Monthly Water Quality Monitoring Results, Cabbage Tree Road Sand Quarry, NSW

January 2024 Monitoring Event

NCA24R163662

29 January 2024

KLEINFELDER
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29 January 2024
NCA24R163662

Williamtown Sand Syndicate (WSS)
PO Box 898
Newcastle, NSW 2300

Attention: Darren Williams

Subject: Monthly Water Quality Monitoring Results, Cabbage Tree Road Sand Quarry, NSW
January 2024 Monitoring Event

Please find enclosed the monthly water quality monitoring results for the January 2024 monitoring event undertaken by Kleinfelder Australia Pty Ltd (Kleinfelder) at the Cabbage Tree Road Sand Quarry, NSW (herein referred to as the 'site').

1 SCOPE OF WORK

The scope of work presented in this report includes the results from the monthly water monitoring event undertaken in accordance with the NSW Environment Protection Authority (EPA) and Department of Planning and Environment (DPE) requirements for monthly water quality monitoring at the site. **Figure 1** of **Attachment 1** presents the groundwater and surface water sampling locations.

The scheduled monthly 2024 monitoring event included gauging of 11 monitoring wells, recording of field parameters for groundwater and surface water, and sampling from 10 groundwater monitoring wells, 2 surface water locations and one Wash Plant Water (WPW) sample as outlined in the Soil and Water Management Plan (SWMP, 2021) for the site. It is noted that additional hydrocarbon analysis was undertaken for all sampled locations including the two unscheduled surface water locations to assess the presence of toluene which was detected during the previous December 2023 monitoring round.

2 SITE WORK

The quarterly monitoring round was conducted on the 18^{h} of January 2024 and comprised:

- Gauging of 11 groundwater monitoring wells (BH1A, BH2, BH4, BH6, BH7, BH8, BH9, BH9A, BH11, BH12A & MW239S) as summarised in **Table 4** and detailed in **Attachment 2.**
- Groundwater sampling from ten monitoring wells (BH1A, BH2, BH4, BH6, BH7, BH8, BH9A, BH11, BH12A & MW239S) as summarised in **Table 5** and detailed in **Attachment 2**.
- Surface water sampling from two locations (SW1 and SW3), as summarised in **Table 4** and detailed in **Attachment 2**. It was noted that SW2 and SW4 were found to be dry during the January 2024 inspection.
- One WPW sample as summarised in **Table 6** and detailed in **Attachment 2.**

Each well location was gauged using a water level meter to determine groundwater depth (relative to the top of the well casing) and the total depth of the well in order to determine potential sand/silt inundation and potential maintenance requirements. Following gauging, a HydraSleeve was placed into the well, ensuring the top of the sleeve was located below the water column to be sampled, and suspended in place while all remaining wells were gauged. Each HydraSleeve was then removed from the well and representative groundwater samples were taken.

Surface water and WPW samples were collected directly into laboratory supplied sample containers using a nitrile-gloved hand. Where access was deemed unsafe, a telescopic sampling pole was used. All collected samples were placed into an ice chilled esky and submitted to a National Association of Testing Authorities (NATA) accredited laboratory under a chain of custody (COC) within specified holding times for the analytical schedule as per **Table 1**. It is noted that barium, chromium, copper, nickel, and zinc were analysed for each sampled location during this round as well as the proposed arsenic, manganese, and iron analysis.

Table 1: Summary of Monthly Water Quality Analysis (January 2024)

Analysis	Number of Samples				
	Primary	Intra-lab (Duplicate)	Inter-lab (Triplicate)	Transport Blank	Rinsate Blank
BTEXN (Water)[1]	12	0	0	1	1
Metals[2] (Groundwater and wash plant water)	8	0	0	1	1
PFAS (28 analytes, standard level)	1	0	0	1	1

[1] BTEXN, (Silica Gel Clean-up)
[2] 8 Metals (dissolved) for groundwater and wash plant water – As, Ba, Cr, Cu, Fe, Mg, Ni & Zn

Table 2 provides a summary of the gauging data for January 2024. The full set of gauging data for each monitoring location is provided in **Table 14**, **Attachment 2**. Additionally, Watershed HydroGeo (2019) outlined a Trigger Action and Response Plan (TARP) to mitigate groundwater elevations that may potentially impact Cabbage Tree Road Sand Quarry operations (primarily sand excavation depths). Based on these recommendations, groundwater elevation has been shaded to correspond to triggers and actions outlined in **Table 3.** There were no instances of TARP Level Exceedances during the January 2024 monitoring event.

Table 2: Summary of Gauging Data (January 2024)

Well ID	Top of Casing (mAHD)	Depth to Water (mBTOC)	Ground-water Elevation (mAHD)	Well Total Depth Current (mBTOC)	Well Total Depth 2014 (mBTOC)	Inferred Max GW Elevation (mAHD)[1]	Difference Between Inferred Max and Measured GW Elevation (mAHD)	Comment
BH1A	8.98	5.965	3.015	12.144	N/A	4.5[2]	1.485	Clear, no odour, no sheen
BH2	7.79	5.636	2.154	8.810	9.45	3.8	1.646	Light brown, organic odour, no sheen
BH4	3.06	1.816	1.244	6	6.45	3.0[3]	1.756	Clear, no odour, no sheen
BH6	3.62	1.696	1.924	4.528	4.95	4.4	2.476	Yellow, moderate Sulphur odour, no sheen
BH7	2.98	1.781	1.199	4.516	4.95	3.7	2.501	Brown, strong Sulphur odour, no sheen
BH8	3.88	2.614	1.266	6.027	6.28	4.0	2.734	Yellow, moderate Sulphur odour, no sheen
BH9	17.75	Dry	N/A	16.099	18.8	3.0[3]	N/A	Gauge only
BH9A	10.75	9.408	1.342	12.225	16.16	3.0[3]	1.658	Yellow, moderate Sulphur odour, no sheen
BH11	6.63	3.072	3.558	5.302	5.95	5.5	1.942	Light yellow, moderate

								Sulphur odour, no sheen
BH12A	5.62	3.425	2.195	7.317	NA	4.0[5]	1.805	Clear, no odour, no sheen
MW239S	3.04	1.391	1.649	3.783	4.0	3.9[4]	2.251	Yellow, moderate sulphur odour, no sheen
SW1	N/A	N/A	N/A	0.2	N/A	N/A	N/A	Clear, no odour, no sheen
SW2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dry
SW3	N/A	N/A	N/A	0.2	N/A	N/A	N/A	Brown tanins. organic odour, no sheen, algae
SW4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dry
WPW2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Brown, earthy odour, no sheen

[1] – Sourced from Watershed HydroGeo ,2019, *Maximum Extraction Depth Management Plan, Cabbage Tree Road Sand Quarry*, May 2019.
[2] – Inferred Max Groundwater level based on former adjacent well (BH1).
[3] – Inferred Max Groundwater level based on adjacent wells (BH4 & BH9).
[4] – Inferred Max Groundwater level based on adjacent well (MW239S).
[5] – Inferred Max Groundwater level based on former adjacent well (BH12).

Table 3: Groundwater Level Monitoring TARP Rules (Watershed HydroGeo, 2019)

Level	Trigger	Action and Response	Report / Response Actions
0	Groundwater levels more than 0.5 m below *inferred* maximum historical level (**Table 2**).	Standard operations – monthly dipping of operational on-site monitoring bores.	N/A
1	Groundwater levels within 0.5 m below *inferred* maximum historical level (**Table 2**) at any on-site bore.	Weekly (or more frequent) monitoring (dipping) of groundwater levels until water level declines to below high frequency level bores listed in **Table 2**.	Internal and environmental consultant. Include note in Annual Report.
2	Groundwater levels within 0.25 m of *inferred* maximum historical level (**Table 2**) at any on-site bore.	Weekly (or more frequent) monitoring (dipping) of groundwater levels. Re-analysis and review of Minimum Extraction Level (MEL).	WSS to issue letter to DPIE, documenting groundwater level and rainfall trends, review and make recommendations regarding MEL.
3	Groundwater levels within resource area rise above previously *inferred* maximum groundwater level (**Table 2**).	Analysis of recent data by hydrogeologist, including site data and data from local HWC wells and local Defence wells (if available). Revision of MEL. Remediation of earlier excavations to revised MEL if required by DPIE.	WSS to issue letter to DPIE, DoI Water and HWC, documenting groundwater level trends, and revision (if necessary) of MEL. Letter to outline remedial options, considering access, vegetation condition in previously rehabilitated areas. Re-grading of previously rehabilitated areas if required by DPIE.

Table 4 provides a summary of the field parameters taken during the January 2024 monitoring event. All field parameters for each monitoring location are detailed in the field sheets provided in **Attachment 2**.

Table 4: Summary of Field Measurements (January 2024)

Borehole	Turbidity (NTU)	Temp (^{0}C)	DO (mg/L)	EC (µc/cm)	TDS (mg/L)	pH	Redox (mV)
BH1A	85	22.8	4.92	91.2	62	4.30	197
BH2	87	22.1	4.01	70.9	49	4.75	168.8
BH4	13.43	21.0	3.92	85.1	60	5.35	182.9
BH6	12	26.6	2.62	243.7	154	4.86	-100
BH7	17	25	2.49	105.4	69	4.50	-64.6
BH8	65	23.0	2.56	166	112	4.36	-98.5
BH9	NS	NS	NS	NS	NS	NS	NS
BH9A	85	21.2	2.97	162.9	114	4.76	96.1
BH11	17	23.1	3.51	146.7	95	4.87	-62.4
BH12A	9.1	25.8	2.1	142.3	91	4.54	115.9
MW239S	83	25.3	2.52	144.9	129	4.37	-89.4
SW1	22.6	23.1	1.02	105.9	71	6.17	121.8
SW2	NS	NS	NS	NS	NS	NS	NS
SW3	6.36	25.8	2.57	278.8	178	5.14	-5.5
SW4	NS	NS	NS	NS	NS	NS	NS
WPW2	360	27.6	7.53	236.1	146	4.47	76.7

ND: No Data – no sample taken

Table 5 below presents a summary of the water monitoring results for key analytes found to be reported above the laboratory limit of reporting (LOR) for groundwater. No exceedances occurred at groundwater locations during this monitoring round. Furthermore, toluene results were reported below the laboratory LOR in all samples analysed, confirming the detections reported during the December 2023 monitoring event were anomalous and likely not representative of the site.

