	7	14	15200000	15420000	15450000	16000000	16100000	16100000	16140000	16170000	16194000
227		Total Dissolved Solids @180°C-Total (mg/L)	7	14	15200	15420	15450	16000	16100	16100	16140	16170	16194
228		Total Lead (mg/L)	6	15	0.0055	0.007	0.00725	0.008	0.008	0.008	0.009	0.0095	0.0099
229		Total Manganese (mg/L)	6	15	0.0125	0.014	0.0143	0.0155	0.0183	0.019	0.0245	0.0273	0.0295
230		Total Mercury (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
231		Total Molybdenum (mg/L)	6	15	0.004	0.005	0.00525	0.007	0.00875	0.009	0.016	0.0195	0.0223
232		Total Nickel (mg/L)	6	15	0.0085	0.009	0.0105	0.0165	0.027	0.03	0.032	0.033	0.0338
233		Total Selenium (mg/L)	3	18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
234		Total Silver (mg/L)	5	16	0.0014	0.0018	0.002	0.006	0.008	0.0086	0.0098	0.0104	0.0109
235		Total Strontium (mg/L)	6	15	11.95	12.4	12.93	14.6	14.85	14.9	15.25	15.43	15.57
236		Total Thorium (mg/L)	2	19	0.0013	0.0016	0.00175	0.0025	0.00325	0.0034	0.0037	0.00385	0.00397
237		Total Tin (mg/L)	2	19	0.0011	0.0012	0.00125	0.0015	0.00175	0.0018	0.0019	0.00195	0.00199
238		Total Titanium (mg/L)	1	20	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
239		Total Uranium (mg/L)	6	15	0.0035	0.007	0.007	0.007	0.00775	0.008	0.0085	0.00875	0.00895
240		Total Vanadium (mg/L)	0	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
241		Total Zinc (mg/L)	7	14	0.033	0.0368	0.0395	0.047	0.056	0.0566	0.0578	0.0584	0.0589

APPENDIX C – COMPARISON AGAINST 95TH PERCENTILES

TSF A - SUMMARY

				TSF-A			
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	Sep-23	Dec-23	Mar-24	Jun-24
			TSF A				
Bicarbonate Alkalinity as CaCO3 (mg/L)	June 2024 is slightly outside percentiles	45.2	40.5	27	29	43	46
Chloride (mg/L)	June 2024 is slightly outside percentiles	3638	3615	368	266	3320	3660
Dissolved Chromium (mg/L)	June 2024 is outside percentiles	0.002	0.00285	<0.001	<0.001	0.002	0.004
Dissolved Nickel (mg/L)	March and June within percentiles	No Data	0.00725	0.01	0.008	0.004	0.003
Dissolved Zinc (mg/L)	March and June within percentiles	0.0272	0.0231	0.025	0.018	0.013	0.015
Electrical Conductivity @ 25°C (µS/cm)	Within previous percentiles	12320	12205	1540	1370	11600	12300
FLS EC	June 2024 is slightly outside percentiles	No Data	12.41	1.453	1.414	1.482	12.86
FLS Temp		No Data	27.58	25.3	28.2	25.3	24.7
Total Alkalinity as CaCO3 (mg/L)	June 2024 is slightly outside percentiles	No Data	40.5	27	29	43	46
Total Chromium (mg/L)	March and June outside percentiles	0.002	0.0028	0.003	<0.001	0.004	0.005
Total Nickel (mg/L)	March and June within percentiles	No Data	0.0075	0.01	0.008	0.005	0.003
Total Zinc (mg/L)	March and June within percentiles	0.0278	0.0235	0.024	0.018	0.013	0.011

TSF B

Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	TSF-B			
				24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF B				
Dissolved Calcium (mg/L)	Outside percentiles	532	526.5	585	539	561	563
Dissolved Magnesium (mg/L)	Outside percentiles	No Data	239.5	258	241	245	257
Dissolved Potassium (mg/L)	Within percentiles	37	36.5	37	37	35	35
Dissolved Sodium (mg/L)	Outside percentiles	No Data	954	978	933	954	963
Dissolved Strontium (mg/L)	Outside percentiles	6.16	5.335	5.85	5.98	6.26	6.27
Electrical Conductivity @ 25°C (µS/cm)	Outside percentiles	9386	8363	8260	10600	9030	9230
FLS EC		No Data	8.719	6.84	6.53	9.24	9.12
FLS Temp		No Data	27.27	26.9	28.3	26.4	24.5
pH (no unit)		7.64	7.635	7.56	7.65	7.3	7.22
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	Outside percentiles	965	942.5	958	982	988	954
Total Arsenic (mg/L)	Last three are within percentiles	0.001	0.00195	0.002	<0.001	0.001	0.001
Total Boron (mg/L)	Within percentiles	1.24	1.24	1.08	1.27	1.14	1.2
Total Dissolved Solids @180°C-Total (mg/L)	Within percentiles	6427	5520	4270	6210	6520	5340
Total Molybdenum (mg/L)	Outside percentiles	0.008	0.0075	0.009	0.008	0.008	0.009
Total Strontium (mg/L)	June 2024 within previous	6.059	5.895	6.16	5.61	6.48	6.03

TSF C

				TSF-C			
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	24-Sep-23	19-Dec-23	22-Mar-24	16-Jun-24
			TSF C				
Dissolved Calcium (mg/L)	June within percentiles	385	377	383	342	366	361
Dissolved Magnesium (mg/L)	June within percentiles	No Data	167.5	168	155	157	166
Electrical Conductivity @ 25°C (µS/cm)	June within percentiles	7651	8055	6640	8230	7140	7160
FLS EC			6.788	5.24	5.1	7.18	7.29
FLS pH			7.11	6.79	7.14	7.11	7.28
FLS Temp			28.31	26.6	28.5	24.9	23.6
Total Chromium (mg/L)	June within percentiles	0.004	0.00475	0.004	0.004	0.013	0.004
Total Copper (mg/L)	June within percentiles	0.003	0.003	0.003	0.003	0.008	0.002
Total Manganese (mg/L)	June within percentiles	0.0027	0.0026	0.002	0.002	0.472	0.001
Total Vanadium (mg/L)	June within percentiles	0.01	0.01	0.01	0.01	0.03	0.01

TSF D

Analyte	Summary	Previous Period 95th Percentile	CURRENT 95TH PERCENTILE	TSF-D 19-Dec-23	 16-Jun-24
			TSF D		
Dissolved Zinc (mg/L)	June within percentiles	No Data	0.0193	0.02	0.011
Electrical Conductivity @ 25°C (µS/cm)	June within percentiles	No Data	11290	11400	8340
FLS EC	Within previous percentiles	10.13	7.18	7.18	8.7
FLS pH		6.85	6.82	6.82	7.14
Total Nickel (mg/L)	June within percentiles	No Data	0.0048	0.005	<0.001

TSF E

				TSF-E	
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	17-Dec-23	16-Jun-24
			TSF E		
Dissolved Boron (mg/L)	Outside percentile	No Data	4.385	3.63	4.45
Dissolved Copper (mg/L)	Outside percentile	No Data	0.001	0.002	0.002
Dissolved Zinc (mg/L)	June within percentile	No Data	0.015	0.017	0.015
Electrical Conductivity @ 25°C (µS/cm)	Within previous percentile	13620	12465	13300	12200
Total Boron (mg/L)	June within percentile	No Data	4.396	4.41	3.96
Total Molybdenum (mg/L)	June within percentile	No Data	0.002	0.003	0.002
Total Thorium (mg/L)	Outside percentile	No Data	0.001	<0.001	0.002

TSF S1

				TSF-S1 (TSF-MW01)			
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF S1				
Chloride (mg/L)	Within previous percentile	1136	1098	1040.00	1060.00	1080.00	1100.00
Dissolved Calcium (mg/L)	Within previous percentile	192.8	187	195	178	192	182
Dissolved Potassium (mg/L)	Within previous percentile	20	19.75	20	20	19	20
Dissolved Sodium (mg/L)	Outside percentiles	No Data	491.3	526	497	508	502
Dissolved Zinc (mg/L)	Outside percentiles	0.0268	0.0274	0.024	0.03	0.027	0.03
FLS pH		7.778	7.059	6.65	6.82	7.04	7.1
pH (no unit)			7.808	7.81	7.14	7.5	7.37
Total Chromium (mg/L)	Within previous percentile	0.003	0.002	0.003	0.003	0.003	0.002
Total Nickel (mg/L)		No Data	0.00195	<0.001	0.001	0.002	0.002
Total Zinc (mg/L)	Marginal on June 2024	0.0294	0.0302	0.022	0.025	0.024	0.03

TSF S2

				TSF-S2 (TSF-MW02)			
Analyte	**Summary**	**Previous Period 95th Percentile**	**CURRENT 95TH PERCENTILE**	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
			TSF S2				
Dissolved Antimony (mg/L)	June within percentiles	0.032	0.0348	0.011	0.013	0.057	0.012
Dissolved Arsenic (mg/L)	June outside percentiles	0.001	0.001	0.001	0.001	0.001	0.002
Dissolved Boron (mg/L)	June outside percentiles	2.46	2.32	2.38	1.79	1.92	2.49
Dissolved Cadmium (mg/L)	June within percentiles	0.0004	3.7500E-4	0.0002	0.0003	0.0004	0.0002
Dissolved Copper (mg/L)	June within percentiles	0.017	0.0183	0.007	0.007	0.024	0.007
Dissolved Manganese (mg/L)	June within percentiles	0.003	0.00375	0.001	0.001	0.004	0.001
Dissolved Nickel (mg/L)	June within percentiles	No Data	0.0268	0.011	0.013	0.048	0.014
Dissolved Zinc (mg/L)	June within percentiles	No Data	0.0548	0.033	0.04	0.058	0.036
Electrical Conductivity @ 25°C (µS/cm)		26240	24600	22700	27000	22000	24300
FLS EC	June outside percentiles	No Data	23.19	13.04	10.17	24.8	25.7
FLS pH		No Data	6.749	6.54	6.66	6.95	6.75
FLS Temp	June within percentiles	No Data	28.83	26.6	29	27.7	24
pH (no unit)		7.6	7.574	7.6	7.6	7.34	7.24
Total Antimony (mg/L)	June within percentiles	0.041	0.0415	0.013	0.014	0.06	0.016
Total Boron (mg/L)	June within percentiles	2.65	2.383	2.38	2.6	1.91	2.3
Total Dissolved Solids @180°C-Total (mg/L)	Within previous percentiles	18040	16170	15000	16000	16300	16800
Total Lead (mg/L)	June outside percentiles	No Data	0.0095	0.007	0.001	0.002	0.01
Total Nickel (mg/L)	June within percentiles	No Data	0.033	0.011	0.014	0.048	0.014
Total Tin (mg/L)	Within previous percentiles	0.002	0.00195	<0.001	<0.001	<0.001	0.002
Total Titanium (mg/L)	June outside percentiles	No Data	0.01	<0.01	<0.01	<0.01	0.02
Total Zinc (mg/L)	June within percentiles	0.058	0.0584	0.032	0.037	0.061	0.035