Table 6 presents a summary of the wash plant sample results for key PFAS analytes in water. The site-specific groundwater criteria outlined in the SWMP (2021) has been applied to this monthly report including a comparison of results with previous data.

The WPW2 sample recorded one detection for PFAS compound above the LOR during this monitoring round, reporting a PFOS concentration of 0.01µg/L. This concentration is below the site-specific trigger values and consistent with previous reported concentrations.

Full results summary tables, including Quality Assurance/Quality Control (QA/QC) sample analyses, are provided in **Attachment 2**. Field rinsate and trip blank samples collected by Kleinfelder did not detect any analyte above the laboratory LOR. Based on a review of the QA/QC Compliance Assessment provided by ALS, the overall data quality is considered acceptable for interpretive use. Copies of the final NATA endorsed laboratory reports, including internal QA/QC results and chain-of-custody documentation for both laboratories are provided in **Attachment 3**.

Table 5: Groundwater Results and Screening Criteria (January 2024)

Analyte	Metals									Discussion of results relative to previous monitoring (details on specific data trends provided in Section 4 below)
	Arsenic	Barium	Chromium	Copper	Manganese	Nickel	Zinc	Iron	Magnesium	
LOR	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	1	
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Adopted Site Specific Trigger Values (SWMP 2021)	0.003	0.07	0.004	0.083	0.136	0.02	0.085	4.1	11	
	Samples									
BH2	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.009	<0.05	<1	Metal concentrations were generally consistent with historical results and remain below the adopted criteria. BH2 is located marginally down hydraulic gradient from the current quarry operations footprint.
BH4	<0.001	0.011	<0.001	0.014	0.01	<0.001	0.012	<0.05	1	Metal concentrations were generally consistent with historical variations and remain below the adopted criteria. BH4 is located down hydraulic gradient approximately 700 m from current quarry operations and is on the southernmost boundary of the site adjacent to Cabbage Tree Road.
BH6	<0.001	0.014	<0.001	<0.001	0.002	<0.001	0.02	1.48	8	Metal concentrations are generally consistent with historical results and remain below the adopted criteria. BH6 is considered up hydraulic gradient, approximately 860 m from current quarry operations and is at the north-eastern corner of the site.
BH7	<0.001	0.002	0.002	<0.001	0.001	<0.001	0.005	0.34	2	Metal concentrations were generally consistent with historical results and are below the adopted criteria. BH7 is located approximately 960 m east of the current quarry operations.
BH9A	<0.001	0.006	<0.001	0.003	0.029	0.003	0.012	0.38	2	Metal concentrations were generally consistent with historical results and below the adopted criteria. BH9A is down gradient (approximately 700m) from current quarry operations and is on the southern-most

Analyte	Metals									Discussion of results relative to previous monitoring (details on specific data trends provided in Section 4 below)
	Arsenic	Barium	Chromium	Copper	Manganese	Nickel	Zinc	Iron	Magnesium	
LOR	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.05	1	
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Adopted Site Specific Trigger Values (SWMP 2021)	0.003	0.07	0.004	0.083	0.136	0.02	0.085	4.1	11	
	Samples									
										boundary of the site adjacent to Cabbage Tree Road.
BH11	<0.001	0.003	0.002	<0.001	0.004	<0.001	0.006	0.79	4	Metal concentrations were generally consistent with historical results and below the adopted criteria. BH11 is located approximately 460 m from current quarry operations and at the most north-western point of the site.
MW239S	<0.001	0.006	0.002	<0.001	0.001	0.002	0.009	1.49	3	Metal concentrations were generally consistent with historical results and below the adopted criteria. MW239S is located approximately 800 m east of the current quarry operations.

Notes:
< - Less than laboratory limit of reporting;

Table 6: Wash Plant Water Sample Results and Screening Criteria (January 2024)

Analyte	PFAS				Discussion of results
	PFOA	PFOS	PFHxS	Sum of PFOS + PFHxS	
LOR	0.01	0.01	0.01	0.01	
Units	µg/L	µg/L	µg/L	µg/L	
Site Specific Trigger Values (SWMP 2021)	0.56	N/A	N/A	0.07	
Sample Name					Sand Wash Plant
WPW2	<0.01	0.01	<0.01	0.01	Concentrations of PFAS compounds in the WPW were not detected above the site-specific trigger values during this sampling event.

Notes:
< - Less than laboratory limit of reporting

3 RAINWATER DATA

Table 7 presents the rainfall data from Williamtown RAAF base (Station Number: 061078, Latitude: 32.79°S; Longitude: 151.84°E; Elevation: 8 m) for the period 2023-2024. Since May 2023, the recorded monthly rainfall total has fallen below the historical average with the previous three months reporting relatively stable rainfall totals slightly below the historical mean. As presented in **Table 7** below, rainfall totals during January 2024 have fallen well below the historical mean. Based on current rainfall data (mean and monthly totals) for December 2023 and January 2024, it is expected that groundwater elevations will continue to decrease during the subsequent months due to a lag in groundwater response, consistent with current groundwater trend data.

Table 7: 2022-2023 Rainfall data (12-month period)

Date	Feb (23)	Mar (23)	Apr (23)	May (23)	Jun (23)	Jul (23)	Aug (23)	Sep (23)	Oct (23)	Nov (23)	Dec (23)	Jan (24)
1st	0	0.2	0	0	0	0	0	0	0	0	0	0
2nd	0	0	11.2	0	0	0	0	4.2	0	0	2.4	0
3rd	0	0	2.4	0	0	0	0	0	0	2.4	11.6	0
4th	0.6	1	3.4	0	0	2.2	0	0	0	0	0.2	0
5th	0	0	ND	0	0.2	5	0	0.2	7	0	0	1.6
6th	0	0	6.8	0	0.8	0	12.6	0	0	19.4	0	0
7th	0	0	3	0	0	0	8.8	0	3	0.2	0	0
8th	0	0	10.6	4.6	0	0	1.6	4.4	0.2	0	0	0
9th	0	0	0.2	0	0.6	0	0.4	3.8	0	0	0	1.2
10th	0	0	0	0	0	0	0	0	0	16	0.2	0.4
11th	0.2	0	0	0	0	0	0	0	0	0.2	0	0
12th	0	0	0	0	0	0	0	0	0	0	0	0.8
13th	0	4.2	11.6	0	1.2	ND	0	0	1.2	0	0	0
14th	21.2	1.6	25.4	0.2	0.6	0	4.6	0	0.2	0	0.2	0
15th	1	7.4	2	0	0	0	8.4	0	0	0	0	1.8
16th	0.2	0.2	0	0	0	0	ND	0	0	0	0	0.4
17th	0	0	0	11.4	0	5.4	0	0	0.2	8.2	0	0.4
18th	0	0	0	22.2	0	0.2	ND	0	0	0.2	0	13
19th	1.8	0	0	2.2	0	0.8	0	0.6	0.6	0	0	0.2
20th	0.2	0	3.2	0	0	0	0	0	0	0	-	0
21st	0	0.6	29.4	0	0	0.4	0	0	0	0.6	-	0
22nd	45.6	0	0.8	0	0	1	0	0	0	0.4	-	0
23rd	35	0	0	0	3.6	0	1.8	0	0	0	-	0.2
24th	1.2	25.6	0.2	0	0.2	22	2.4	0	0	5.4	-	0
25th	0	31.4	0	0	0	1	0	0	0	0.2	-	0
26th	0	1.8	0	0.2	0	0.2	0	0	7.2	0	-	0
27th	0	0	0	45.8	0	0.2	0	0	35	0.2	-	0
28th	0.4	22.4	0	0	0	0	0	3.2	4.8	1.2	-	0

Date	Feb (23)	Mar (23)	Apr (23)	May (23)	Jun (23)	Jul (23)	Aug (23)	Sep (23)	Oct (23)	Nov (23)	Dec (23)	Jan (24)
29th	-	8.8	0	0	1.6	0	0	0	0.2	5.6	-	0
30th	-	0.8	8.2	0	0	ND	ND	0.2	0	5.2	-	ND
31st	-	0	-	0	-	ND	7	-	0	-	-	ND
Total	107.4	106	118.4	86.6	8.8	38.4	47.6	16.6	59.6	65.4	61.4	20
Historical Mean	118.8	128.0	109.6	108.2	121.5	75.2	71.7	60.1	75.9	82.7	77.1	99.4

Notes:
ND – no data retrieved.

4 DATA TRENDS

Data trends, based on analyses undertaken throughout the duration of the sampling program (January 2019 – present), are provided as **Attachment 4.** Generally, groundwater elevations have increased over the last four years with a notable spike in elevation following the March 2021 and February 2022 water monitoring events. A general increase in groundwater elevations across the site occurred during 2022 and is predominantly due to above average rainfall recorded for most months during the year. Since October 2022, groundwater elevations have shown a decreasing trend across the site, with a minor rebound during March and April 2023 monitoring events coinciding with the above average rainfall received during this period as noted in **Section 3**.

Notable changes in data trends were observed for the following analytes:

- Concentrations of toluene were reported greater than the laboratory LOR in most samples during the previous December 2023 monitoring event and were reanalysed by the laboratory for confirmation. As per the SWMP, BTEXN was resampled and analysed during the January 2024event at all available locations, including two surface water locations. The result for all sampled locations is reported less than the laboratory LOR.
- Iron – The reported iron concentrations at BH6 (1.48 mg/L) have been on a generally decreasing trend since June 2023, with concentrations reported below the site-specific criteria for the past three months after a period of eight consecutive months from March 2024 reporting results greater than the site specific trigger value.
- PFAS – PFAS compounds were not detected in ground or surface water samples during this monitoring event. WPW2 reported one detection of PFOS (0.01µg/L) during this monitoring round with the concentration consistent with previously reported results at this location.

5 CLOSING

Overall, the results suggest that since quarry operations began in August 2019, there has been negligible change in analytical results across the sampled locations. Groundwater level monitoring TARP rules, outlined in **Section 2,** recorded no exceedances at any locations during the January 2024 monitoring event.

No analyte or parameter exceedances of the site-specific trigger values were reported during the January 2024 groundwater monitoring event.

We trust that the above report meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Kleinfelder Australia Pty Ltd

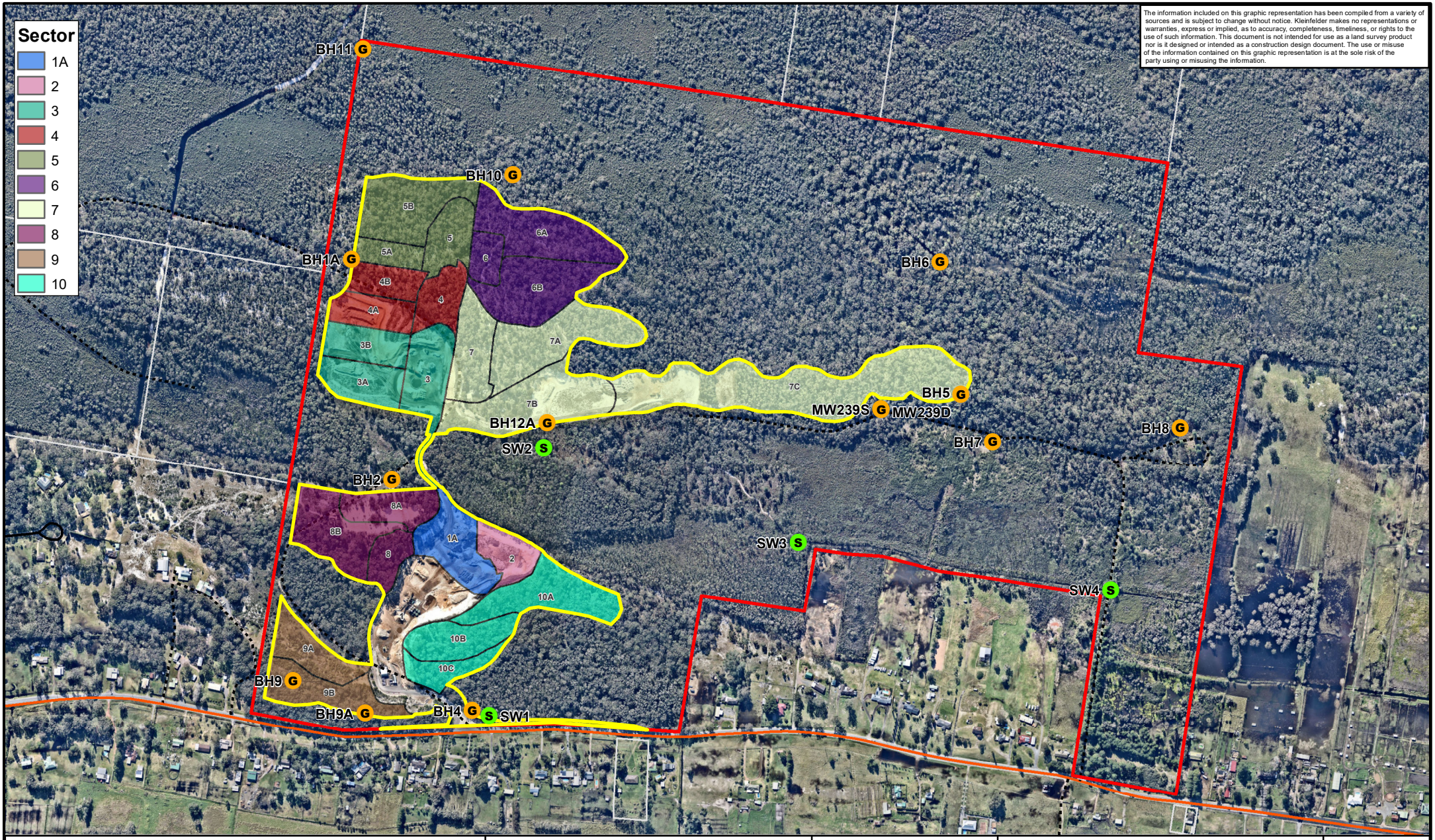
Aaron King

Graduate Environmental Scientist
Contaminated Land Management
Aking@kleinfelder.com
Mobile: 0457 426 013

Attachments

Attachment 1: Figures
Attachment 2: Results tables and field records
Attachment 3: Lab results
Attachment 4: Data Trends

ATTACHMENT 1: FIGURES



Legend

- G Groundwater Sample Site
- S Surface Water Sample Site
- Quarry Project Area
- Subject Land Boundary
- Arterial Road
- Local Road
- Track

Metres
0 50 100 200 300 400 500
N

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PROJECT REFERENCE: 20232071
DATE DRAWN: 7/10/2022 14:16 Version 1
DRAWN BY: CMiskell

DATA SOURCE:
NSW DFSI - 2017
Nearmap - 2022

Monthly Monitoring Locations

Williamtown Sand Syndicate
Proposed Sand Quarry
398 Cabbage Tree Road, Williamtown

FIGURE:
1

J:\00 CLIENT FILES\126863_TrusteeForWSS_UnitTrust\20170448_Williamtown\Mapping\20232071_WMP_D20221007_Fig01_MonthlyWaterMonitoring.mxd

ATTACHMENT 2: RESULTS TABLES AND FIELD RECORDS

Calibration Date 9/1/24 **Technician:** AK

Handheld Serial Number: 23F105250 **Handheld Software Version:** 1.3.35

Cable Serial Number: 23C103080

Temperature

Reading when sensor is dry and in room temp air: 24.4 *Accurate?* (Y) N ✓

Conductivity

Reading when sensor is dry and in room temp air: 2.9 *Acceptable value is less than* **1 µS/cm**

Actual Reading in solution before calibration is accepted: 1308

Reading in calibration solution after calibration is completed: 1074

Conductivity Cell Constant in GLP record after calibration:* 5.12

Acceptable range for ProDSS conductivity/temperature sensors (626902) is **4.5** *to* **6.5** ✓

Acceptable range for integral (i.e. built-in) sensors on ODO/CT assemblies is **4.4** *to* **6.4**

Optical Dissolved Oxygen

Barometric pressure: 758

Actual Reading before DO% calibration is accepted: 109.9

Reading in DO% calibration environment after calibration is completed: 99.7

ODO gain in GLP record after calibration: 0.96 *Acceptable range is* **0.75** *to* **1.50**

pH

		Actual Readings during calibration		
Buffer	Calibration Value	pH	pH mV**	Acceptable pH mV in buffer
7		7.18	-23.4	-50 mV to 50 mV
4		3.99	150.6	+165 to +180 from pH 7 buffer mV value
10		10.03	-179.0	-165 to -180 from pH 7 buffer mV value

pH slope in GLP record after calibration: 56.09 *Acceptable range is ~* **55** *to* **60** *pH/mV (Ideal is 59.16 mV/pH)*

ORP

Actual Reading in solution before calibration is accepted: 238.5

Reading in calibration solution after calibration is completed: 240.3

ORP Cal Offset in GLP record after calibration: 2.0 *Acceptable range is* **-100** *to* **50**

**GLP stands for Good Laboratory Practice file. This calibration record contains important information about the calibration result.*

***The pH mV at the time of calibration (Sensor Value) can also be seen in the final pH GLP record.*

Turbidity

Calibration value (FNU)*	Actual Reading during calibration
0	1.48
12.4*	
124*	104
1010	1125

*Acceptable range for **Actual Reading** during calibration of the first point is **-10** to **10** FNU* ✓

***Note:** The turbidity sensor can be calibrated to 3 points. Either 12.4 or 124 FNU standard can be used for the second point, but not both. Other calibration values can be used when calibrating.*

Depth (Completed in Air)

*Actual Reading before calibration is accepted:*_____

*Reading in air after calibration is completed:*_____

Ammonium

	Actual Readings during calibration		
Concentration** (i.e. Calibration Value)	mg/L	mV***	Acceptable mV when the sensor is new
1st point: 1 mg/L			-20 mV to 20 mV
2nd point: 100 mg/L			+90 to +130 from mV value in 1 mg/L standard

Nitrate

	Actual Readings during calibration		
Concentration** (i.e. Calibration Value)	mg/L	mV***	Acceptable mV when the sensor is new
1st point: 1 mg/L			180 mV to 220 mV
2nd point: 100 mg/L			-90 to -130 from mV value in 1 mg/L standard

Chloride

	Actual Readings during calibration		
Concentration** (i.e. Calibration Value)	mg/L	mV***	Acceptable mV when the sensor is new
1st point: 10 mg/L			205 mV to 245 mV
2nd point: 1,000 mg/L			-80 to -130 from mV value in 10 mg/L standard

***Other standard concentrations can be used. A 2 point calibration without chilling a third calibration solution is extremely accurate and is the preferred method. However, if there is a large temperature variation during sampling, a chilled third calibration point is recommended.*

****The mV at the time of calibration (Sensor Value) for each point can also be seen in the GLP record after a calibration is complete.*