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

								TSF-A									TSF-B							
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	Jun-22	Oct-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	Mar-24	Jun-24	19-Jun-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken dipped x 2	clear colourless odourless	hydrasleeved lab samples taken triplicate lab samples taken dipped x 3 EC risen creamy brown mud on hydralseeve weight	hydrasleeved clear sample dipped x 3	hydrasleeved EC dropped significant clear "fresh" organic odour 1440uS	hydrasleeved	hydrasleeved surface water adjacent well EC reading was 1414uS	EC 1482uS. Unusual initial EC result of 11.88mS. Dipped twice duplicated sample.	hydrasleeved noted EC rise from March 2024 quarter is this well returning to historic EC readings or sample error?	hydrasleeved lab samples taken	hydrasleeved lab samples taken dipped x 3	hydrasleeved slight hint of h2s odour	hydrasleeved	hydrasleeved EC lowered duplicate sample taken	hydrasleeved		hydrasleeved
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	22000	39000	41000	36000	26000	27000	29000	43000	46000	72000	70000	91000	96000	68000	73000	71000	71000.00
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	22	39	41	36	26	27	29	43	46	72	70	91	96	68	73	71	71
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	9.88	120	115	55.5	11.3	15.4	10.7	98.4	113	82	87.9	37.7	38.4	93.9	88.3	90.6	92
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	264	3510	3650	3140	272	368	266	3320	3660	2520	2660	1090	1030	2620	2620	2770	2810.00
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	5.39	5.61	4.95	5.58	5.45	5.56	5.09	5.33	5.86	5.19	5.07	4.93	4.97	4.9	4.92	4.99	5.04
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	<0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	0.35	4.29	4.14	2.02	0.21	0.4	0.25	3.51	4.22	1.38	1.15	1.14	0.84	1.16	1.15	1.12	1.18
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	61000	463000	431000	221000	70000	85000	65000	363000	423000	484000	518000	184000	188000	585000	539000	561000	563000.00
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	61	463	431	221	70	85	65	363	423	484	518	184	188	585	539	561	563
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	0.002	0.004	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	0.013	0.008	0.007	0.01	0.012	0.013	0.014	0.008	0.007	0.001	0.003	0.003	0.001	0.002	0.002	0.001	0.002
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	9000	221000	214000	93000	11000	19000	10000	180000	207000	217000	250000	85000	87000	258000	241000	245000	257000.00
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	9	221	214	93	11	19	10	180	207	217	250	85	87	258	241	245	257
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.003	0.002	<0.001	<0.001	<0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.008	0.008	0.007	0.006	0.009	0.009	0.009	0.004	0.005	0.006	0.006	0.003	0.003	0.006	0.007	0.006	0.007
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	0.006	0.003	0.003	0.005	0.008	0.01	0.008	0.004	0.003	0.002	0.003	<0.001	0.002	0.003	0.002	0.002	0.002
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	7000	52000	50000	25000	9000	10000	9000	41000	46000	31000	35000	19000	20000	37000	37000	35000	35000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	7	52	50	25	9	10	9	41	46	31	35	19	20	37	37	35	35
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	0.02
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	136000	1780000	1720000	831000	154000	215000	148000	1480000	1690000	901000	933000	484000	492000	978000	933000	954000	963000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	136	1780	1720	831	154	215	148	1480	1690	901	933	484	492	978	933	954	963
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	0.51	6.03	4.88	2.62	0.522	0.679	0.499	4.96	5.52	6.13	5.56	2.22	2.4	5.85	5.98	6.26	6.27
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.002	0.001	0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0	0.002	0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.025	0.014	0.016	0.021	0.021	0.025	0.018	0.013	0.015	0.009	0.01	0.028	0.023	0.012	0.007	0.009	0.01
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	1220	11100	12400	10600	1230	1540	1370	11600	12300	7940	8820	4250	3960	8260	10600	9030	9230
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	1.635	1.635	9.21	12.81	10.13	1.453	1.414	1.482	12.86	7.31	8.72	8.71	8.13	6.84	6.53	9.24	9.12
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	7.51	7.51	6.96	6.68	6.54	7.21	7.33	7.4	6.97	6.72	6.61	6.42	6.61	6.52	6.61	6.86	6.74
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	18.3	18.3	18.2	27.7	26.9	25.3	28.2	25.3	24.7	18.9	27.3	27.1	23.5	26.9	28.3	26.4	24.5
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	8.6	8.6	3.73	8.14	35.2	1.02	6.07	10.9	9.09	5.77	4.84	2.96	0.17	0.69	4.1	5.02	4.42
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.34	7.34	7.41	7.23	7.06	7.01	7.06	7.2	7.15	7.49	7.46	7.61	7.31	7.56	7.65	7.3	7.22
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	185000	185000	1420000	1530000	1270000	231000	194000	1340000	1500000	937000	980000	358000	353000	958000	982000	988000	954000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	185	185	1420	1530	1270	231	194	1340	1500	937	980	358	353	958	982	988	954
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	22	22	39	41	36	27	29	43	46	72	70	91	96	68	73	71	71
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	11.7	11.7	129	136	116	15.7	12.1	122	135	92	96.8	40	38.3	95.2	95.8	100	100
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.002	0.001	0.001	0.002	0.002	<0.001	0.001	0.002	0.001	<0.001	<0.001	0.001	0.002	<0.001	0.001	0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	0.24	0.24	4.32	4.05	2.05	0.36	0.26	3.28	4.03	1.22	1.24	1.17	1.18	1.08	1.27	1.14	1.2
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.001	0.001	0.002	0.002	0.002	0.003	<0.001	0.004	0.005	<0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.028	0.028	0.02	0.016	0.024	0.031	0.04	0.022	0.017	0.003	0.004	0.004	0.006	0.006	0.002	0.002	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	700000	700000	16000000	7770000	6730000	1300000	775000	7480000	6560000	5930000	5600000	2440000	2280000	4270000	6210000	6520000	5340000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	700	700	16000	7770	6730	1300	775	7480	6560	5930	5600	2440	2280	4270	6210	6520	5340
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.004	0.003	0.003	0.004	0.006	0.005	0.005	0.006	0.004	0.005	0.004	0.007	0.02	0.009	0.002	0.002	0.004
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.008	0.007	0.007	0.01	0.012	0.012	0.012	0.007	0.006	0.006	0.008	0.004	0.004	0.009	0.008	0.008	0.009
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	0.008	0.003	0.003	0.006	0.008	0.01	0.008	0.005	0.003	0.003	0.003	0.001	0.002	0.003	0.002	0.002	0.002
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	0.02
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	0.489	5.77	5.58	2.87	0.52	0.703	0.502	4.9	5.14	5.63	6.23	2.35	2.29	6.16	5.61	6.48	6.03
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.002	0.001	0	<0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	0	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.029	0.013	0.012	0.025	0.02	0.024	0.018	0.013	0.011	0.006	0.007	0.023	0.026	0.01	<0.005	<0.005	0.008

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-C								TSF-D				
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	19-Jun-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	19-Dec-23	22-Mar-24	16-Jun-24	19-Jun-22	04-Dec-22	18-Jun-23	19-Dec-23	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken	hydrasleeved lab samples taken	hydrasleeved slight h2s odour	hydrasleeved	hydrasleeved			hydrasleeved	hydrasleeved grey mud on weight strong h2s odour nil lab sample taken	hydrasleeved lab samples taken very strong h2s odour grey mud on weight	hydrasleeved h2s odour duplicate sample taken	hydrasleeved strong h2s odour	hydrasleeved strong h2s odour
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	72000	70000	68000	70000	68000	74000	71000	71000		231000	232000	175000	217000
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	72	70	68	70	68	74	71	71		231	232	175	217
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	65	69.8	70.5	70.8	72.3	67.1	69.5	70.4		90.4	92.2	85.7	74.9
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	1770	1920	1790	1790	1820	1850	1940	1940		2970	2820	2730	2350
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	12.31	12.15	12.09	12.07	11.96	11.92	11.96	11.96	90.53	90.43	90.45	90.37	90.36
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002		<0.001	<0.001	<0.001	<0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	1.8	1.54	1.61	1.41	1.49	1.46	1.51	1.56		3.66	3.36	3.16	3.06
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	323000	351000	370000	374000	383000	342000	366000	361000		281000	265000	245000	235000
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	323	351	370	374	383	342	366	361		281	265	245	235
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004		<0.001	<0.001	<0.001	<0.001
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	<0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.001		0.001	0.002	<0.001	<0.001
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	146000	170000	160000	159000	168000	155000	157000	166000		161000	166000	158000	146000
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	146	170	160	159	168	155	157	166		161	166	158	146
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.433	0.457	0.418	0.295
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.008	0.003	0.002	0.002	0.002	0.003	0.002	0.003		0.002	<0.001	0.001	0.001
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.004	0.001	0.004	<0.001
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	28000	32000	31000	32000	33000	33000	30000	32000		54000	54000	53000	45000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	28	32	31	32	33	33	30	32		54	54	53	45
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	832000	862000	876000	879000	885000	838000	864000	871000		1420000	1470000	1360000	1150000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	832	862	876	879	885	838	864	871		1420	1470	1360	1150
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	4.35	4.07	4.24	4.45	4.08	4.23	4.26	4.31		3.35	3.64	3.31	3.03
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.002	0	0.001	0.001	0.001	0.002	0.001	0.002		0	<0.001	<0.001	<0.001
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.008	0.009	0.019	0.009	0.008	0.011	0.007	0.007		0.017	0.012	0.02	0.011
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	6630	6410	7040	7060	6640	8230	7140	7160		10300	9730	11400	8340
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	6.37	6.66	6.81	6.49	5.24	5.1	7.18	7.29	8.55	9.74	8.8	7.18	8.7
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	7.03	6.94	6.72	6.94	6.79	7.14	7.11	7.28	6.85	6.79	6.87	6.82	7.14
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	19.1	27.1	27.2	21.7	26.6	28.5	24.9	23.6	22.7	29.3	24.2	32.1	25.1
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	1.49	1.57	3.1	2.04	2.62	1.96	1.79	1.1		10.1	6.78	8.33	9.05
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.65	7.55	7.59	7.19	7.67	7.74	7.44	7.37		7.91	7.47	7.9	7.62
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	751000	792000	693000	772000	763000	775000	765000	759000		1070000	1030000	1000000	922000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	751	792	693	772	763	775	765	759		1070	1030	1000	922
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	72	70	68	70	68	74	71	71		231	232	175	217
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	67	72	66.3	68	68.6	69.8	72.1	71.9		111	106	101	89.8
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.002
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.002		<0.001	<0.001	<0.001	<0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	1.7	1.66	1.56	1.56	1.43	1.66	1.5	1.55		3.58	3.94	3.83	2.8
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.5	<0.1
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	0.0005	<0.0001
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.004	0.004	0.004	0.004	0.004	0.004	0.013	0.004		<0.001	0.001	<0.001	<0.001
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001		<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.002	0.002	0.003	0.003	0.003	0.003	0.008	0.002		0.003	0.015	0.004	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	4270000	4340000	4470000	5260000	4420000	3740000	4820000	3850000		5760000	6770000	6350000	4640000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	4270	4340	4470	5260	4420	3740	4820	3850		5760	6770	6350	4640
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.001	<0.001	<0.001
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.002	0.002	0.002	0.002	0.002	0.002	0.472	0.001		0.476	0.502	0.472	0.311
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004		0.002	0.002	0.001	0.002
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	<0.001		0.004	0.002	0.005	<0.001
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	<0.01	<0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	4.19	4.64	4.47	4.16	4.24	3.68	4.41	4.18		3.73	3.48	3.06	2.93
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.002
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001		<0.001	0.002	<0.001	0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.002	0	0.002	0.002	0.002	0.002	0.002	0.002		0	<0.001	<0.001	<0.001
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01		<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.007	0.008	0.02	0.01	<0.005	0.008	0.008	0.006		0.015	0.033	0.021	0.013

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-E					TSF-S1 (TSF-MW01)								
Analyte	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	95TH PERCENTILE	19-Jun-22	04-Dec-22	18-Jun-23	17-Dec-23	16-Jun-24	19-Jun-22	14-Oct-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved strong h2s odour nil lab sample taken	hydrasleeved lab samples taken strong h2s odour small amount of grey mud on weight	hydrasleeved strong h2s odour trplicate sample taken	hydrasleeved	hydrasleeved h2s odour	hydrasleeved lab samples taken	clear colourless odourless	hydrasleeved lab sample taken	hydrasleeved h2s odour	hydrasleeved	hydrasleeved	hydrasleeved		hydrasleeved trplicate sample taken
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250		254000	255000	200000	255000	99000	97000	96000	91000	96000	93000.00	92000.00	97000.00	96000.00
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25		254	255	200	255	99	97	96	91	96	93	92	97	96
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8		123	121	117	118	35	36.6	37.9	37.7	38.4	40.4	38.2	39.4	38.8
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568		3550	3360	3320	3390	1000	1100	1050	1090	1030	1040.00	1060.00	1080.00	1100.00
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	95.62	95.57	95.64	95.56	95.65	25.61	25.6	25.59	25.57	25.56	25.57	25.57	25.57	25.62
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32		4.4	3.54	3.63	4.45	1.36	1.08	1.1	1.14	0.84	1.13	0.98	1.12	1.05
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4		<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500		298000	309000	290000	288000	165000	180000	173000	184000	188000	195000.00	178000.00	192000.00	182000.00
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338		298	309	290	288	165	180	173	184	188	195	178	192	182
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275		<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183		0.001	0.001	0.002	0.002	0.002	<0.001	0.002	0.003	0.001	0.002	0.002	<0.001	0.001
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250		240000	217000	212000	219000	78000	81000	91000	85000	87000	89000.00	87000.00	88000.00	90000.00
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3		240	217	212	219	78	81	91	85	87	89	87	88	90
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375		0.352	0.33	0.262	0.325	<0.001	<0.001	<0.001	0.002	0.003	0.001	0.002	0.002	0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175		0.001	<0.001	0.001	0.001	0.002	0.024	0.004	0.003	0.003	0.003	0.002	0.003	0.003
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268		0.009	0.008	0.009	0.008	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.002	0.002	0.002
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000		68000	66000	67000	65000	18000	19000	19000	19000	20000	20000.00	20000.00	19000.00	20000.00
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82		68	66	67	65	18	19	19	19	20	20	20	19	20
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000		2000000	1970000	1910000	1920000	458000	471000	489000	484000	492000	526000.00	497000.00	508000.00	502000.00
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845		2000	1970	1910	1920	458	471	489	484	492	526	497	508	502
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48		4.33	4.66	4.27	4.36	2.2	2.46	2.08	2.22	2.4	2.11	2.26	2.23	2.3
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085		0	<0.001	<0.001	<0.001	0.002	0.005	0	0.002	0.001	0.002	0.001	0.002	0.002
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548		0.015	0.012	0.017	0.015	0.023	0.02	0.022	0.028	0.023	0.024	0.03	0.027	0.03
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600		12500	11800	13300	12200	3840	3960	3720	4250	3960	3990.00	4180.00	4030.00	4050.00
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	9.47	11.85	10.87	8.09	11.99	4.41	3.94	3.91	4.33	4.25	3.9	3.84	4.22	4.25
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	6.94	6.78	6.93	6.81	7.06	6.89	7.11	6.71	6.57	6.77	6.65	6.82	7.04	7.1
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	22.8	30.7	23.4	30.4	27.4	18.2	20.9	27.9	25.8	21	25.1	25.8	24.4	22.6
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704		5.34	3.83	4.55	4.73	3.34	5.29	1.58	2.96	0.17	2.43	1.48	0.78	1.92
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574		7.94	7.44	7.97	7.6	7.73	7.76	7.67	7.61	7.31	7.81	7.14	7.5	7.37
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500		1540000	1460000	1450000	1370000	349000	372000	363000	358000	353000	352000.00	364000.00	366000.00	356000.00
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428		1540	1460	1450	1370	349	372	363	358	353	352	364	366	356
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25		254	255	200	255	99	97	96	91	96	93	92	97	96
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5		137	130	128	129	37.4	40.7	39.1	40	38.3	38.5	39.3	40	40.4
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415		<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002		<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383		4.19	4.42	4.41	3.96	1.16	1.02	1.17	1.17	1.18	1.16	1.12	1.08	1.14
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375		<0.1	<0.1	0.5	<0.1	0.4	0.3	0.2	0.2	0.2	0.2	<0.1	0.3	0.3
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4		<0.0001	<0.0001	0.0005	<0.0001	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	<0.0001	0.0003	0.0003
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375		<0.001	<0.001	<0.001	<0.001	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.002
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182		0.003	0.006	0.006	0.004	0.003	0.003	0.003	0.004	0.006	0.003	0.004	0.006	0.004
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000		7510000	8060000	7460000	7110000	2500000	2320000	2480000	2440000	2280000	2070000.00	2180000.00	2380000.00	2070000.00
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170		7510	8060	7460	7110	2500	2320	2480	2440	2280	2070.00	2180.00	2380.00	2070.00
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095		<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.001	0.002	0.002	0.002	0.002	0.002
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273		0.376	0.311	0.332	0.386	0.004	0.001	0.004	0.007	0.02	0.004	0.01	0.008	0.008
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195		0.002	0.002	0.003	0.002	0.003	0.007	0.003	0.004	0.004	0.004	0.004	0.005	0.004
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033		0.008	0.011	0.01	0.008	<0.001	<0.001	<0.001	0.001	0.002	<0.001	0.001	0.002	0.002
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104		<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.001	0.002	<0.001	<0.001
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43		4.85	4.34	3.92	4.17	2.08	2.32	2.32	2.35	2.29	2.3	1.97	2.26	2.24
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385		<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875		0	<0.001	<0.001	<0.001	0.002	0.003	0	0.002	0.002	0.002	0.002	0.002	0.002
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584		0.016	0.02	0.019	0.013	0.031	0.018	0.021	0.023	0.026	0.022	0.025	0.024	0.03

Table 1 - Analytical Data Provided from June 2022 to June 2024

Exceeds 95th percentile

Provided from June 2022 to June 2024

								TSF-S2 (TSF-MW02)								
Analyte	**95TH PERCENTILE**	**95TH PERCENTILE**	**95TH PERCENTILE**	**95TH PERCENTILE**	**95TH PERCENTILE**	**95TH PERCENTILE**	**95TH PERCENTILE**	19-Jun-22	14-Oct-22	04-Dec-22	26-Mar-23	18-Jun-23	24-Sep-23	17-Dec-23	22-Mar-24	16-Jun-24
	TSF A	TSF B	TSF C	TSF D	TSF E	TSF S1	TSF S2	hydrasleeved lab samples taken	slight yellow filtered odourless	hydrasleeved lab sample taken dipped x 3 turbid cloudy brownish/yellowish	hydrasleeved turbid/cloudy sample brownish/yellowish dipped x 3 duplicate taken TSFDUP1 at this site	hydrasleeved dipped x 2 turbid/cloudy	hydrasleeved turbid cloudy could hear "material" falling into well when retrieving hydrasleeve	hydrasleeved dipped x 2 turbid/cloudy	Sample field chemisty collected twice	hydrasleeved cloudy sample
Bicarbonate Alkalinity as CaCO3 (µg/L)	40500	95000	75500	251400	283800	102250	87250	84000	84000	78000	73000	74000	79000	84000	77000	84000
Bicarbonate Alkalinity as CaCO3 (mg/L)	40.5	95	75.5	251.4	283.8	102.3	87.25	84	84	78	73	74	79	84	77	84
Carbonate Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Carbonate Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cations Total (meq/L)	118.8	86.68	76.35	98.56	123.9	38.28	279.8	240	271	267	210	248	260	252	180	245
Chloride (mg/L)	3615	2655	2027	3058	3546	1098	8568	7850	8570	8030	7100	7060	7850	7790	7260	8110
Depth to Water (m)	6.154	5.695	12.85	90.45	N/A	25.65	22.18	21.09	22.34	19.7	20.71	21.28	21.7	22.13	21.45	21.99
Dissolved Antimony (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	0.0348	0.01	0.011	0.016	0.041	0.009	0.011	0.013	0.057	0.012
Dissolved Arsenic (mg/L)	0.002	0.001	0.002	N/A	N/A	N/A	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
Dissolved Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Boron (mg/L)	4.253	1.23	1.625	3.988	4.385	1.328	2.32	1.79	2.35	2.23	2.22	1.96	2.38	1.79	1.92	2.49
Dissolved Cadmium (mg/L)	N/A	2.0000E-4	N/A	N/A	N/A	3.0000E-4	3.7500E-4	<0.0001	0.0002	0.0002	0.0004	0.0002	0.0002	0.0003	0.0004	0.0002
Dissolved Calcium (µg/L)	455000	526500	377000	282600	319200	187000	1337500	1070000	1230000	1170000	995000	1140000	1190000	1090000	830000	1070000
Dissolved Calcium (mg/L)	455	526.5	377	282.6	319.2	187	1338	1070	1230	1170	995	1140	1190	1090	830	1070
Dissolved Chromium (mg/L)	0.00285	0.002	0.00475	0.001	0.001	0.002	0.00275	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002
Dissolved Cobalt (mg/L)	0.00295	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Copper (mg/L)	0.0435	0.003	0.002	0.00195	0.001	0.0046	0.0183	0.007	0.006	0.01	0.019	0.008	0.007	0.007	0.024	0.007
Dissolved Lead (mg/L)	0.001	N/A	N/A	N/A	N/A	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Magnesium (µg/L)	219250	241400	175850	176800	237300	90000	540250	452000	500000	542000	398000	461000	491000	469000	346000	468000
Dissolved Magnesium (mg/L)	219.3	239.5	167.5	176.8	237.3	90	540.3	452	500	542	398	461	491	469	346	468
Dissolved Manganese (mg/L)	0.0177	0.00295	N/A	0.48	0.387	0.0075	0.00375	0.002	0.001	0.002	0.003	0.001	0.001	0.001	0.004	0.001
Dissolved Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (mg/L)	0.00975	0.0092	0.0045	0.00285	0.002	0.0518	0.0175	0.003	0.01	0.004	0.005	0.003	0.004	0.003	0.008	0.004
Dissolved Nickel (mg/L)	0.00725	0.003	N/A	0.004	0.0119	0.002	0.0268	0.009	0.01	0.017	0.03	0.011	0.011	0.013	0.048	0.014
Dissolved Potassium (µg/L)	51500	35000	34900	57600	69700	19750	82000	66000	82000	78000	64000	71000	73000	77000	57000	69000
Dissolved Potassium (mg/L)	51.5	36.5	34.9	57.6	69.7	19.75	82	66	82	78	64	71	73	77	57	69
Dissolved Selenium (mg/L)	0.02	0.02	0.01	N/A	N/A	N/A	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01
Dissolved Silver (mg/L)	0.004	0.003	0.004	N/A	N/A	0.003	0.0091	0.003	<0.001	<0.001	0.01	<0.001	0.002	0.001	0.002	<0.001
Dissolved Sodium (µg/L)	1765000	954000	882750	1574000	2017000	491250	3845000	3400000	3830000	3720000	2900000	3490000	3630000	3620000	2510000	3470000
Dissolved Sodium (mg/L)	1765	954	948.5	1574	2017	491.3	3845	3400	3830	3720	2900	3490	3630	3620	2510	3470
Dissolved Strontium (mg/L)	5.743	5.335	4.335	3.61	4.612	2.445	15.48	14.7	15.5	12.3	11.5	13.8	12.3	12.7	10.4	13
Dissolved Thorium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Tin (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Uranium (mg/L)	0.001	0.0018	0.002	0.0019	0	0.008	0.0085	0.009	0.007	0	0.005	0.005	0.005	0.002	0.007	0.006
Dissolved Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Zinc (mg/L)	0.0231	0.0253	0.0157	0.0193	0.015	0.0274	0.0548	0.034	0.031	0.048	0.048	0.034	0.033	0.04	0.058	0.036
Electrical Conductivity @ 25°C (µS/cm)	12205	8363	8055	11290	12465	4207	24600	22800	24600	24600	22900	21400	22700	27000	22000	24300
FLS EC	12.41	8.719	6.788	7.18	N/A	4.318	23.19	14.5	9.21	23.29	22.65	18.4	13.04	10.17	24.8	25.7
FLS pH	7.428	7.222	7.11	6.82	N/A	7.059	6.749	6.75	6.77	6.51	6.46	6.63	6.54	6.66	6.95	6.75
FLS Temp	27.58	27.27	28.31	32.1	N/A	27.59	28.83	20.8	18.2	28.9	28.4	24.5	26.6	29	27.7	24
Hydroxide Alkalinity as CaCO3 (µg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Hydroxide Alkalinity as CaCO3 (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ionic Balance (Percent)	22.27	5.813	5.448	11.3	9.461	9.056	7.704	5.38	3.68	1.35	6.98	1.73	1.25	2.77	15.3	5.66
pH (no unit)	7.53	7.635	7.742	7.98	8.088	7.808	7.574	7.54	7.56	7.53	7.56	7.22	7.6	7.6	7.34	7.24
Sulfate as SO4 - Turbidimetric-Dissolved (µg/L)	1502500	942500	787750	1070000	1532500	369750	2427500	2130000	2330000	2210000	1920000	1890000	2070000	2180000	1900000	2090000
Sulfate as SO4 - Turbidimetric-Dissolved (mg/L)	1503	942.5	787.8	1070	1533	369.8	2428	2130	2330	2210	1920	1890	2070	2180	1900	2090
Total Alkalinity as CaCO3 (mg/L)	40.5	94.75	75.5	251.4	283.8	102.3	87.25	84	84	78	73	74	79	84	77	84
Total Anions (meq/L)	134.3	91.6	71.45	113.4	136.9	40.53	293.5	267	292	274	242	240	266	267	246	274
Total Antimony (mg/L)	0.001	N/A	N/A	0.002	N/A	N/A	0.0415	0.012	0.009	0.025	0.043	0.037	0.013	0.014	0.06	0.016
Total Arsenic (mg/L)	0.002	0.00195	0.002	N/A	N/A	0.001	0.002	0.002	0.001	0.002	0.002	0.002	0.002	<0.001	0.002	0.002
Total Beryllium (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron (mg/L)	4.253	1.24	1.66	4.548	4.396	1.338	2.383	2.05	2.31	2.4	2.33	2.23	2.38	2.6	1.91	2.3
Total Cadmium (µg/L)	N/A	0.2	N/A	0.5	N/A	0.3	0.375	0.3	0.2	0.2	0.4	0.3	0.2	0.2	0.3	0.2
Total Cadmium (mg/L)	N/A	2.0000E-4	N/A	5.0000E-4	N/A	3.0000E-4	3.7500E-4	0.0003	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002
Total Chromium (mg/L)	0.0028	0.002	0.00475	0.00195	0.001	0.002	0.00375	0.004	0.002	0.003	0.003	0.003	0.003	0.002	0.002	0.003
Total Cobalt (mg/L)	0.0039	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Copper (mg/L)	0.0493	0.0195	0.003	0.0128	0.00685	0.0075	0.182	0.034	0.019	0.047	0.079	0.216	0.035	0.025	0.055	0.017
Total Dissolved Solids @180°C-Total (µg/L)	13942500	5520000	5102000	6686000	7977500	2667000	16170000	17,500,000	16,100,000	15,500,000	14,900,000	16,100,000	15,000,000	16,000,000	16,300,000	16,800,000
Total Dissolved Solids @180°C-Total (mg/L)	13943	5520	5102	6686	7978	2631	16170	17500	16100	15500	14900	16100	15000	16000	16300	16800
Total Lead (mg/L)	0.001	0.002	N/A	0.001	0.001	0.002	0.0095	0.006	0.01	0.008	0.007	0.008	0.007	0.001	0.002	0.01
Total Manganese (mg/L)	0.0193	0.0392	0.0026	0.514	0.402	0.018	0.0273	0.011	0.016	0.015	0.019	0.03	0.015	0.008	0.011	0.022
Total Mercury (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Molybdenum (mg/L)	0.0145	0.0075	0.004	0.006	0.002	0.058	0.0195	0.003	0.006	0.003	0.009	0.008	0.005	0.004	0.012	0.005
Total Nickel (mg/L)	0.0075	0.0045	N/A	0.0048	0.0129	0.00195	0.033	0.01	0.009	0.015	0.034	0.03	0.011	0.014	0.048	0.014
Total Selenium (mg/L)	0.02	0.02	0.0175	N/A	N/A	N/A	0.01	0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Silver (mg/L)	N/A	0.002	N/A	N/A	N/A	0.002	0.0104	0.002	<0.001	0.008	0.011	0.006	0.006	0.002	0.003	0.007
Total Strontium (mg/L)	5.723	5.895	4.598	3.708	4.774	2.343	15.43	13.7	14.9	14.7	12.4	11.5	13.2	11.6	10.3	12.3
Total Thorium (mg/L)	0.002	0.001	N/A	0.002	0.001	0.001	0.00385	<0.001	<0.001	0.004	<0.001	0.001	0.001	<0.001	<0.001	<0.001
Total Tin (mg/L)	N/A	N/A	0.002	0.002	N/A	0.001	0.00195	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	0.002
Total Titanium (mg/L)	N/A	N/A	N/A	0.01	N/A	N/A	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Total Uranium (mg/L)	0.002	0.002	0.002	0	0	0.009	0.00875	0.007	0.007	0	0.007	0.007	0.006	0.006	0.008	0.006
Total Vanadium (mg/L)	N/A	N/A	0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Zinc (mg/L)	0.0235	0.0254	0.0175	0.03	0.0296	0.0302	0.0584	0.038	0.03	0.044	0.059	0.057	0.032	0.037	0.061	0.035

APPENDIX D – STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS & IMPORTANT INFORMATION REGARDING YOUR REPORT

INTRODUCTION

This report has been prepared by Land & Water Consulting for you, as Land & Water Consulting's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Land & Water Consulting may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Land & Water Consulting has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

No warranty or guarantee of the site conditions is intended.