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HYDRASLEEVE™ SAMPLING LOG

Project Number:	Date:	Site Address:
24001956	18/11/24	Cabbage Tree Rd

Site Name:	Field Manager:	Weather Observations:
WSS	TS	Sunny 32°C

Field Measurements													
Well ID	Sample Time	DTW (mbTOC)	Total Depth (mbTOC)	Sample Depth (mbTOC)	Temp (°C)	DO (mg/L)	EC (µc/cm)	TDS (mg/L)	pH	Redox (mV)	Turbidity (NTU)	Description (Odour, Colour, Sheen)
BH1A	950	5.965	12.144	7.00	22.8	4.92	91.2	62	4.3	147	85	NS, NO, Clear
BH2	925	3.636	8.310	6.700	22.1	4.01	20.9	49	4.75	168.8	87	NS, NO, Light Brown
BH4	820	1.86	6.00	2.85	21.0	3.92	85.1	60	5.35	182.9	13.43	NS, NO, Clear
BH6	1141	1.696	4.588	2.70	26.6	2.62	213.7	154	4.86	-100	12	Mod H2S odour, NS Yellow
BH7	1122	1.781	4.516	2.8	25	2.49	105.4	69	4.5	-64.6	17	Brown, St H2S odour, NS
BH8	1104	2.614	6.027	3.7	23.0	2.56	166	112	4.36	-98.5	65	Yellow, Mod H2S odour, NS
BH9	910	—	16.099	—	—	—	—	—	—	—	—	Gauge only
BH9A	847	9.408	12.28	10.5	21.2	2.97	162.4	114	4.76	96.1	85	MH2S odour, NS Yellow
BH11	1015	3.072	5.302	4.2	23.1	3.57	146.7	95	4.81	-62.4	17	Slight Yellow, Mod H2S odour, NS — Level logger didn't count-
BH12A	1225	3.425	7.317	4.500	25.8	2.10	142.3	91	4.54	115.9	9.1	Clear, NS, NO
MW23S	1150	1.391	3.783	2.400	25.3	2.52	194.9	129	4.37	-89.4	83	Yellow, Mod H2S odour, NS
MW2	1036	-	-	-	27.6	2.53	236.1	146	4.47	76.7	360	Earthy odour Brown, NS
SW1	830		0.3	0.2	23.1	1.02	105.9	71	6.17	121.8	2260	NS, NO, Clear
SW2	—	—	—	—	—	—	—	—	—	—	—	Dry
SW3	1208		0.3	0.2	25.8	2.57	278.8	178	5.14	-5.5	6.36	Brown Tanins, Organic odour, NS Algae
SW4	1055	—	—	—	—	—	—	—	—	—	—	Dry, no flow

Damaged wells (identify how damaged): _____

*Sample Depth is reported as bottom of hydrasleeve depth

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QA/QC SAMPLE REGISTER

Project Number:	Site Name:	Site Address:
240019456	WSS	Cabbage Tree Road.

Date:	Field Manager:
18/1/24	TS

Date Sampled	Field Staff	QC Sample ID	QC Sample Type	Primary Sample	Rinsate Item (Hand auger, low flow pump etc.)	Rinsate Water Batch	Analysing Lab	Analysis Requested
18/1/24	TS	TB_180124	Trip Blank	–	–	–	ALS	See CoC
〃	〃	RB_180124	Rinsate	–	IP	–	〃	

COMMENTS: _____

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Analyte		BTEXN								Total Petroleum Hydrocarbons					
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sample Name	Sample Date														
BH1	15-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	**1,710**	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	**40**	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	22-Sep-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 100
	13-Oct-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
BH1A	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**5.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**5.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH2	22-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**6.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**6.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH3	21-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	21-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	**250**	< 50	**250**	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

KLEINFELDER
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Analyte		BTEXN								Total Petroleum Hydrocarbons					
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH4	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**4.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**4.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH5	22-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
BH6	22-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**6.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**6.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
	22-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Analyte		BTEXN								Total Petroleum Hydrocarbons					
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH7	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**6.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**6.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH8	21-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**4.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**4.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Analyte		BTEXN								Total Petroleum Hydrocarbons					
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH9A	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	22-Sep-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	13-Oct-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**7.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**7.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH11	21-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	22-Sep-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	13-Oct-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	06-Mar-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**6.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**6.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-
BH12	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	22-Sep-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	13-Oct-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
BH12A	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	-
	19-Dec-23	< 1.0	**3.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**3.0**	< 20	-	-	-	-	-
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Analyte	BTEXN								Total Petroleum Hydrocarbons					
	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup
LOR	1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	100
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
BTEXN - Benzene, toluene, ethylbenzene, total xylenes, naphthalene
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Total Petroleum Hydrocarbons - Silica Clean-up				Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup	C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	>C_{10} - C_{16}	>C_{10} - C_{16} minus Naphthalene (F2)	>C_{16} - C_{34}	>C_{34} - C_{40}	>C_{10} - C_{40} (sum)	>C_{10}-C_{16} - Silica Cleanup	F2 - Silica Cleanup	>C_{16}-C_{34} - Silica Cleanup	>C_{34}-C_{40} - Silica Cleanup	>C_{10}-C_{40} - Silica Cleanup
50	100	50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	20	20	100	--	100	100	--	--	--	--	--	--
< 50	< 100	< 50	< 50	**1,690**	**1,690**	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	**30**	**30**	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
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-	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	-	< 100	< 100	< 100	< 100
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-	-	-	-	< 20	< 20	< 100	< 100	**280**	< 100	**280**	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Total Petroleum Hydrocarbons - Silica Clean-up				Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup	C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	$>C_{10}$ - C_{16}	$>C_{10}$ - C_{16} minus Naphthalene (F2)	$>C_{16}$ - C_{34}	$>C_{34}$ - C_{40}	$>C_{10}$ - C_{40} (sum)	$>C_{10}$-C_{16} - Silica Cleanup	F2 - Silica Cleanup	$>C_{16}$-C_{34} - Silica Cleanup	$>C_{34}$-C_{40} - Silica Cleanup	$>C_{10}$-C_{40} - Silica Cleanup
50	100	50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	20	20	100	--	100	100	--	--	--	--	--	--
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< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	**130**	< 50	**130**	< 20	< 20	-	-	-	-	-	< 100	< 100	**140**	< 100	**140**
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< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
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< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
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-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
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< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Total Petroleum Hydrocarbons - Silica Clean-up				Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup	C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	$>C_{10}$ - C_{16}	$>C_{10}$ - C_{16} minus Naphthalene (F2)	$>C_{16}$ - C_{34}	$>C_{34}$ - C_{40}	$>C_{10}$ - C_{40} (sum)	$>C_{10}$-C_{16} - Silica Cleanup	F2 - Silica Cleanup	$>C_{16}$-C_{34} - Silica Cleanup	$>C_{34}$-C_{40} - Silica Cleanup	$>C_{10}$-C_{40} - Silica Cleanup
50	100	50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	20	20	100	--	100	100	--	--	--	--	--	--
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Total Petroleum Hydrocarbons - Silica Clean-up				Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup	C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	$>C_{10}$ - C_{16}	$>C_{10}$ - C_{16} minus Naphthalene (F2)	$>C_{16}$ - C_{34}	$>C_{34}$ - C_{40}	$>C_{10}$ - C_{40} (sum)	$>C_{10}$-C_{16} - Silica Cleanup	F2 - Silica Cleanup	$>C_{16}$-C_{34} - Silica Cleanup	$>C_{34}$-C_{40} - Silica Cleanup	$>C_{10}$-C_{40} - Silica Cleanup
50	100	50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	20	20	100	--	100	100	--	--	--	--	--	--
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
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< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 100	< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 1
Groundwater Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Total Petroleum Hydrocarbons - Silica Clean-up				Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup	C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	>C_{10} - C_{16}	>C_{10} - C_{16} minus Naphthalene (F2)	>C_{16} - C_{34}	>C_{34} - C_{40}	>C_{10} - C_{40} (sum)	>C_{10}-C_{16} - Silica Cleanup	F2 - Silica Cleanup	>C_{16}-C_{34} - Silica Cleanup	>C_{34}-C_{40} - Silica Cleanup	>C_{10}-C_{40} - Silica Cleanup
50	100	50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	20	20	100	--	100	100	--	--	--	--	--	--