This report was prepared for the sole use of you, the Client and may not contain sufficient information for purposes of other parties or for other uses. Any reliance on this report by third parties shall be at such parties sole risk. This report shall only be presented in full and may not be used to support any other objectives than those set out in the report, except where written approval with comments are provided by Land & Water Consulting.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

LIMITATIONS OF THE REPORT

The scope of works undertaken and the report prepared to complete the assessment was in accordance with the information provided by the client and the specifications for works required under the contract. As such, works undertaken and statements made are based on those specifications (such as levels of risks and significance of any contamination) and should be considered and interpreted within this context. The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

Your environmental report should not be used without reference to Land & Water Consulting in the first instance:

- When the nature of the proposed development is changed, for example if a residential development is proposed instead of a commercial one;
- When the size or configuration of the proposed development is altered;
- When the location or orientation of the proposed structures are modified;
- When there is a change in ownership;
- For application to an adjacent site.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

ENVIRONMENTAL ASSESSMENT “FINDINGS” ARE PROFESSIONAL ESTIMATES

The information in this report is considered to be accurate with respect to conditions encountered at the site at the time of investigation and considering the inherent limitations associated with extrapolating information from a sample set. Note however that site assessment identifies actual subsurface conditions only at those specific points where samples are taken, when they are taken. Environmental data derived through sampling and analysis are interpreted by consultants who then render an opinion about overall subsurface conditions, the nature and extent of contamination and potential impacts on the use of the land. Actual conditions may differ from those inferred to exist as no professional and no subsurface assessment program can reveal every detail within the ground across a site. Subsurface conditions can vary across a particular site and no practical degree of sampling can ever eliminate the possibility that conditions may be present at a site that have not been represented though sampling.

SUBSURFACE CONDITIONS CAN CHANGE

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Land & Water Consulting should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions. Since subsurface conditions (including contamination concentrations) can change within a limited period of time and space, this inherent limitation to the representation of site conditions provided by this report should always be taken into consideration particularly if the report is used after a delay in time.

DATA SHOULD NOT BE SEPARATED FROM THE REPORT

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

RESPONSIBILITY

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

Appendix H. Environmental Radiation Monitoring Report Prominent Hill January 2023 – December 2023 (BHP 2024)

BHP

Environmental Radiation Monitoring Report

January 2023 to December 2023

Prominent Hill Project

1 August 2024

Contents

Introduction

Prominent Hill Operations

BHP own and operate the Prominent Hill copper-gold mining operation which is located in northern South Australia, 650km north-west of Adelaide. The Prominent Hill Operation (PHO) consists of an open pit mine (now completed), two underground mines, crushing and grinding mills and a flotation circuit which produces a high grade copper concentrate containing gold. In addition to the copper and gold mineralisation in the ore, uranium is also present at varying concentrations, at an average of approximately 100ppm.

A dedicated Environmental Radiation Monitoring program commenced in March 2015, and the latest results of this monitoring are reported in this document.

Overview of naturally occurring radiation

Radioactive materials exists naturally in soil, water and the air, and are responsible for the naturally occurring radiation known as ‘background radiation’. Naturally occurring background radiation is variable, depending largely on the environment, the underlying geology and meteorological conditions. Naturally occurring background radiation causes radiation exposure to people everywhere on Earth.

‘Radiation’ is a term used to describe the movement or transfer of energy through space or through a medium. Radiation that has enough energy to ionize atoms and potentially cause DNA damage due to this ionization is called ‘ionizing radiation’. Ionizing radiation occurs when unstable atoms (isotopes) give off the radiation (alpha, beta, gamma) to move to a lower energy state. These unstable isotopes are known as ‘radionuclides’. A number of radionuclides are found in the natural environment, occurring in rock, soil, water, air, plants and animals.

Environmental radiation monitoring

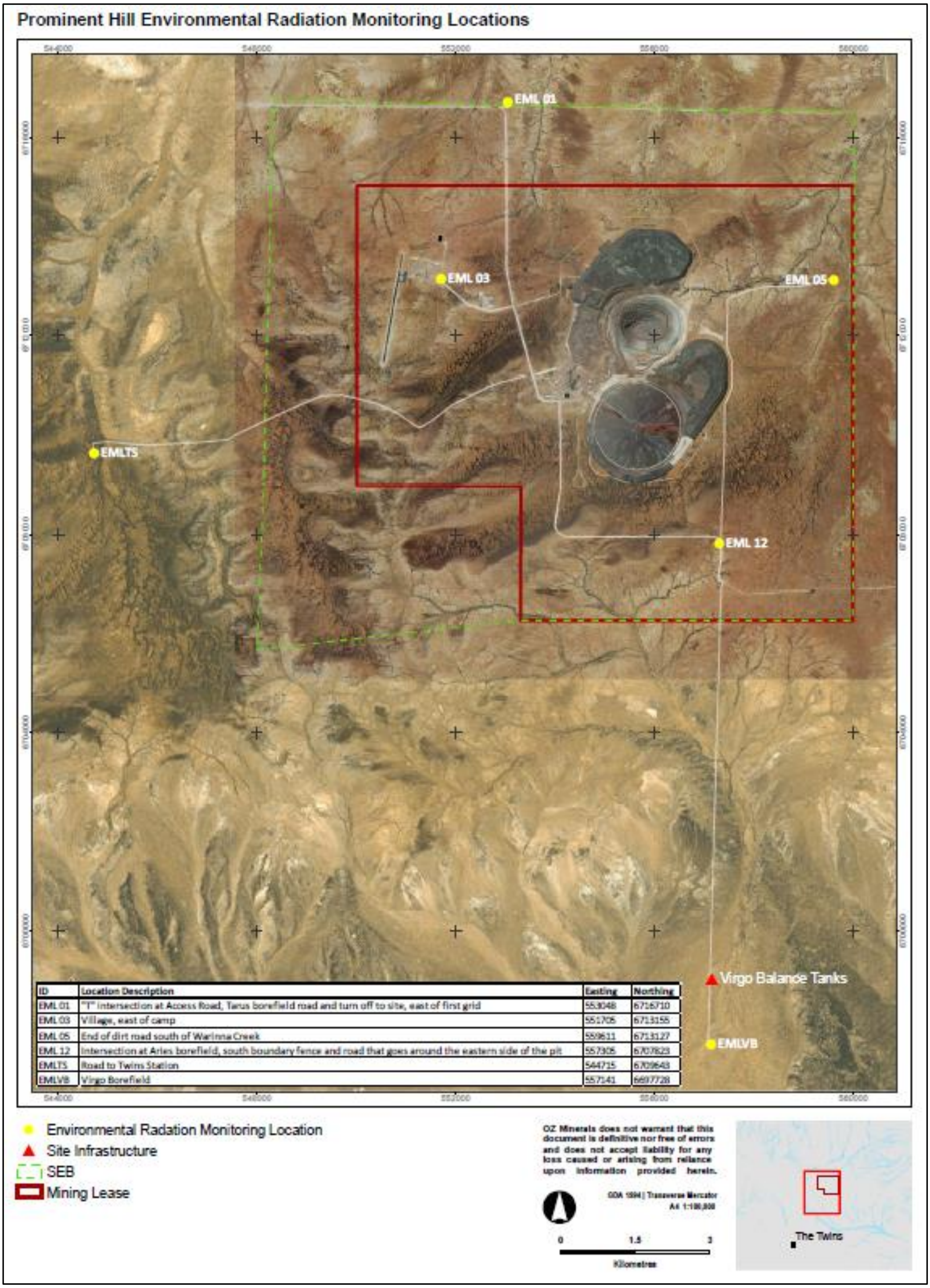
Environmental radiation monitoring locations

During March 2015, seven Environmental Radiation Monitoring Locations (ERMLs) were established within the PHO mining lease and in the surrounding region.

The location of the ERMLs are detailed in Figure 2-1 (with geographical information), and shown in Table 2-1.

Table 2-1: Geographical detail and description for the PHO ERMLs

Site ID	GPS Site Coordinates for Dust, Gamma & Rn monitoring (Zone 53)		Description
	Easting (m)	Northing (m)	
ERML 01	553,048	6,716,710	“T” intersection at access road, Taurus borefield road and turn off to site, east of first grid.
ERML 03	551,705	6,713,155	Village, east of camp.
ERML 05	559,611	6,713,127	End of dirt road south of Warinna Creek.
ERML 12	557,305	6,707,823	Intersection at Aries borefield, south boundary fence and road that goes around eastern side of pit.
ERML TS	544,715	6,709,643	Road to Twins Station.
ERML VB	557,141	6,697,728	Virgo borefield.



Prominent Hill Environmental Radiation Monitoring Locations

ID	Location Description	Easting	Northing
EML 01	"T" intersection at Access Road, Tarus borefield road and turn off to site, east of first grid	553048	6716710
EML 03	Village, east of camp	551705	6713155
EML 05	End of dirt road south of Warinna Creek	559611	6713127
EML 12	Intersection at Aries borefield, south boundary fence and road that goes around the eastern side of the pit	557305	6707823
EMLTS	Road to Twins Station	544715	6709643
EMLVB	Virgo Borefield	557141	6697728

Figure 2-1: Prominent Hill monitoring locations

Environmental radiation monitoring

Environmental radiation monitoring program

The Environmental Radiation Monitoring program consists of continuous passive monitoring, i.e.; the monitors and samplers are continuously in the field, and the reported results are the totals for the entire monitoring period, reported as hourly, monthly or annual averages.

The radiation monitoring is the same at each ERML and is detailed below in Table 2-2.

Table 2-2: ERML monitoring program

Type of monitoring	Monitoring method	Rotation period	Analysis period
Gamma radiation	OSL (Optically Stimulated Luminescence) badge – passive and continuous	Quarterly, approximately every three months	At the end of each rotation
Radon concentration in air	Radtrak2 α-track detector with thoron filter – passive and continuous		
Radionuclides in dust (which deposits naturally from the air)	Collection of dust for late elemental and radionuclide analysis – passive and continuous		Annual site composite

The current monitoring equipment setup and detailed images of an OSL badge and radon detector are shown in Figure 2-2.

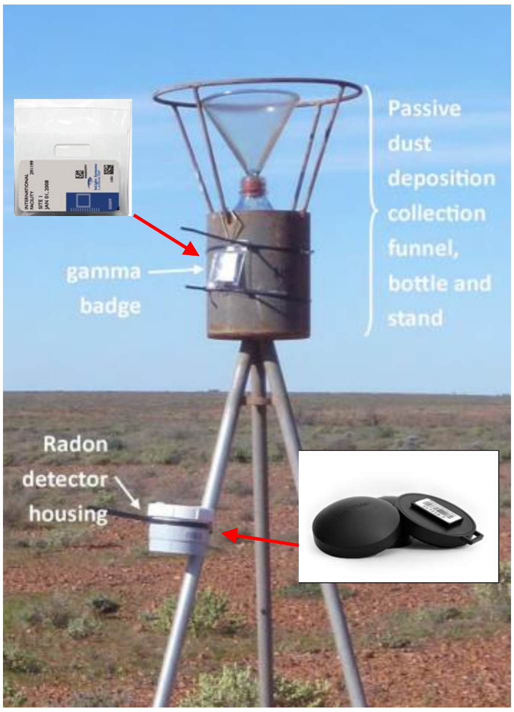


Figure 2-2: Radiation monitoring equipment

Environmental radiation monitoring results

Monitoring for this report began on 15th December 2022 and concluded on 5th December 2023. The sampling period comprised of 4 sampling periods (quarters). At the end of each quarter, monitoring and sampling equipment is collected and replaced with new equipment. The results for 2023 are summarised below, with laboratory results appearing in Appendix C.

Gamma radiation

Background gamma radiation levels vary widely as they depend primarily on the natural levels of radionuclides in soil. A portion of the background gamma levels also comes from cosmic radiation.

OSL badges are used to determine an average hourly gamma dose rate (above the control badge, which accounts for background and transit dose). The gamma results for 2023 are detailed in Appendix C and summarised in Table 2-3.

Table 2-3: Gamma dose rates 2023

Site ID	Gamma (μSv/h) above background		
	Minimum	Maximum	Average
ERML 01	0.11	0.22	0.14
ERML 03	0.05	0.15	0.12
ERML 05	0.14	0.20	0.17
ERML 12	0.09	0.21	0.14
ERML TS	0.00	0.13	0.07
ERML VB	0.13	0.21	0.06
All sites (2023)	**0.00**	**0.22**	**0.13**

To compare to other locations in Australia, it is necessary to include the background with the dose rate. The background is estimated by measuring the dose rate in the location of the control badge over a period of 24 hours (an average of 0.056 μSv/h was measured in the Environment Lab). With background included, doses range from 0.056 to 0.276 μSv/h.

The gamma radiation levels measured at all of the ERMLs are comparable to typical background gamma levels in Australia, as detailed in Table 2-4. The dose rates are similar to dose rates measured during previous monitoring periods.

Table 2-4: Gamma radiation levels across Australia

Location	Gamma Levels (μSv/h)	Reference
Typical for Australia	0.02 - 0.1	Mudd (2002)
Melville Island, NT – undisturbed areas	0.06 (avg)	Matilda Minerals (2005)
Australian Average	0.07	Inferred from ARPANSA (2005)
Centipede Deposit, WA – over deposit	0.07 - 0.86 (avg 0.17)	TORO (2010)
Centipede Deposit, WA – sand dune areas	0.10	
Central South Australia	0.1	BHP Billiton (2009)
REX Hillside Project, SA – Background 5 km from project	0.11 - 0.16 (avg 0.12)	Trevlyn Radiation & Environment (2013)
Prominent Hill ERMLs (2023)	**0.056 - 0.276 (avg 0.186)**	

Environmental radiation monitoring results

Radionuclides in airborne dust

Soils, which contain naturally occurring radioactive materials, can become airborne and form dusts. Airborne dust can be collected via active and passive air sampling techniques. At the PHO ERMLs, dust is collected by passive dust sampling where dusts and particulates settle naturally from the air and are collected in sampling apparatus as shown in Figure 2-2.

Analysis of passive dust samples enables quantification of the activity the radionuclides depositing in the environment to be determined, with result being reported in units of $Bq/m^2/month$. Dust samples have previously been analysed for the 'long-lived' radionuclides of the uranium and thorium decay chains;

- U^{238}, Th^{230}, Ra^{226}, Pb^{210}, Po^{210}, Th^{232} and Th^{228}

This has given a reasonable understanding of the radionuclide deposition rates that may be impacted by operational activities. Monitoring data has indicated that the sites that are closer to operational activities (EML 1, 3, 5 and 12) have not had significantly different activity deposition rates or activity concentrations compared to sites furthest away from operational activities (EML TS and EML VB) for any radionuclides, with the exception of U^{238}, particularly for EML 1 and EML 3 (which has been elevated by up to 2x previously). All other radionuclides have not had significant activity deposition variations between sites closer to operational activities and further away from operational activities, suggesting that any fluctuations are not due to operations. Analysis of 2023 dust has therefore been conducted for U (to estimate head of chain U^{238} activity concentrations), and Th (to estimate head of chain Th^{232} activity concentration) via ICP-MS.

The quarterly mass deposition data is detailed below in Table 2-5. Full dust results are detailed in Appendix C.

Table 2-5: Quarterly dust mass deposition data

Site ID	Mass dust deposited (g)				Total mass dust per site (g)	Sampling period (days)
	Sampling Period					
	Q1	Q2	Q3	Q4		
ERML 01	0.343	0.124	0.048	0.120	0.635	359
ERML 03	0.097	0.104	0.060	0.064	0.325	359
ERML 05	0.030	0.287	0.036	0.077	0.430	359
ERML 12	0.034	0.019	0.123	0.246	0.422	359
ERML TS	0.047	0.042	0.018	0.023	0.130	359
ERML VB	0.076	0.142	0.051	0.129	0.398	359
Average	**0.093**	**0.107**	**0.123**	**0.558**	**0.390**	**359**

Note: The mass of dust is calculated by subtracting the mass of copper sulphate (algaecide) from the mass of the collected sample

Although some locations showed spikes in dust mass due to different activities, none of the dust contained elevated uranium concentrations.

The concentrations of radionuclides in the dust collected for 2023 are shown in Table 2-7.

Dust and radionuclide deposition rates for the passive dust samples are detailed in Table 2-8.

Table 2-7: Radionuclide concentrations in deposited dust

Site ID	Mass dust deposited (g)	Concentration of deposited dust (mg/kg)*		Approximate radionuclide concentration of deposited dust (Bq/g)	
		Uranium	Thorium	U^{238}	Th^{232}
ERML 01	0.635	0.422	0.917	0.01	0.00
ERML 03	0.325	9.98	7.53	0.09	0.04
ERML 05	0.430	0.751	1.71	0.02	0.00
ERML 12	0.422	1.10	1.84	0.02	0.00
ERML TS	0.130	7.66	3.36	0.04	0.03
ERML VB	0.398	7.65	4.34	0.05	0.03

Table 2-8: Radionuclide deposition rates

Site ID	Dust Deposition Rate[1] (g/m^2/month)	Approximate radionuclide deposition rate (Bq/m^2/month)	
		U^{238}	Th^{232}
ERML 01	1.80	0.01	0.00
ERML 03	4.08	0.02	0.01
ERML 05	0.92	0.02	0.00
ERML 12	2.18	0.01	0.00
ERML TS	2.25	0.02	0.01
ERML VB	1.80	0.03	0.01

Note: The dust deposition rate is based on the entire sample period dust deposition mass

U^{238} deposition rates for all locations are similar or lower than baseline studies conducted in Australia, shown in Table 2-9.

Dust uranium concentrations at all locations are typical of normal soil, with the worldwide average being approximately 3 ppm (UNSCEAR 2000), equivalent to 3 mg/kg.

Thorium dust deposition is consistently low over all ERMLs, and the thorium dust concentrations are below typical worldwide average soil concentration ranges, with the worldwide average being approximately 7 ppm (UNSCEAR 2000), equivalent to 7 mg/kg.

Table 2-9: Dust deposition comparison to other Australian sites

Location	Average U^{238} Deposition ($Bq/m^2/month$)	Reference
Lake Maitland, WA, Australia	0.05	TORO Energy (2016)
Nolans Bore, NT, Australia	0.06	Derived from Arafura Resources (2016)
Kiggavik Project, NU, Canada	0.16	Derived from AREVA Resources Canada Inc. (2014)
Prominent Hill ERMLs 2023	**0.01 – 0.13 (ave 0.02)**	

Environmental radiation monitoring results

Radon in air

Radon (Rn) is a naturally occurring inert radioactive gas with a number of isotopes. Radon is present in varying concentrations everywhere in the atmosphere. Radon is produced when its parent radium decays. Radium occurs naturally in rocks, soils and water. The Rn^{222} isotope, a daughter in the uranium decay chain, is measured at the ERMLs.

Results of the radon monitoring for 2023 are detailed in Appendix C and summarised below in Table 2-10.

Table 2-10: Radon concentration results

Site ID	Average Radon concentration over exposure period Rn^{222} (Bq/m^3)			
	Q1	Q2	Q3	Q4
ERML 01	< 21	< 15	22 ± 6	< 15
ERML 03	< 21	< 15	21 ± 6	< 31
ERML 05	36 ± 14	< 15	26 ± 6	< 15
ERML 12	< 16	19 ± 8	< 15	18 ± 6
ERML TS	27 ± 14	< 15	19 ± 4	23 ± 6
ERML VB	50 ± 18	32 ± 10	31 ± 8	32 ± 6

Approimately half of the radon readings at the ERMLs are all below the detection limit; reported concentrations range from <15 – 50 Bq/m^3.

The results show that the radon levels are likely consistent with world average level of 10 Bq/m^3 [UNSCEAR, 2000] and in line with the average radon concentrations recorded at other similar locations around Australia as detailed in Table 2-11.

Table 2-11: Radon concentrations compared to other Australian sites

Location	Long-term Average Rn^{222} Concentration (Bq/m^3)	Reference
Honeymoon, Yarramba Homestead	30	Honeymoon (2006)
BHP Billiton - Olympic Dam Village	30	BHP Billiton (2009)
BHP Billiton – Regional monitoring (Darwin and Alice Springs)	28	
Toro Energy – Wiluna WA	39	TORO Energy (2016)
REX – Hillside	18.7	Trevlyn Radiation and Environment (2013)
Prominent Hill ERMLs 2023	**<15 - 50**	

Environmental radiation monitoring results

Summary

The monitoring results for 2023, compiled from results tables, are consolidated into Table 2-12.

Table 2-12 Radon concentrations compared to other Australian sites

Site ID	Gamma		Passive Dust			Radon
	Dose rate μSv/h (including background)		Dust Deposition Rate (g/m²/month)	Approximate radionuclide deposition rate (Bq/m²/month)		Rn^{222} concentration (Bq/m^3)
	Range	Average		U^{238}	Th^{232}	
ERML 01	0.05 – 0.10	0.06	1.80	0.01	0.00	<15 – 22
ERML 03	0.02 – 0.07	0.05	4.08	0.02	0.01	<15 - <31
ERML 05	0.07 – 0.10	0.08	0.92	0.02	0.00	<15 – 36
ERML 12	0.05 – 0.10	0.07	2.18	0.01	0.00	<15 – 19
ERML TS	0.00 – 0.06	0.03	2.25	0.02	0.01	<15 – 27
ERML VB	0.04 – 0.06	0.06	1.80	0.03	0.01	31 – 50

Environmental radiation monitoring results

Comparison to previous monitoring periods

All monitored parameters can be compared to previous monitoring periods (previous results are graphed vs 2023 data in Figure 2-3, Figure 2-4, and Figure 2-5).

Average gamma dose rates remained comparable. Average dust deposition was greater for all sites, indicating that the amount of dust deposition was likely due to regional weather conditions, rather than dependant on site activities. Radon concentrations remain below detectable limits for half of all measurements. Concentrations often being below detectable limits has been the case since the inception of the monitoring program.

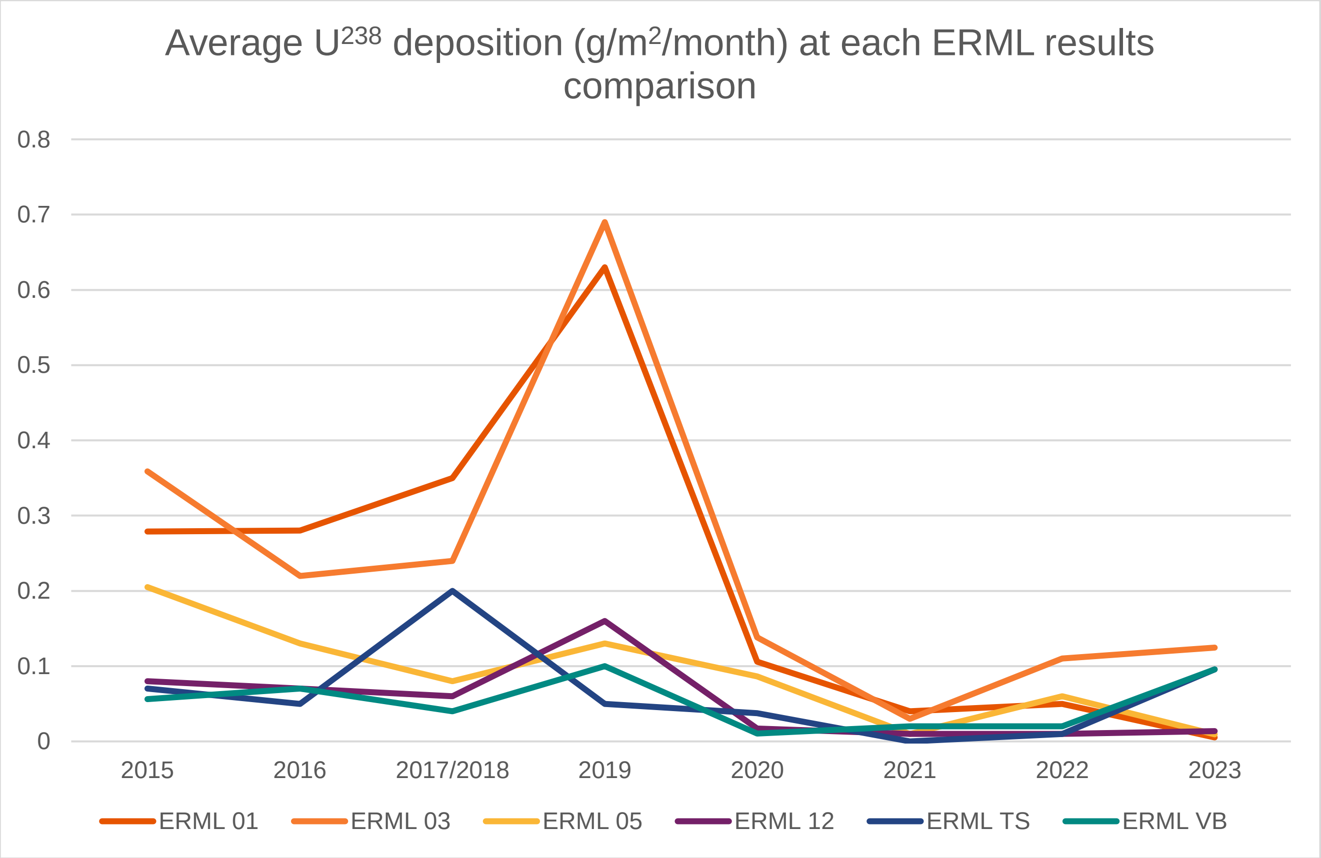


Figure 2-3: Average U^{238} deposition (g/m^2/month) at each ERML results comparison