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

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Analyte		Anions and Cations																				
		Sodium	Calcium	Magnesium	Potassium	Sulphate	Chloride	Fluoride	Phosphorus	Reactive phosphorus as P	Total Phosphorus	Total Phosphorus	Total Phosphorus	Nitrite	Nitrite as N	Nitrate	Nitrate as N	Nitrite + Nitrate as N	Ammonia as N	Total Ammonia as Nitrogen	Total Nitrogen as N	Total Nitrogen as N
LOR		1.0	1.0	1.0	1.0	1.0	1.0	0.1	0.01	0.01	0.01	0.02	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1	0.2
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		77	5.0	11	2.0	70	148	0.2	--	--	2.0	2.0	2.0	--	--	--	--	--	--	0.5	5.9	5.9
Sample Name	Sample Date																					
BH1	15-Mar-19	**11**	**2.0**	**1.0**	< 1.0	< 1.0	**25**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**14**	**1.0**	**2.0**	< 1.0	**4.0**	**25**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**12**	< 1.0	**2.0**	< 1.0	**5.0**	**25**	< 0.1	-	**0.03**	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.11**	-	**0.3**	-
	14-Jun-19	**10**	< 1.0	**2.0**	< 1.0	**3.0**	**24**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**15**	< 1.0	**2.0**	< 1.0	**4.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**14**	< 1.0	**2.0**	< 1.0	**2.0**	**21**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**13**	< 1.0	**2.0**	< 1.0	**2.0**	**20**	< 0.1	-	< 0.01	**0.06**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.12**	-	**0.3**	-
	15-Oct-19	**13**	< 1.0	**2.0**	< 1.0	**2.0**	**21**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**16**	< 1.0	**2.0**	< 1.0	**3.0**	**23**	**0.1**	< 0.01	< 0.01	-	-	-	-	< 0.01	**0.01**	-	**0.01**	-	**0.13**	**0.3**	-
	16-Sep-20	**13**	< 1.0	**2.0**	< 1.0	**2.0**	**21**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**14**	< 1.0	**2.0**	< 1.0	**4.0**	**21**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**11**	< 1.0	**2.0**	< 1.0	**5.0**	**18**	< 0.1	-	< 0.01	**0.02**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.07**	**0.2**	-
	16-Dec-20	**13**	< 1.0	**2.0**	**1.0**	**6.0**	**22**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**12**	< 1.0	**2.0**	< 1.0	**5.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**14**	< 1.0	**2.0**	**1.0**	**5.0**	**25**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	**0.02**	**0.02**	-	**0.05**	< 0.1	-
	17-Mar-21	**14**	**1.0**	**2.0**	< 1.0	**4.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**14**	**1.0**	**3.0**	< 1.0	**10**	**23**	< 0.1	-	-	< 0.01	-	-	< 0.01	-	**0.02**	-	**0.02**	**0.11**	-	**0.2**	-
BH1A	15-Feb-23	**9.0**	< 1.0	< 1.0	< 1.0	**7.0**	**13**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	**0.26**	**0.26**	-	**0.04**	**0.5**	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	22-Feb-19	**12**	**2.0**	**2.0**	< 1.0	**6.0**	**22**	**0.1**	-	< 0.01	**0.28**	-	-	-	< 0.01	-	**2.76**	**2.76**	**0.05**	-	**4.0**	-
	15-Mar-19	**10**	**3.0**	**2.0**	< 1.0	**7.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**14**	**2.0**	**2.0**	< 1.0	**6.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**12**	**2.0**	**2.0**	< 1.0	**21**	**22**	< 0.1	-	< 0.01	**0.26**	-	-	-	< 0.01	-	**0.38**	**0.38**	**0.01**	-	**1.3**	-
	14-Jun-19	**11**	**1.0**	**2.0**	< 1.0	**5.0**	**23**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**13**	**2.0**	**2.0**	< 1.0	**9.0**	**20**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**12**	**1.0**	**2.0**	< 1.0	**8.0**	**20**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**11**	**2.0**	**2.0**	< 1.0	**8.0**	**18**	< 0.1	-	< 0.01	-	-	**0.28**	-	< 0.01	-	**1.07**	**1.07**	**0.04**	-	-	-
	15-Oct-19	**12**	**2.0**	**2.0**	< 1.0	**5.0**	**20**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**14**	**2.0**	**1.0**	< 1.0	**7.0**	**19**	< 0.1	**0.21**	< 0.01	-	-	-	-	< 0.01	**1.01**	-	**1.01**	-	**0.05**	**2.1**	-
	16-Sep-20	**11**	**2.0**	**2.0**	< 1.0	**7.0**	**17**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**11**	**2.0**	**2.0**	< 1.0	**6.0**	**16**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**11**	**2.0**	**2.0**	< 1.0	**9.0**	**16**	< 0.1	-	< 0.01	**0.48**	-	-	-	< 0.01	-	**2.88**	**2.88**	-	< 0.01	**4.8**	-
	16-Dec-20	**11**	**2.0**	**2.0**	< 1.0	**7.0**	**15**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**9.0**	**2.0**	**2.0**	< 1.0	**7.0**	**13**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**12**	**1.0**	**1.0**	< 1.0	**8.0**	**12**	< 0.1	-	< 0.01	**0.15**	-	-	-	< 0.01	-	**2.58**	**2.58**	-	< 0.01	**3.5**	-
	17-Mar-21	**10**	**2.0**	**2.0**	< 1.0	**7.0**	**13**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-21	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**8.0**	**2.0**	**1.0**	< 1.0	**7.0**	**14**	< 0.1	-	-	**0.06**	-	-	< 0.01	-	**0.05**	-	**0.05**	**0.01**	-	**0.4**	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27-May-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**9.0**	< 1.0	**1.0**	< 1.0	**6.0**	**16**	< 0.1	-	< 0.01	**0.22**	-	-	-	< 0.01	-	**0.04**	**0.04**	-	**0.01**	**1.4**	-
	16-May-23	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	21-Feb-19	**4.0**	**4.0**	**1.0**	< 1.0	**4.0**	**10**	< 0.1	-	< 0.01	**2.76**	-	-	-	< 0.01	-	**0.78**	**0.78**	**0.3**	-	**5.9**	-
BH4	21-Feb-19	**8.0**	**2.0**	**1.0**	**1.0**	**5.0**	**17**	< 0.1	-	< 0.01	**0.19**	-	-	-	< 0.01	-	**0.35**	**0.35**	**0.04**	-	**0.6**	-
	15-Mar-19	**9.0**	**2.0**	< 1.0	< 1.0	**5.0**	**18**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**10**	**2.0**	**1.0**	**1.0**	**3.0**	**19**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**9.0**	**2.0**	**1.0**	**1.0**	**22**	**19**	< 0.1	-	< 0.01	**0.97**	-	-	-	< 0.01	-	**0.29**	**0.29**	< 0.01	-	**1.0**	-
	14-Jun-19	**6.0**	**1.0**	**1.0**	< 1.0	**4.0**	**18**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**10**	**2.0**	**2.0**	**1.0**	**6.0**	**18**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**8.0**	**2.0**	**1.0**	**1.0**	**5.0**	**16**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**11**	**2.0**	**2.0**	< 1.0	**8.0**	**19**	< 0.1	-	< 0.01	**0.4**	-	-	-	< 0.01	-	**0.24**	**0.24**	**0.02**	-	**0.6**	-
	15-Oct-19	**10**	**1.0**	**1.0**	< 1.0	**4.0**	**18**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**11**	**1.0**	**1.0**	< 1.0	**6.0**	**18**	< 0.1	**0.08**	< 0.01	-	-	-	-	< 0.01	**0.29**	-	**0.29**	-	< 0.01	**0.3**	-
	16-Sep-20	**20**	< 1.0	**2.0**	< 1.0	**11**	**31**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**19**	**1.0**	**3.0**	< 1.0	**10**	**34**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**18**	< 1.0	**2.0**	< 1.0	**12**	**27**	< 0.1	-	< 0.01	**0.06**	-	-	-	< 0.01	-	**0.1**	**0.1**	-	< 0.01	**0.1**	-
	16-Dec-20	**25**	**1.0**	**4.0**	< 1.0	**15**	**43**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**36**	**1.0**	**4.0**	< 1.0	**23**	**54**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**69**	**2.0**	**9.0**	**1.0**	**32**	**111**	< 0.1	-	< 0.01	**0.11**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.03**	< 0.1	-
	17-Mar-21	**77**	**2.0**	**11**	**1.0**	**26**	**128**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**7.0**	**1.0**	**2.0**	< 1.0	**7.0**	**15**	< 0.1	-	-	**0.3**	-	-	< 0.01	-	**0.21**	-	**0.21**	**0.01**	-	**0.6**	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27-May-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**10**	**1.0**	**1.0**	**1.0**	**7.0**	**18**	< 0.1	-	< 0.01	**0.11**	-	-	-	< 0.01	-	**0.33**	**0.33**	-	**0.02**	**0.7**	-
	16-May-23	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	22-Feb-19	**42**	< 1.0	**6.0**	**1.0**	**19**	**69**	**0.2**	-	< 0.01	**0.34**	-	-	-	-	< 0.01	-	< 0.01	**0.09**	-	**3.0**	-
	24-Feb-22	**40**	< 1.0	**8.0**	< 1.0	**42**	**60**	< 0.1	-	-	**0.29**	-	-	< 0.01	-	**0.02**	-	**0.02**	**0.21**	-	**1.2**	-
	15-Feb-23	**18**	< 1.0	**2.0**	< 1.0	**17**	**24**	< 0.1	-	< 0.01	**0.32**	-	-	-	< 0.01	-	**0.01**	**0.01**	-	**0.06**	**3.9**	-
	22-Feb-19	**28**	**3.0**	**4.0**	**1.0**	**28**	**42**	< 0.1	-	< 0.01	**0.05**	-	-	-	< 0.01	-	**0.09**	**0.09**	**0.14**	-	**0.5**	-
	14-Mar-19	**23**	**2.0**	**4.0**	**1.0**	**17**	**37**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**25**	**3.0**	**4.0**	**1.0**	**18**	**42**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**23**	**3.0**	**4.0**	**1.0**	**18**	**45**	< 0.1	-	< 0.01	**0.13**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.14**	-	**0.6**	-
	14-Jun-19	**20**	**2.0**	**4.0**	**1.0**	**16**	**42**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**23**	**2.0**	**4.0**	**1.0**	**20**	**35**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**23**	**2.0**	**3.0**	**1.0**	**21**	**38**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

KLEINFELDER
Right People. Right Solutions.

Analyte		Anions and Cations																				
		Sodium	Calcium	Magnesium	Potassium	Sulphate	Chloride	Fluoride	Phosphorus	Reactive phosphorus as P	Total Phosphorus	Total Phosphorus	Total Phosphorus	Nitrite	Nitrite as N	Nitrate	Nitrate as N	Nitrite + Nitrate as N	Ammonia as N	Total Ammonia as Nitrogen	Total Nitrogen as N	Total Nitrogen as N
LOR		1.0	1.0	1.0	1.0	1.0	1.0	0.1	0.01	0.01	0.01	0.02	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1	0.2
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		77	5.0	11	2.0	70	148	0.2	--	--	2.0	2.0	2.0	--	--	--	--	--	--	0.5	5.9	5.9
BH6	16-Sep-19	**25**	**3.0**	**3.0**	**1.0**	**21**	**38**	< 0.1	-	< 0.01	**0.15**	-	-	-	< 0.01	-	**0.07**	**0.07**	**0.19**	-	**0.8**	-
	15-Oct-19	**25**	**2.0**	**4.0**	**1.0**	**13**	**41**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**27**	**3.0**	**3.0**	**1.0**	**18**	**45**	< 0.1	**0.06**	< 0.01	-	-	-	-	< 0.01	< 0.01	-	< 0.01	-	**0.23**	**0.4**	-
	16-Sep-20	**36**	**2.0**	**4.0**	**1.0**	**16**	**55**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**36**	**2.0**	**5.0**	**1.0**	**12**	**64**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**37**	**3.0**	**5.0**	**2.0**	**23**	**61**	< 0.1	-	**0.01**	**0.08**	-	-	-	< 0.01	-	**0.01**	**0.01**	-	**0.22**	**0.3**	-
	16-Dec-20	**46**	**3.0**	**6.0**	**2.0**	**15**	**75**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**39**	**3.0**	**5.0**	**2.0**	**21**	**73**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**43**	**3.0**	**6.0**	**2.0**	**18**	**72**	< 0.1	-	< 0.01	**0.1**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.25**	< 0.1	-
	17-Mar-21	**51**	**4.0**	**9.0**	**1.0**	**25**	**80**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**5.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**30**	< 1.0	**4.0**	< 1.0	**10**	**61**	< 0.1	-	-	**0.11**	-	-	< 0.01	-	**0.02**	-	**0.02**	**0.04**	-	**0.4**	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27-May-22	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**32**	< 1.0	**4.0**	< 1.0	**21**	**59**	< 0.1	-	< 0.01	**0.03**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.03**	**0.4**	-
	16-May-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**7.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**7.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	**8.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	22-Feb-19	**34**	< 1.0	**5.0**	**2.0**	**12**	**64**	**0.2**	-	< 0.01	**0.13**	-	-	-	< 0.01	-	**0.02**	**0.02**	**0.34**	-	**2.2**	-
	14-Mar-19	**36**	< 1.0	**6.0**	**2.0**	**16**	**61**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**38**	< 1.0	**6.0**	**2.0**	**17**	**62**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**35**	< 1.0	**5.0**	**2.0**	**15**	**68**	**0.2**	-	< 0.01	**0.06**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.27**	-	**0.9**	-
	14-Jun-19	**31**	< 1.0	**4.0**	**2.0**	**11**	**56**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**36**	< 1.0	**5.0**	**2.0**	**12**	**46**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**32**	< 1.0	**4.0**	**2.0**	**15**	**49**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**27**	< 1.0	**4.0**	**1.0**	**13**	**53**	< 0.1	-	< 0.01	**0.09**	-	-	-	< 0.01	-	**0.06**	**0.06**	**0.2**	-	-	**1.2**
	15-Oct-19	**34**	< 1.0	**5.0**	**2.0**	**12**	**53**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**31**	< 1.0	**5.0**	**1.0**	**15**	**56**	**0.1**	**0.02**	< 0.01	-	-	-	-	< 0.01	< 0.01	-	< 0.01	-	**0.17**	**0.5**	-
	16-Sep-20	**33**	< 1.0	**5.0**	**2.0**	**12**	**62**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**34**	< 1.0	**5.0**	**2.0**	**9.0**	**64**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**30**	< 1.0	**5.0**	**2.0**	**9.0**	**54**	**0.1**	-	< 0.01	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.3**	**0.6**	-
	16-Dec-20	**30**	< 1.0	**6.0**	**2.0**	**9.0**	**58**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**31**	< 1.0	**5.0**	**2.0**	**10**	**63**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**34**	< 1.0	**6.0**	**2.0**	**12**	**64**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.3**	**0.6**	-
	17-Mar-21	**36**	< 1.0	**7.0**	**2.0**	**11**	**68**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**17**	< 1.0	**2.0**	**1.0**	**8.0**	**25**	< 0.1	-	-	**0.12**	-	-	< 0.01	-	**0.02**	-	**0.02**	**0.08**	-	**1.0**	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27-May-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**10**	< 1.0	**1.0**	< 1.0	**1.0**	**14**	< 0.1	-	< 0.01	**0.23**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.03**	**1.6**	-
	16-May-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	21-Feb-19	**52**	< 1.0	**6.0**	< 1.0	**11**	**90**	< 0.1	-	< 0.01	**1.97**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.5**	-	**2.4**	-
	14-Mar-19	**45**	< 1.0	**6.0**	< 1.0	**6.0**	**76**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**53**	< 1.0	**7.0**	< 1.0	**8.0**	**89**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**47**	< 1.0	**4.0**	< 1.0	**6.0**	**81**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.12**	-	**0.4**	-
	14-Jun-19	**47**	< 1.0	**5.0**	< 1.0	**4.0**	**89**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**57**	< 1.0	**5.0**	< 1.0	**70**	**121**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**42**	< 1.0	**3.0**	< 1.0	**4.0**	**63**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**46**	< 1.0	**3.0**	< 1.0	**4.0**	**70**	< 0.1	-	< 0.01	-	**0.43**	-	-	< 0.01	-	< 0.01	< 0.01	**0.13**	-	-	**1.1**
	15-Oct-19	**45**	< 1.0	**4.0**	< 1.0	**4.0**	**70**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**49**	< 1.0	**4.0**	< 1.0	**8.0**	**80**	< 0.1	**0.58**	< 0.01	-	-	-	-	< 0.01	**0.01**	-	**0.01**	-	**0.17**	**1.3**	-
	16-Sep-20	**58**	< 1.0	**4.0**	< 1.0	**9.0**	**109**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**43**	< 1.0	**4.0**	< 1.0	**12**	**70**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**48**	< 1.0	**6.0**	< 1.0	**10**	**76**	< 0.1	-	< 0.01	**0.14**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.13**	**0.6**	-
	16-Dec-20	**35**	< 1.0	**4.0**	< 1.0	**14**	**56**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**44**	< 1.0	**5.0**	< 1.0	**13**	**77**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**50**	< 1.0	**6.0**	< 1.0	**17**	**79**	< 0.1	-	< 0.01	**0.14**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.12**	< 0.1	-
	17-Mar-21	**50**	< 1.0	**6.0**	< 1.0	**19**	**75**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**7.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-21	-	-	**8.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**55**	< 1.0	**5.0**	< 1.0	**54**	**70**	< 0.1	-	-	**0.3**	-	-	< 0.01	-	**0.72**	-	**0.72**	**0.13**	-	**1.7**	-
	27-May-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**16**	< 1.0	**1.0**	< 1.0	**15**	**22**	< 0.1	-	< 0.01	**0.19**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.06**	**1.7**	-
	16-May-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9A	16-Sep-20	**35**	**5.0**	**5.0**	**1.0**	**41**	**38**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**32**	**3.0**	**6.0**	**1.0**	**33**	**48**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**23**	**2.0**	**4.0**	**1.0**	**23**	**35**	< 0.1	-	< 0.01	**0.11**	-	-	-	< 0.01	-	**2.35**	**2.35**	-	< 0.01	**2.8**	-
	16-Dec-20	**23**	**1.0**	**3.0**	**1.0**	**9.0**	**37**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**24**	**1.0**	**3.0**	**1.0**	**15**	**43**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**25**	**1.0**	**3.0**	**1.0**	**12**	**40**	< 0.1	-	< 0.01	**1.74**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.15**	**5.1**	-
	17-Mar-21	**25**	**1.0**	**3.0**	< 1.0	**12**	**35**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	**25**	**1.0**	**3.0**	**1.0**	**14**	**37**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01	**0.8**	-
	22-Sep-21	**22**	**1.0**	**2.0**	**1.0**	**12**	**35**	< 0.1	-	< 0.01	**0.16**	-	-	-	< 0.01	-	**0.03**	**0.03**	-	**0.25**	**1.0**	-
	13-Oct-21	**24**	< 1.0	**2.0**	**1.0**	**11**	**38**	< 0.1	-	< 0.01	**0.13**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.31**	**0.9**	-
	16-Nov-21	**24**	**2.0**	**3.0**	**1.0**	**17**	**32**	< 0.1	-	< 0.01	**0.05**	-	-	-	< 0.01	-	**0.04**	**0.04**	-	**0.21**	**1.1**	-
	24-Feb-22	**21**	**2.0**	**4.0**	**1.0**	**17**	**32**	< 0.1	-	-	**0.19**	-	-	< 0.01	-	< 0.01	-	< 0.01	**0.25**	-	**1.0**	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27-May-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