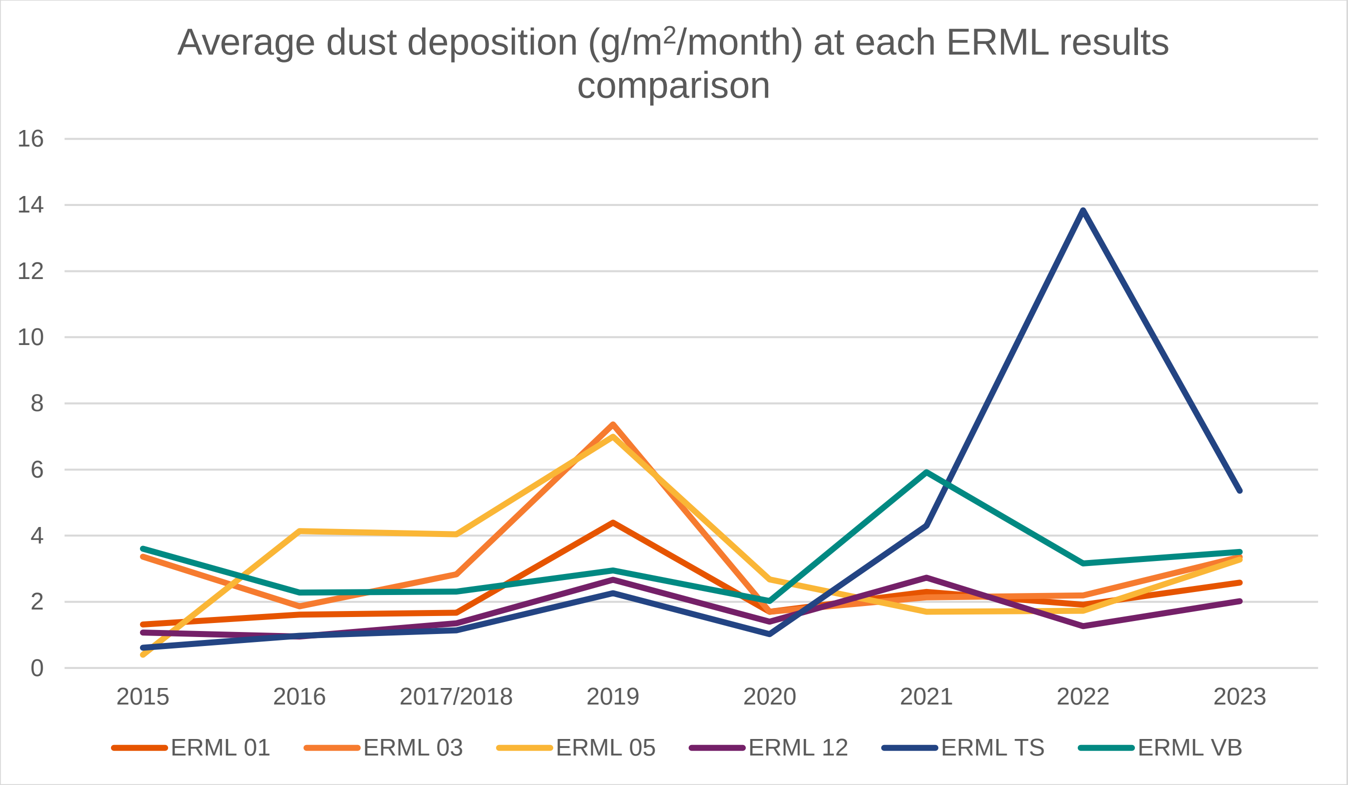


Figure 2-4: Average dust deposition (g/m^2/month) at each ERML results comparison

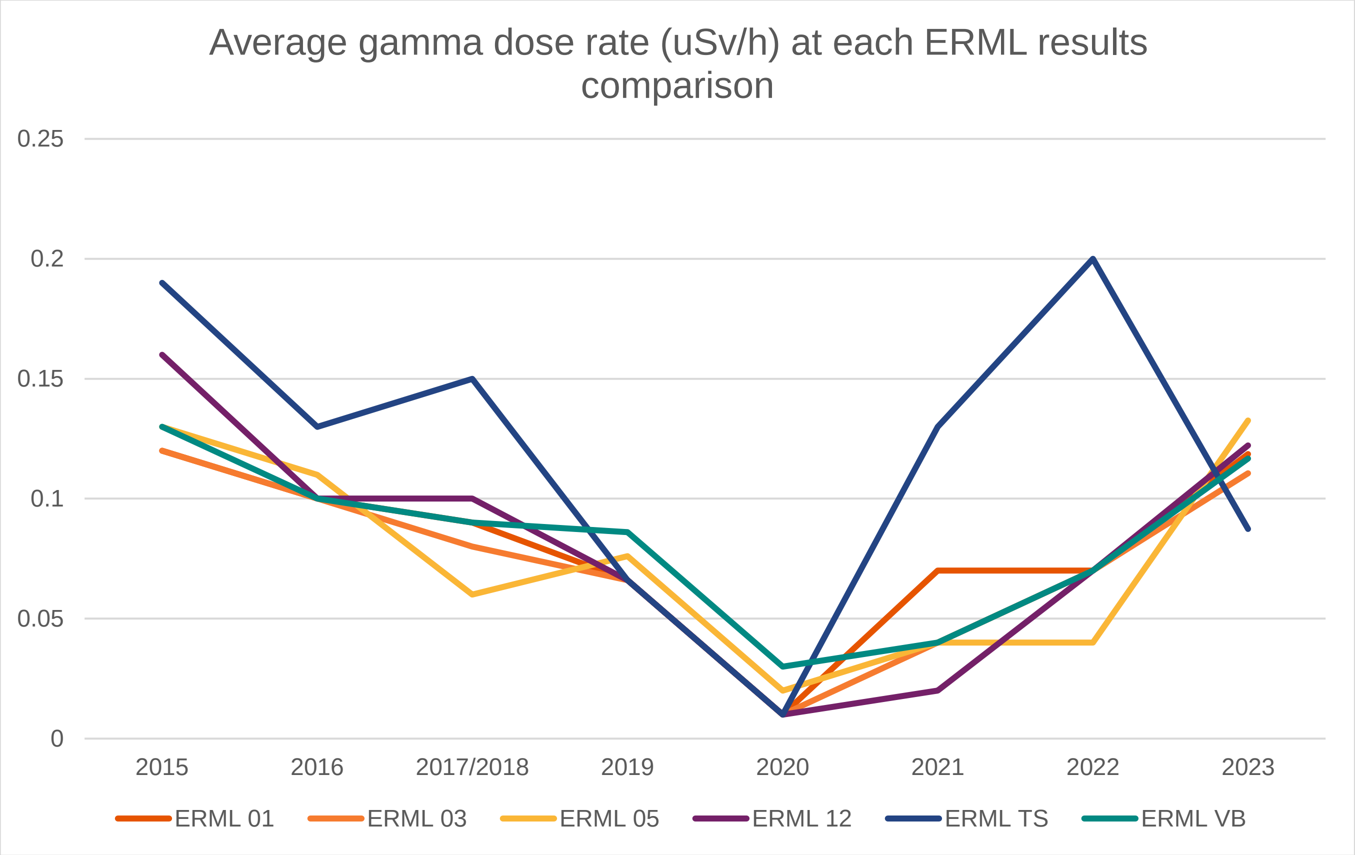


Figure 2-5: Average gamma dose rate (uSv/h) at each ERML results comparison

Environmental radiation monitoring results

Conclusions

Results from the 2022 period of environmental radiation monitoring show the following:

- variation across the monitoring sites for all monitored parameters,
- variation across the monitoring quarters (high Q4 dust results, due to dry conditions)
- below average U238 and Th232 concentrations in dust compared to worldwide average soil radionuclide concentrations,
- gamma levels comparable to reported Australian naturally occurring levels,
- radon levels comparable with worldwide average radon concentrations, and slightly lower than other similar Australian locations,
- all monitored parameters are comparable to the data collected in previous monitoring years.

On-going environmental radiation monitoring will enable more detailed analysis of results over the long term and a more comprehensive understanding of the radiological environment in the vicinity of the Prominent Hill Operation, with results able to be utilized in an ERICA assessment or similar. Any changes to the radiological environment due to the mining of stopes with increasingly higher uranium grades can be captured with continued monitoring.

Appendix A: Glossary

Becquerel (Bq) - The Standard International (SI) unit of measurement of radioactive activity defined as one radioactive disintegration per second.

Decay Chain - The name given to the progression of naturally occurring radionuclides that occur as a result of radioactive decays.

Decay Product - The product of the spontaneous radioactive decay of a nuclide (a type of atom). A nuclide such as U238 decays through a sequence of steps and has a number of successive decay products associated with it in a decay series.

Gamma radiation - A form of electromagnetic radiation similar to light or x-rays, distinguished by its high energy and penetrating power.

Isotope - Forms of a chemical element having the same number of protons but different numbers of neutrons.

Radiation - Electromagnetic waves or quanta, and atomic or sub-atomic particles, propagated through space or through a material medium.

Radionuclide - Any nuclide (isotope of an atom) which is unstable and undergoes natural radioactive decay.

Sievert (Sv) - The SI derived unit of dose equivalent, relating to the biological effects of radiation as opposed to the physical aspects.

Appendix B: Referenced Documents

ARPANSA (2005)	Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing. Radiation Protection Series. Canberra, Australian Radiation Protection and Nuclear Safety Agency. 9
BHP Billiton (2009)	Olympic Dam Expansion Draft Environmental Impact Statement 2009
Mudd, GM (2002)	Uranium Mining in Australia: Environmental Impact, Radiation Releases and Rehabilitation. Invited presentation at SPEIR3, Darwin NT July 2002
Matilda Minerals (2005)	Radiation Management Plan, Andranangoo Creek West And Lethbridge Bay West Projects
Toro Energy (2010)	Wiluna Uranium Project – Environmental Scoping Document
Trevlyn Radiation & Environment (2013)	Radiological Assessment of REX Minerals Hillside Project
Honeymoon (2006)	Honeymoon Uranium Project Environmental Impact Statement
Toro Energy (2016)	PER Environmental Radiation Baseline Review
Arafura Resources (2016)	Nolans Project Environmental Impact Statement
AREVA Resources Canada Inc. (2014)	Kiggavik Project FEIS
UNSCEAR (2000)	Volume I: Sources. United Nations Scientific Committee on the Effects of Atomic Radiation. UNSCEAR 2000 Report to the General Assembly, with scientific annexes

Appendix C: Laboratory Reports

*NOTE: Labelling errors from the laboratory have meant inconsistent dates are cited in lab reports – correct monitoring periods were ascertained by cross referencing field monitoring sheets.

OZ MINERALS CARR
2 HAMRA DRIVE
ADELAIDE AIRPORT, SA 5950
Australia

Report Date (YYYY-MM-DD)	2023-04-26
Page	1 of 1
Dosimeter Received	2023-04-21
QC Release	LCA
Analytical Work Order	2310800353

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Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 727638

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mSv)		Net Cumulative Totals (mSv)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2022-07-01 to	2022-09-30	Q3	2022			
	V03NN	Average Control Dose	0.99						
01677	V03NN	EML 01	1.1	0.11				2020-03	EX00080748D
01678	V03NN	EML 03	1.04	0.05				2020-03	EX000163980
01679	V03NN	EML 05	1.15	0.16				2020-03	EX00051984I
01680	V03NN	EML 12	1.14	0.15				2020-03	EX000091618
01681	V03NN	EML VB	1.15	0.16				2020-03	EX000650430
01682	V03NN	EML TS	1.02	0				2020-03	EX000091650
01685	V03NN	CONTORL	1.15	0.16				2020-01	EX00063224Y

General Information

The Environmental dosimeter is for both indoor and outdoor use, and is designed to withstand extremes of temperature, humidity, precipitation, and other environmental conditions. InLight dosimeters are built on an assembly of a case component with copper and plastic filters along with a four-positioned aluminum oxide detector slide component. Both the case and slide are uniquely bar coded with serial numbers for chain of custody and sensitivity identification. The InLight dosimeter is sealed within a heavy-duty vinyl tamper resistant pouch that has multiple slots to permit several methods of attachment for easy deployment.

Technical Specifications

- Fully meets ANSI N545-1977, NRC Regulatory Guide 4.13, and HPS Draft Standard N13.29 for environmental dosimetry.

- Minimum Detectable Dose - nominally 0.1 mrem (1 μSv), reporting to tenths of a millirem ambient dose equivalent.

- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 μSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 μSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number

Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier

Location name supplied by customer.

Exposure Ambient Dose (mrem)

Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)

Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date

The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number

Dosimeter serial number.

U.S. Patents

6,316,782; 6,127,685; 5,892,234

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Report Date (YYYY-MM-DD)	2023-07-03
Page	1 of 1
Dosimeter Received	2023-06-27
QC Release	DEL
Analytical Work Order	2317400407

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Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 728215

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mSv)		Net Cumulative Totals (mSv)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2023-04-01 to	2023-06-30	Q2	2023			
00000	V03NN	Transit Control						2023-04	EX00086407J
	V03NN	Control Dose Used	0.41						
	V03NN	Average Control Dose	0.2						
01947	V03NN	EML01	0.31	0				2023-04	EX00086406L
01948	V03NN	EML03	0.32	0				2023-04	EX00094105T
01949	V03NN	EML05	0.34	0				2023-04	EX00082245R
01950	V03NN	EML12	0.29	0				2023-04	EX00069105U
01951	V03NN	EMLVB	0.33	0				2023-04	EX00089029I
01990	V03NN		0.24	0				2023-04	EX00103111I

General Information

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Technical Specifications

- Fully meets ANSI N545-1977, NRC Regulatory Guide 4.13, and HPS Draft Standard N13.29 for environmental dosimetry.

- Minimum Detectable Dose - nominally 0.1 mrem (1 µSv), reporting to tenths of a millirem ambient dose equivalent.

- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 µSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 µSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number

Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier

Location name supplied by customer.

Exposure Ambient Dose (mrem)

Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)

Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date

The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number

Dosimeter serial number.

U.S. Patents

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Report Date (YYYY-MM-DD)	2023-10-09
Page	1 of 1
Dosimeter Received	2023-09-28
QC Release	LCA
Analytical Work Order	2326800291

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Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 728215

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mSv)		Net Cumulative Totals (mSv)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2023-04-01 to	2023-06-30	Q2	2023			
00000	V03NN	Transit Control Dosimeter received damaged. No evaluation possible.						2023-04	EX00071912P
	V03NN	Average Control Dose	0.43						
	V03NN	Average Control Dose	0.39						
01929	V03NN	EML01	0.54	0.11				2023-04	EX00080535O
01930	V03NN	EML03	0.57	0.15				2023-04	EX00080483P
01931	V03NN	EML05	0.59	0.16				2023-04	EX00089781E
01932	V03NN	EML12	0.55	0.12				2023-04	EX00086595C
01933	V03NN	EMLVB	0.63	0.21				2023-04	EX00060828H
01989	V03NN		0.49	0.1				2023-04	EX00102925U

General Information

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- Minimum Detectable Dose - nominally 0.1 mrem (1 µSv), reporting to tenths of a millirem ambient dose equivalent.

- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 µSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 µSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number

Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier

Location name supplied by customer.

Exposure Ambient Dose (mrem)

Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)

Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date

The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number

Dosimeter serial number.

U.S. Patents

6,316,782; 6,127,685; 5,892,234

LANDAUER, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
landauer.com
Telephone: (708) 755-7000
Facsimile: (708) 755-7016
Customer Service: (800) 323-8830
Technical: (800) 438-3241

LANDAUER®

OZ MINERALS
PROMINENT HILL
C-O TOLL ROAD EXPRESS
6-20 JOHANSSON RD
WINGFIELD, SA 5013
Australia

Report Date (YYYY-MM-DD)	2024-01-09
Page	1 of 1
Dosimeter Received	2024-01-03
QC Release	LCA
Analytical Work Order	2336101605

LANDAUER®
LANDAUER, Inc., 2 Science Road
Glenwood, Illinois 60425-1586
landauer.com
Telephone: (708) 755-7000
Facsimile: (708) 755-7016
Customer Service: (800) 323-8830
Technical: (800) 438-3241

Environmental Dosimetry Report

Account : 728215

Location ID Number	Dosimeter Type	Identifier (Client Supplied)	Exposure (Ambient Dose mSv)		Net Cumulative Totals (mSv)			Inception Date (YYYY-MM)	Serial Number
			Gross	Net	Quarter to Date	Year to Date	Permanent		
Monitoring Period:			2023-04-01 to	2023-06-30	Q2	2023			
00000	V03NN	Transit Control						2023-04	EX00081800U
	V03NN	Control Dose Used	0.75						
	V03NN	Average Control Dose	0.57						
01935	V03NN	EML01	0.79	0				2023-04	EX00090363R
01936	V03NN	EML03	0.72	0				2023-04	EX00086369B
01937	V03NN	EML05	0.77	0				2023-04	EX000130747
01938	V03NN	EML12	0.78	0				2023-04	EX000067304
01939	V03NN	EMLVB	0.7	0				2023-04	EX00067347K
01987	V03NN		0.7	0.12				2023-04	EX001029303

General Information

The Environmental dosimeter is for both indoor and outdoor use, and is designed to withstand extremes of temperature, humidity, precipitation, and other environmental conditions. InLight dosimeters are built on an assembly of a case component with copper and plastic filters along with a four-positioned aluminum oxide detector slide component. Both the case and slide are uniquely bar coded with serial numbers for chain of custody and sensitivity identification. The InLight dosimeter is sealed within a heavy-duty vinyl tamper resistant pouch that has multiple slots to permit several methods of attachment for easy deployment.

Technical Specifications

- Fully meets ANSI N545-1977, NRC Regulatory Guide 4.13, and HPS Draft Standard N13.29 for environmental dosimetry.

- Minimum Detectable Dose - nominally 0.1 mrem (1 μSv), reporting to tenths of a millirem ambient dose equivalent.

- Detection Capabilities:

  Photons (x and gamma rays) with energies above 15 keV nominally: 0.1 mrem to 1000 rem (1 μSv to 10 Sv).

  Beta particles with energies greater than approximately 500 keV average energy: 20 mrem to 1000 rem (200 μSv to 10 Sv).

Control Dosimeter

A minimum of two control dosimeters are provided per shipment. The first is for field deployment/retrieval used to measure exposure during shipment and placement/collection. The second is for transit used to measure exposure during shipment only. Both control dosimeters assigned to a shipment should accompany that shipment both from and to LANDAUER. Do not use the control dosimeters for any other purpose. Store dosimeters away from radiation when not in use along with the control dosimeter(s) of the same use date.

Dosimetry reports show gross and net dosage. Gross dosage includes the dosage to the controls. LANDAUER's background subtraction protocol is:

1. Subtract the deployment/retrieval control; or if not returned to LANDAUER
2. Subtract the transit control.

Environmental Dosimetry Report Information

Location ID Number

Unique number assigned by LANDAUER.

Dosimeter Type

Dosimeter Type	Analytical Sensitivity	Minimum Detectable Dose Level (mrem)
V03NH	High	0.1
V03NN	Standard	5.0
V06NH	High	0.1
V06NN	Standard	5.0

Identifier

Location name supplied by customer.

Exposure Ambient Dose (mrem)

Gross: Gross exposure before control subtraction.
Net: Net exposure after control subtraction.

Net Cumulative Totals (mrem)

Quarter to Date, Year to Date, and Permanent are accumulated net ambient exposure.

Inception Date

The date LANDAUER began keeping dosimeter records for a given dosimeter for a monitoring location on the current account.

Serial Number

Dosimeter serial number.

U.S. Patents

6,316,782; 6,127,685; 5,892,234

LANDAUER, Inc.
2 Science Road
Glenwood, Illinois 60425-1586
landauer.com
Telephone: (708) 755-7000
Facsimile: (708) 755-7016
Customer Service: (800) 323-8830
Technical: (800) 438-3241

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CERTIFICATE OF ANALYSIS

Work Order : **EM2305812**
Client : **OZ MINERALS LIMITED - PROMINENT HILL**
Contact : MS TINA LAW
Address : 2 Hamra Drive Adelaide Airport
Adelaide 5950
Telephone : ----
Project : PH_Passive Dust_March 2023
Order number : 4500041333
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ME/644/17 Dust Analysis
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Customer Services EM
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61 3 8549 9600
Date Samples Received : 31-Mar-2023 11:40
Date Analysis Commenced : 13-Apr-2023
Issue Date : 18-Apr-2023 17:03

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- Sampling Period:15/12/2022-24/03/2023.
- Sample exposure period is 99 days which is outside the typical exposure period of 30+/-2 days as per AS3580.10.1
- Dust samples have been dosed with Copper Sulphate prior to sample collection and a copper correction factor of 0.055g has been used for calculations.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			*Sample ID*	**EML 1- MONTHLY**	**EML 3 - MONTHLY**	**EML 5 - MONTHLY**	**EML 12 - MONTHLY**	**EML TS - MONTHLY**
			Sampling date / time	24-Mar-2023 11:49	24-Mar-2023 11:20	24-Mar-2023 13:29	24-Mar-2023 09:19	24-Mar-2023 10:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM2305812-001**	**EM2305812-002**	**EM2305812-003**	**EM2305812-004**	**EM2305812-005**
				Result	Result	Result	Result	Result
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**5.9**	**1.7**	**0.5**	**0.6**	**0.8**
Total Solids (mg)	----	2	mg	**343**	**97**	**30**	**34**	**47**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR)**

			Sample ID	**EML VB - MONTHLY**	**----**	**----**	**----**	**----**
			Sampling date / time	24-Mar-2023 08:47	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM2305812-006**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**1.3**	**----**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg	**76**	**----**	**----**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EM2310709**	Page	: 1 of 4
Client	: **OZ MINERALS LIMITED - PROMINENT HILL**	Laboratory	: Environmental Division Melbourne
Contact	: Tina Law	Contact	: Customer Services EM
Address	: 2 Hamra Drive Adelaide Airport Adelaide 5950	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61 3 8549 9600
Project	: PH_Passive Dust _June 2023	Date Samples Received	: 13-Jun-2023 16:20
Order number	: 4500041333	Date Analysis Commenced	: 21-Jun-2023
C-O-C number	: ----	Issue Date	: 27-Jun-2023 17:31
Sampler	: ----		
Site	: ----		
Quote number	: ME/644/17 Dust Analysis		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key :
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- Sample exposure period is 40 days which is outside the typical exposure period of 30+/-2 days as per AS3580.10.1
- Dust samples have been dosed with Benzalkonium chloride prior to sample collection and a correction factor of 0.030g has been used for calculations.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			*Sample ID*	**EML 1- MONTHLY**	**EML 3 - MONTHLY**	**EML 5 - MONTHLY**	**EML 12 - MONTHLY**	**EML TS - MONTHLY**
			Sampling date / time	03-Jun-2023 12:20	03-Jun-2023 11:19	03-Jun-2023 13:30	03-Jun-2023 09:39	03-Jun-2023 10:20
Compound	*CAS Number*	*LOR*	*Unit*	**EM2310709-001**	**EM2310709-002**	**EM2310709-003**	**EM2310709-004**	**EM2310709-005**
				Result	Result	Result	Result	Result
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**5.2**	**4.4**	**12.2**	**0.8**	**1.8**
Total Solids (mg)	----	2	mg	**124**	**104**	**287**	**19**	**42**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

			Sample ID	**EML VB - MONTHLY**	**----**	**----**	**----**	**----**
			Sampling date / time	03-Jun-2023 08:56	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM2310709-006**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**6.1**	**----**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg	**142**	**----**	**----**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order : **EM2316529**
Client : **OZ MINERALS LIMITED - PROMINENT HILL**
Contact : Tina Law
Address : 2 Hamra Drive Adelaide Airport
Adelaide 5950
Telephone : ----
Project : PH_Passive Dust_September 2023
Order number : 4500041333
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ME/644/17 Dust Analysis
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Customer Services EM
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61 3 8549 9600
Date Samples Received : 14-Sep-2023 11:30
Date Analysis Commenced : 21-Sep-2023
Issue Date : 02-Oct-2023 14:02

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Analytical Results

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Signatories

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Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Sampling Period: 3/6/23 - 11/9/23.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- Sample exposure period is 100 days which is outside the typical exposure period of 30+/-2 days as per AS3580.10.1/AS3580.10.2
- Dust samples have been dosed with Copper Sulphate prior to sample collection and a copper correction factor of 0.055g has been used for calculations.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

			Sample ID	EML 1	EML 3	EML 5	EML 12	EML TS
			Sampling date / time	11-Sep-2023 12:40	11-Sep-2023 11:15	11-Sep-2023 13:27	11-Sep-2023 09:05	11-Sep-2023 10:12
Compound	CAS Number	LOR	Unit	EM2316529-001	EM2316529-002	EM2316529-003	EM2316529-004	EM2316529-005
				Result	Result	Result	Result	Result
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**0.7**	**0.9**	**0.6**	**2.1**	**0.3**
Total Solids (mg)	----	2	mg	**46**	**50**	**36**	**123**	**18**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR)**