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Analyte		Anions and Cations																			
		Sodium	Calcium	Magnesium	Potassium	Sulphate	Chloride	Fluoride	Phosphorus	Reactive phosphorus as P	Total Phosphorus	Total Phosphorus	Total Phosphorus	Nitrite	Nitrite as N	Nitrate	Nitrate as N	Nitrite + Nitrate as N	Ammonia as N	Total Ammonia as Nitrogen	Total Nitrogen as N	Total Nitrogen as N
LOR		1.0	1.0	1.0	1.0	1.0	1.0	0.1	0.01	0.01	0.01	0.02	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1	0.2
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		77	5.0	11	2.0	70	148	0.2	--	--	2.0	2.0	2.0	--	--	--	--	--	--	0.5	5.9	5.9
BH11	12-Aug-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**18**	< 1.0	**2.0**	**1.0**	**20**	**19**	< 0.1	-	< 0.01	**0.13**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.27**	**2.0**	-
	16-May-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	21-Feb-19	**48**	< 1.0	**10**	< 1.0	**24**	**80**	**0.1**	-	< 0.01	**0.03**	-	-	-	< 0.01	-	**0.04**	**0.04**	**0.06**	-	**1.8**	-
	15-Mar-19	**26**	< 1.0	**2.0**	< 1.0	**2.0**	**52**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Apr-19	**32**	< 1.0	**5.0**	< 1.0	**2.0**	**57**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-May-19	**29**	< 1.0	**4.0**	< 1.0	**2.0**	**55**	< 0.1	-	< 0.01	**0.01**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.12**	-	**0.4**	-
	14-Jun-19	**26**	< 1.0	**3.0**	< 1.0	< 1.0	**53**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Jul-19	**49**	< 1.0	**8.0**	< 1.0	**8.0**	**73**	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Aug-19	**28**	< 1.0	**3.0**	< 1.0	**4.0**	**47**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-19	**27**	< 1.0	**3.0**	< 1.0	**5.0**	**46**	< 0.1	-	< 0.01	**0.12**	-	-	-	< 0.01	-	< 0.01	< 0.01	**0.15**	-	**0.7**	-
	15-Oct-19	**28**	< 1.0	**3.0**	< 1.0	**3.0**	**44**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-19	**28**	< 1.0	**3.0**	< 1.0	< 1.0	**53**	< 0.1	**2.11**	< 0.01	-	-	-	-	< 0.01	**0.06**	-	**0.06**	-	**0.18**	**5.9**	-
	16-Sep-20	**29**	< 1.0	**5.0**	< 1.0	**6.0**	**48**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-20	**29**	< 1.0	**6.0**	< 1.0	**4.0**	**61**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**27**	< 1.0	**5.0**	< 1.0	**5.0**	**50**	< 0.1	-	< 0.01	**0.06**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.08**	**0.5**	-
	16-Dec-20	**31**	< 1.0	**6.0**	< 1.0	**7.0**	**60**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Jan-21	**32**	< 1.0	**6.0**	< 1.0	**12**	**63**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Feb-21	**32**	< 1.0	**5.0**	**1.0**	**12**	**55**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.08**	< 0.1	-
	17-Mar-21	**29**	< 1.0	**6.0**	< 1.0	**17**	**48**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Aug-21	**58**	< 1.0	**7.0**	< 1.0	**9.0**	**110**	**0.1**	-	< 0.01	**0.08**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01	**1.4**	-
	22-Sep-21	**49**	< 1.0	**6.0**	< 1.0	**12**	**101**	**0.1**	-	< 0.01	**0.01**	-	-	-	< 0.01	-	**0.01**	**0.01**	-	**0.01**	**0.8**	-
	13-Oct-21	**51**	< 1.0	**8.0**	< 1.0	**29**	**90**	< 0.1	-	< 0.01	**0.03**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01	**0.8**	-
	16-Nov-21	**37**	< 1.0	**8.0**	< 1.0	**24**	**55**	< 0.1	-	< 0.01	**0.03**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01	**0.9**	-
	24-Feb-22	**41**	< 1.0	**6.0**	< 1.0	**4.0**	**80**	< 0.1	-	-	< 0.01	-	-	< 0.01	-	< 0.01	-	< 0.01	**0.02**	-	**0.6**	-
	06-Mar-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Apr-22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**17**	< 1.0	**2.0**	< 1.0	< 1.0	**29**	< 0.1	-	< 0.01	**0.04**	-	-	-	< 0.01	-	< 0.01	< 0.01	-	**0.07**	**1.0**	-
	16-May-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Jan-24	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	16-Sep-20	**24**	< 1.0	**7.0**	**1.0**	**22**	**38**	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-20	**22**	< 1.0	**4.0**	**1.0**	**11**	**41**	< 0.1	-	< 0.01	< 0.01	-	-	-	< 0.01	-	**0.02**	**0.02**	-	< 0.01	**0.2**	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**20**	< 1.0	**4.0**	**2.0**	**18**	**28**	< 0.1	-	-	**0.12**	-	-	< 0.01	-	**0.01**	-	**0.01**	**0.01**	-	**0.4**	-
BH12A	15-Feb-23	**16**	< 1.0	**2.0**	< 1.0	**8.0**	**29**	< 0.1	-	< 0.01	**1.74**	-	-	-	**0.02**	-	**0.02**	**0.04**	-	**0.21**	**3.2**	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
LOR - Laboratory limit of reporting
mg/L - Milligrams per litre
µS/cm - Microsiemens per centimeter
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