			Sample ID	EML VB	----	----	----	----
			Sampling date / time	11-Sep-2023 08:32	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2316529-006	--------	--------	--------	--------
				Result	----	----	----	----
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**0.9**	----	----	----	----
Total Solids (mg)	----	2	mg	**51**	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EM2322287**	Page	: 1 of 4
Client	: **OZ MINERALS LIMITED - PROMINENT HILL**	Laboratory	: Environmental Division Melbourne
Contact	: Tina Law	Contact	: Customer Services EM
Address	: 2 Hamra Drive Adelaide Airport Adelaide 5950	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61 3 8549 9600
Project	: PH_Passive Dust_December 2023	Date Samples Received	: 12-Dec-2023 12:45
Order number	: 4500041333	Date Analysis Commenced	: 27-Dec-2023
C-O-C number	: ----	Issue Date	: 02-Jan-2024 12:20
Sampler	: ----		
Site	: ----		
Quote number	: ME/644/17 Dust Analysis		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories

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Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- Sample exposure period is 85 days which is outside the typical exposure period of 30+/-2 days as per AS3580.10.1/AS3580.10.2
- SAMPLING PERIOD: 11/09/2023 - 05/12/2023.
- Dust samples have been dosed with Benzalkonium chloride prior to sample collection and a correction factor of 0.030g has been used for calculations.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			Sample ID	**EML 1**	**EML 3**	**EML 5**	**EML 12**	**EML TS**
			Sampling date / time	05-Dec-2023 13:34	05-Dec-2023 12:30	05-Dec-2023 15:13	05-Dec-2023 10:57	05-Dec-2023 11:35
Compound	*CAS Number*	*LOR*	*Unit*	**EM2322287-001**	**EM2322287-002**	**EM2322287-003**	**EM2322287-004**	**EM2322287-005**
				Result	Result	Result	Result	Result
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**2.4**	**1.3**	**1.5**	**4.9**	**0.5**
Total Solids (mg)	----	2	mg	**120**	**64**	**77**	**246**	**23**

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			*Sample ID*	**EML VB**	**----**	**----**	**----**	**----**
			Sampling date / time	05-Dec-2023 10:23	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM2322287-006**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**2.5**	**----**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg	**129**	**----**	**----**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EM2215153**	Page	: 1 of 4
Client	: **OZ MINERALS LIMITED - PROMINENT HILL**	Laboratory	: Environmental Division Melbourne
Contact	: MS TINA LAW	Contact	: Shirley LeCornu
Address	: 2 Hamra Drive Adelaide Airport Adelaide 5950	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9630
Project	: PH_Passive Dust_Composite (2021/2022)	Date Samples Received	: 14-Jun-2022 13:50
Order number	: 4500041333	Date Analysis Commenced	: 11-Aug-2022
C-O-C number	: ----	Issue Date	: 16-Aug-2022 14:30
Sampler	: ----		
Site	: ----		
Quote number	: ME/644/17 Dust Analysis		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

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Signatories

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Signatories	*Position*	*Accreditation Category*
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
~ = Indicates an estimated value.

- ALS is not NATA accredited for the analysis of metals in dust deposition gauge.
- This is a rebatch of EM2118571, EM2125006, EM2205228 and EM2211241.

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			*Sample ID*	**EML 1**	**EML 3**	**EML 5**	**EML 12**	**EML TS**
			Sampling date / time	08-Jun-2022 00:00	08-Jun-2022 00:00	08-Jun-2022 00:00	08-Jun-2022 00:00	08-Jun-2022 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EM2215153-001**	**EM2215153-002**	**EM2215153-003**	**EM2215153-004**	**EM2215153-005**
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS								
Thorium	7440-29-1	0.050	µg	**0.439**	**0.403**	**0.203**	**0.196**	**0.120**
Uranium	7440-61-1	0.050	µg	**0.668**	**0.543**	**0.157**	**0.120**	**0.054**

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)			Sample ID	**EML VB**	----	----	----	----
			Sampling date / time	08-Jun-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	**EM2215153-006**	--------	--------	--------	--------
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS								
Thorium	7440-29-1	0.050	µg	**0.670**	----	----	----	----
Uranium	7440-61-1	0.050	µg	**0.400**	----	----	----	----

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The global leader in radon measurement

REPORT NUMBER
6616267:1

REPORT DATE
2023-04-18

REPORT PAGE
1 of 2

PRINT DATE
2023-04-18

OWN ID
N/A

AUSTRALIA

BY
Oz Minerals - Carrapateena

REPORT RECEIVER(S)
r.ippolito@landauer.com.au
cs2@landauer.com.au
cs4@landauer.com.au

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector following the guidelines given in ISO 11665-4:2021.

The detector(s) arrived to Radonova Laboratories **2023-04-11**.
They were measured **2023-04-17**.

Property data and address

MEASURE SITE ADDRESS

BUILDING ID

TYPE OF BUILDING: **BUILDING YEAR:** **HVAC:** **FOUNDATION TYPE:** **PURPOSE OF TEST:**

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
266693-1 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - 1*		< 21 Bq/m^3
162725-6 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - 3*		< 21 Bq/m^3
443490-8 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - 5*		36 ± 14 Bq/m^3
335006-3 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - 12*		< 16 Bq/m^3
695202-2 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - VB*		50 ± 18 Bq/m^3
705886-0 [Radtrak$^{2®}$]	*2022-12-15 – 2023-03-24*	*EML - TS*		27 ± 14 Bq/m^3

Comment to the results

Jose Luis Gutierrez (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

Measurement method: Closed alpha-track detector (Radtrak²®/Radtrak³®)

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Radonova Laboratories (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 200 ± 30 Bq/m³ means that the radon concentration is most likely contained in the range 170 - 230 Bq/m³. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in kBqh/m³ will be reported. The average radon concentration can be calculated by dividing the total exposure with the number of measured hours and multiplying that result with 1000. The reported measured values are related to the detectors as received by Radonova Laboratories. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

Codes on non-reportable detectors

DNR	Not Reported – Detector Not Returned
VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Measurement method versions used when the report was created

ISO 11665-4:2021, Measurement of radioactivity in the environment — Air: radon-222
ISO 11665-11:2016, radon-222 - Test method for soil gas with sampling at depth

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Accred. no. 1489
Testing
ISO/IEC 17025

The global leader in radon measurement

REPORT NUMBER
6634300:1

REPORT PAGE
1 of 2

REPORT DATE
2023-06-28

PRINT DATE
2023-06-28

OWN ID
OZMI02223

AUSTRALIA

BY
Landauer Australasia Pty Ltd

REPORT RECEIVER(S)
cs4@landauer.com.au

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector following the guidelines given in ISO 11665-4:2021.

The detector(s) arrived to Radonova Laboratories **2023-06-20**.
They were measured **2023-06-22**.

Test data have been given by Luke Polkinghorne

Property data and address

MEASURE SITE ADDRESS
BHP PH_Radon_June 2023
2 Hamra Drive, Adelaide Airport
Adelaide SA

BUILDING ID

TYPE OF BUILDING:

BUILDING YEAR:

HVAC:

FOUNDATION TYPE:

PURPOSE OF TEST:

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
104 585 476 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-1*		< 15 Bq/m^3
100 447 812 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-3*		< 15 Bq/m^3
105 121 099 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-5*		< 15 Bq/m^3
103 397 717 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-12*		19 ± 8 Bq/m^3
105 640 551 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-VB*		< 15 Bq/m^3
105 366 025 [Radtrak^3®]	*2023-03-24 – 2023-06-03*	*EML-TS*		32 ± 10 Bq/m^3

Comment to the results

Jose Luis Gutierrez (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

Measurement method: Closed alpha-track detector (Radtrak²®/Radtrak³®)

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Radonova Laboratories (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 200 ± 30 Bq/m³ means that the radon concentration is most likely contained in the range 170 - 230 Bq/m³. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in kBqh/m³ will be reported. The average radon concentration can be calculated by dividing the total exposure with the number of measured hours and multiplying that result with 1000. The reported measured values are related to the detectors as received by Radonova Laboratories. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

Codes on non-reportable detectors

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VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Measurement method versions used when the report was created

ISO 11665-4:2021, Measurement of radioactivity in the environment — Air: radon-222
ISO 11665-11:2016, radon-222 - Test method for soil gas with sampling at depth

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Accred. no. 1489
Testing
ISO/IEC 17025

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REPORT NUMBER
6684020:1

REPORT DATE
2023-09-30

REPORT PAGE
1 of 2

PRINT DATE
2023-09-30

OWN ID
OZMI02223

AUSTRALIA

BY
Landauer Australasia Pty Ltd

REPORT RECEIVER(S)
cs4@landauer.com.au

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector following the guidelines given in ISO 11665-4:2021.

The detector(s) arrived to Radonova Laboratories **2023-09-26**.
They were measured **2023-09-28**.

Test data have been given by Luke Polkinghome

Property data and address

MEASURE SITE ADDRESS
2 Hamra Drive Adelaide Airport
Adelaide SA

BUILDING ID

TYPE OF BUILDING:
BUILDING YEAR:
HVAC:
FOUNDATION TYPE:
PURPOSE OF TEST:

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
100 396 910 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-1*		22 ± 6 Bq/m^3
100 706 431 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-3*		21 ± 6 Bq/m^3
103 185 773 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-5*		26 ± 6 Bq/m^3
100 795 160 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-12*		< 15 Bq/m^3
105 082 440 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-VB*		19 ± 4 Bq/m^3
104 845 219 [Radtrak^3®]	*2023-06-03 – 2023-09-11*	*EML-TS*		31 ± 8 Bq/m^3

Comment to the results

Jose Luis Gutierrez (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

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SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

Measurement method: Closed alpha-track detector (Radtrak^2®/Radtrak^3®)

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Radonova Laboratories (P.O. Box 6522, SE-751 38 Uppsala, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 200 ± 30 Bq/m^3 means that the radon concentration is most likely contained in the range 170 - 230 Bq/m^3. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in kBqh/m^3 will be reported. The average radon concentration can be calculated by dividing the total exposure with the number of measured hours and multiplying that result with 1000. The reported measured values are related to the detectors as received by Radonova Laboratories. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented results apply only to the samples tested.

Codes on non-reportable detectors

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VTW	Not Reported – Visibly Tampered With
FBD	Not Reported – Film Broken or Damaged
LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Measurement method versions used when the report was created

ISO 11665-4:2021, Measurement of radioactivity in the environment — Air: radon-222
ISO 11665-11:2016, radon-222 - Test method for soil gas with sampling at depth

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

SWEDAC ACKREDITERING
Accred. no. 1489
Testing
ISO/IEC 17025

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REPORT NUMBER
6777300:1

REPORT DATE
2024-01-10

REPORT PAGE
1 of 2

PRINT DATE
2024-01-10

OWN ID
OZMI02223

AUSTRALIA

BY
Landauer Australasia Pty Ltd

REPORT RECEIVER(S)
cs4@landauer.com.au

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with a closed alpha-track detector in accordance with ISO 11665-4.

The detector(s) arrived to Radonova Laboratories **2023-12-28**.
They were measured **2024-01-03**.

Test data have been given by Luke Polkinghorne

Property data and address

MEASURE SITE ADDRESS
2 Hamra Drive, Adelaide airport
Adelaide SA

BUILDING ID

TYPE OF BUILDING:	BUILDING YEAR:	HVAC:	FOUNDATION TYPE:	PURPOSE OF TEST:
Other				

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
102 717 238 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-1*		< 15 Bq/m^3
104 139 647 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-3*		< 31 Bq/m^3
100 795 483 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-5*		< 15 Bq/m^3
104 061 395 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-12*		18 ± 6 Bq/m^3
105 395 594 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-VB*		23 ± 6 Bq/m^3
105 151 146 [Radtrak^3®]	*2023-09-11 – 2023-12-05*	*EML-TS*		32 ± 6 Bq/m^3

Comment to the results

Jose Luis Gutierrez (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

Accred. no. 1489
Testing
ISO/IEC 17025

Measurement method: Closed alpha-track detector (Radtrak²®/Radtrak³®)

The radon measurement was performed with a closed alpha-track detector following the quality assurance guidance given in EPA 402-R-95-012. The detector container is manufactured from electrically conducting plastic. Through a small slit (filter), radon gas enters the detector. The track-detecting material (film) inside the detector is hit by alpha particles generated by the radon entering the container and the decay products formed from it. On the film, the alpha particles make small tracks which are enlarged through chemical etching and later counted in a microscope in order to determine the radon exposure.

Radonova Laboratories (P.O. Box 6522, SE-751 38 UPPSALA, Sweden) is accredited (no. 1489) by SWEDAC to conduct radon-gas measurements using the closed alpha-track detector method. The analysis equipment is checked daily and the detectors are calibrated at regular intervals. NRPP Licenses: 107831 AL, 107830 RT

Measured radon concentrations

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LIL	Not Reported – Lost in Lab
DTO	Not Reported – Detector Too Old

Measurement method versions used when the report was created

ISO 11665-4:2021, Measurement of radioactivity in the environment — Air: radon-222
ISO 11665-11:2016, radon-222 - Test method for soil gas with sampling at depth

Signature on the report

With the signature on the report, the person responsible for the radon analysis at Radonova Laboratories hereby certifies that the measurement procedures follows the guidance in accordance with EPA 402-R-95-012 and that the demands from SWEDAC are fulfilled.

Measurement information displayed in italics on report has been provided by the customer.

Accred. no. 1489
Testing
ISO/IEC 17025