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Anions and Cations								Alkalinity								Inorganics					
Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Cations	Total Anions	Ionic Balance	Sodium Adsorption Ratio	Bicarbonate	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Total Alkalinity as CaCO3	Total Hardness as CaCO3	Hardness	Electrical Conductivity @ 25°C	Total Dissolved Solids	Total Dissolved Solids	Total suspended solids	pH	Turbidity	Phosphate Total (as P)
1.0	0.1	0.2	1.0	0.01	0.01	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	5.0	0.01	0.1	0.01
mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	pH units	NTU	mg/L
5.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-	-	-	-	**0.66**	**0.88**	-	-	-	**9.0**	< 1.0	< 1.0	**9.0**	**9.0**	-	**104**	**68**	**129**	**78**	**5.67**	-	-
-	-	-	-	**0.82**	**0.99**	-	-	-	**10**	< 1.0	< 1.0	**10**	**11**	-	**84**	**55**	**97**	**248**	**5.83**	-	-
-	**0.3**	-	-	**0.69**	**1.01**	-	**1.7**	-	**10**	< 1.0	< 1.0	**10**	**8.0**	-	**105**	**68**	**164**	**80**	**5.82**	-	-
-	-	-	-	**0.6**	**0.94**	-	-	-	**10**	< 1.0	< 1.0	**10**	**8.0**	-	**99**	**64**	**72**	**39**	**5.52**	-	-
-	-	-	-	**0.82**	**0.95**	-	-	-	**11**	< 1.0	< 1.0	**11**	**8.0**	-	**102**	**66**	**84**	**26**	**5.62**	-	-
-	-	-	-	**0.77**	**0.91**	-	-	-	**14**	< 1.0	< 1.0	**14**	**8.0**	-	**128**	**83**	**82**	**181**	**6.22**	-	-
-	**0.3**	-	-	**0.73**	**0.76**	-	**1.84**	-	**8.0**	< 1.0	< 1.0	**8.0**	**8.0**	-	**102**	**66**	**88**	**108**	**5.44**	-	-
-	-	-	-	**0.73**	**0.71**	-	-	-	**4.0**	< 1.0	< 1.0	**4.0**	**8.0**	-	**98**	**64**	-	-	**5.5**	-	-
-	**0.3**	-	-	**0.86**	**1.19**	-	**2.26**	-	**24**	< 1.0	< 1.0	**24**	**8.0**	-	**126**	**82**	-	-	**6.29**	-	-
-	-	-	-	**0.73**	**0.81**	-	-	-	**9.0**	< 1.0	< 1.0	**9.0**	**8.0**	-	**95**	**62**	**81**	**58**	**5.87**	-	-
-	-	-	-	**0.77**	**0.84**	-	-	-	**8.0**	< 1.0	< 1.0	**8.0**	**8.0**	-	**88**	**57**	-	-	**5.7**	-	-
-	**0.2**	-	-	**1.02**	**1.05**	-	**1.55**	-	**22**	< 1.0	< 1.0	**22**	**8.0**	-	**120**	**78**	**76**	**41**	**5.98**	-	-
-	-	-	-	**0.93**	**1.16**	-	-	-	**21**	< 1.0	< 1.0	**21**	**8.0**	-	**134**	**87**	-	-	**5.76**	-	-
-	-	-	-	**0.96**	**1.07**	-	-	-	**16**	< 1.0	< 1.0	**16**	**8.0**	-	**124**	**81**	-	-	**5.63**	-	-
-	< 0.1	-	-	**0.8**	**1.05**	-	**1.98**	-	**12**	< 1.0	< 1.0	**12**	**8.0**	-	**116**	**75**	**89**	**20**	**5.57**	-	-
-	-	-	-	**0.82**	**0.95**	-	-	-	**11**	< 1.0	< 1.0	**11**	**11**	-	**111**	**72**	-	-	**6.02**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.66**	**98**	-
-	**0.2**	-	-	**0.9**	**1.18**	-	-	**16**	-	< 1.0	< 1.0	**16**	**15**	-	**127**	**82**	-	-	**5.95**	-	< 0.01
-	**0.2**	-	-	**0.39**	**0.51**	-	**2.15**	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	**70**	**46**	-	-	**4.49**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.2**	-	-	**0.79**	**0.74**	-	**1.44**	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**91**	**59**	**128**	**376**	**4.87**	-	-
-	-	-	-	**0.75**	**0.79**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**101**	**66**	**90**	**352**	**4.71**	-	-
-	-	-	-	**0.87**	**0.77**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**70**	**46**	**84**	**575**	**4.82**	-	-
-	**0.9**	-	-	**0.79**	**1.06**	-	**1.44**	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**94**	**61**	**144**	**111**	**4.85**	-	-
-	-	-	-	**0.69**	**0.75**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**11**	-	**91**	**59**	**51**	**215**	**4.76**	-	-
-	-	-	-	**0.83**	**0.75**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**90**	**58**	**63**	**92**	**4.84**	-	-
-	-	-	-	**0.74**	**0.73**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**11**	-	**110**	**72**	**61**	**310**	**5.2**	-	-
2.7	-	-	**1.6**	**0.74**	**0.67**	-	**1.32**	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**96**	**62**	**60**	**216**	**4.72**	-	-
-	-	-	-	**0.79**	**0.67**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**102**	**66**	-	-	**5.06**	-	-
-	**1.1**	-	-	**0.79**	**0.68**	-	**2.02**	-	< 1.0	< 1.0	< 1.0	< 1.0	**9.0**	-	**102**	**66**	-	-	**5.47**	-	-
-	-	-	-	**0.74**	**0.62**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**99**	**64**	**76**	**356**	**4.85**	-	-
-	-	-	-	**0.74**	**0.58**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**90**	**58**	-	-	**5.07**	-	-
-	**1.9**	-	-	**0.74**	**0.7**	-	**1.32**	-	**3.0**	< 1.0	< 1.0	**3.0**	**13**	-	**119**	**77**	**91**	**952**	**5.09**	-	-
-	-	-	-	**0.74**	**0.57**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**105**	**68**	-	-	**4.66**	-	-
-	-	-	-	**0.66**	**0.57**	-	-	-	**3.0**	< 1.0	< 1.0	**3.0**	**13**	-	**93**	**60**	-	-	**5.04**	-	-
-	**0.9**	-	-	**0.65**	**0.5**	-	**2.03**	-	< 1.0	< 1.0	< 1.0	< 1.0	**7.0**	-	**89**	**58**	**67**	**86**	**4.84**	-	-
-	-	-	-	**0.7**	**0.53**	-	-	-	**1.0**	< 1.0	< 1.0	**1.0**	**13**	-	**88**	**57**	-	-	**5.28**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.09**	**101**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.3**	-	-	**0.53**	**0.6**	-	-	**3.0**	-	< 1.0	< 1.0	**3.0**	**9.0**	-	**70**	**46**	-	-	**5.18**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**462**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	**1.4**	-	-	**0.47**	**0.62**	-	**1.69**	-	**2.0**	< 1.0	< 1.0	**2.0**	**4.0**	-	**73**	**47**	-	-	**4.67**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**5.1**	-	-	**0.46**	**0.54**	-	**0.46**	-	**9.0**	< 1.0	< 1.0	**9.0**	**14**	-	**60**	**39**	**438**	**3,800**	**5.55**	-	-
-	**0.3**	-	-	**0.56**	**0.7**	-	**1.15**	-	**6.0**	< 1.0	< 1.0	**6.0**	**9.0**	-	**73**	**47**	**96**	**122**	**5.4**	-	-
-	-	-	-	**0.49**	**0.61**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**5.0**	-	**77**	**50**	**70**	**45**	**5.12**	-	-
-	-	-	-	**0.64**	**0.6**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**9.0**	-	**54**	**35**	**61**	**147**	**5.05**	-	-
-	**0.7**	-	-	**0.6**	**0.99**	-	**1.3**	-	< 1.0	< 1.0	< 1.0	< 1.0	**9.0**	-	**73**	**47**	**100**	**44**	**4.99**	-	-
-	-	-	-	**0.39**	**0.59**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**7.0**	-	**69**	**45**	**36**	**186**	**4.84**	-	-
-	-	-	-	**0.72**	**0.63**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**75**	**49**	**42**	**74**	**4.96**	-	-
-	-	-	-	**0.56**	**0.56**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**9.0**	-	**85**	**55**	**49**	**30**	**5.01**	-	-
-	**0.4**	-	-	**0.74**	**0.7**	-	**1.32**	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**95**	**62**	**58**	**49**	**4.83**	-	-
-	-	-	-	**0.57**	**0.59**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**7.0**	-	**85**	**55**	-	-	**4.93**	-	-
-	< 0.1	-	-	**0.61**	**0.63**	-	**1.86**	-	< 1.0	< 1.0	< 1.0	< 1.0	**7.0**	-	**86**	**56**	-	-	**5.34**	-	-
-	-	-	-	**1.03**	**1.1**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**148**	**96**	**74**	**24**	**4.66**	-	-
-	-	-	-	**1.12**	**1.21**	-	-	-	**2.0**	< 1.0	< 1.0	**2.0**	**15**	-	**133**	**86**	-	-	**5.21**	-	-
-	< 0.1	-	-	**0.95**	**1.03**	-	**2.54**	-	**1.0**	< 1.0	< 1.0	**1.0**	**8.0**	-	**146**	**95**	**90**	**15**	**4.98**	-	-
-	-	-	-	**1.47**	**1.58**	-	-	-	**3.0**	< 1.0	< 1.0	**3.0**	**19**	-	**193**	**125**	-	-	**4.81**	-	-
-	-	-	-	**1.94**	**2.02**	-	-	-	**1.0**	< 1.0	< 1.0	**1.0**	**19**	-	**258**	**168**	-	-	**5.23**	-	-
-	< 0.1	-	-	**3.87**	**3.82**	**0.65**	**4.63**	-	**1.0**	< 1.0	< 1.0	**1.0**	**42**	-	**445**	**289**	**251**	**56**	**4.86**	-	-
-	-	-	-	**4.38**	**4.21**	**1.96**	-	-	**3.0**	< 1.0	< 1.0	**3.0**	**50**	-	**501**	**326**	-	-	**5.07**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.4**	-	-	**0.52**	**0.61**	-	-	**2.0**	-	< 1.0	< 1.0	**2.0**	**11**	-	**74**	**48**	-	-	**5.07**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**61**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.4**	-	-	**0.59**	**0.65**	-	**1.69**	-	< 1.0	< 1.0	< 1.0	< 1.0	**7.0**	-	**84**	**55**	-	-	**5.06**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**3.0**	-	-	**2.35**	**2.34**	-	**3.59**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**250**	**162**	**211**	**458**	**4.87**	-	-
-	**1.2**	-	-	**2.4**	**2.63**	-	-	**3.0**	-	< 1.0	< 1.0	**3.0**	**33**	-	**276**	**179**	-	-	**4.67**	-	< 0.01
-	**3.9**	-	-	**0.95**	**1.07**	-	**2.54**	-	**2.0**	< 1.0	< 1.0	**2.0**	**8.0**	-	**126**	**82**	-	-	**4.64**	-	-
-	**0.4**	-	-	**1.72**	**1.77**	-	**2.49**	-	< 1.0	< 1.0	< 1.0	< 1.0	**24**	-	**177**	**115**	**144**	**41**	**4.37**	-	-
-	-	-	-	**1.46**	**1.44**	-	-	-	**2.0**	< 1.0	< 1.0	**2.0**	**21**	-	**179**	**116**	**146**	**144**	**4.95**	-	-
-	-	-	-	**1.59**	**1.56**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**24**	-	**136**	**88**	**115**	**62**	**4.64**	-	-
-	**0.6**	-	-	**1.5**	**1.64**	-	**2.04**	-	< 1.0	< 1.0	< 1.0	< 1.0	**24**	-	**175**	**114**	**214**	**106**	**4.88**	-	-
-	-	-	-	**1.32**	**1.52**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**21**	-	**174**	**113**	**90**	**32**	**4.82**	-	-
-	-	-	-	**1.46**	**1.4**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**21**	-	**161**	**105**	**82**	**23**	**4.73**	-	-
-	-	-	-	**1.37**	**1.51**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**17**	-	**201**	**131**	**104**	**16**	**4.87**	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Anions and Cations								Alkalinity								Inorganics					
Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Cations	Total Anions	Ionic Balance	Sodium Adsorption Ratio	Bicarbonate	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Total Alkalinity as CaCO3	Total Hardness as CaCO3	Hardness	Electrical Conductivity @ 25°C	Total Dissolved Solids	Total Dissolved Solids	Total suspended solids	pH	Turbidity	Phosphate Total (as P)
1.0	0.1	0.2	1.0	0.01	0.01	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	5.0	0.01	0.1	0.01
mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	pH units	NTU	mg/L
5.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-	**0.7**	-	-	**1.51**	**1.55**	-	**2.44**	-	**2.0**	< 1.0	< 1.0	**2.0**	**20**	-	**197**	**128**	**124**	**71**	**4.68**	-	-
-		-	-	**1.54**	**1.43**	-		-	< 1.0	< 1.0	< 1.0	< 1.0	**21**	-	**202**	**131**	-	-	**5.17**	-	-
-	**0.4**	-	-	**1.6**	**1.64**	-	**2.64**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**204**	**133**	-	-	**5.32**	-	-
-	-	-	-	**2.02**	**1.9**	-	-	-	**1.0**	< 1.0	< 1.0	**1.0**	**21**	-	**273**	**177**	**121**	**49**	**4.98**	-	-
-	-	-	-	**2.1**	**2.14**	-	-	-	**4.0**	< 1.0	< 1.0	**4.0**	**26**	-	**249**	**162**	-	-	**5.3**	-	-
-	**0.3**	-	-	**2.22**	**2.2**	-	**3.04**	-	< 1.0	< 1.0	< 1.0	< 1.0	**28**	-	**321**	**209**	**205**	**12**	**4.45**	-	-
-	-	-	-	**2.7**	**2.43**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**32**	-	**321**	**209**	-	-	**4.63**	-	-
-	-	-	-	**2.31**	**2.5**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**28**	-	**332**	**216**	-	-	**4.33**	-	-
-	< 0.1	-	-	**2.56**	**2.46**	-	**3.3**	-	**3.0**	< 1.0	< 1.0	**3.0**	**32**	-	**316**	**205**	**182**	**20**	**4.89**	-	-
-	-	-	-	**3.18**	**2.82**	-	-	-	**2.0**	< 1.0	< 1.0	**2.0**	**47**	-	**358**	**233**	-	-	**5.07**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6.1**	**51**	-
-	**0.4**	-	-	**1.63**	**1.93**	-	-	< 1.0	-	< 1.0	< 1.0	< 1.0	**16**	-	**241**	**157**	-	-	**3.92**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**33**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.4**	-	-	**1.93**	**2.1**	-	**3.31**	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**265**	**172**	-	-	**3.95**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**2.2**	-	-	**1.94**	**2.06**	-	**3.16**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**213**	**138**	**196**	**152**	**4.76**	-	-
-	-	-	-	**2.11**	**2.05**	**1.37**	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**271**	**176**	**212**	**149**	**4.73**	-	-
-	-	-	-	**2.2**	**2.1**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**205**	**133**	**185**	**20**	**4.51**	-	-
-	**0.9**	-	-	**1.98**	**2.23**	-	**3.26**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**235**	**153**	**310**	**29**	**4.87**	-	-
-	-	-	-	**1.73**	**1.81**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**213**	**138**	**145**	**39**	**4.91**	-	-
-	-	-	-	**2.03**	**1.55**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**202**	**131**	**164**	**61**	**5.0**	-	-
-	-	-	-	**1.77**	**1.85**	-	-	-	**8.0**	< 1.0	< 1.0	**8.0**	**16**	-	**232**	**151**	**168**	**44**	**5.53**	-	-
-	-	**1.1**	-	**1.53**	**1.86**	-	**2.79**	-	**5.0**	< 1.0	< 1.0	**5.0**	**16**	-	**222**	**144**	**181**	**44**	**5.07**	-	-
-	-	-	-	**1.94**	**1.74**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**252**	**164**	-	-	**4.95**	-	-
-	**0.5**	-	-	**1.78**	**1.89**	-	**2.89**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**239**	**155**	-	-	**4.97**	-	-
-	-	-	-	**1.9**	**2.0**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**248**	**161**	**140**	**24**	**4.81**	-	-
-	-	-	-	**1.94**	**1.99**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**243**	**158**	-	-	**4.87**	-	-
-	**0.6**	-	-	**1.77**	**1.71**	-	**2.79**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**245**	**159**	**168**	**6.0**	**4.57**	-	-
-	-	-	-	**1.85**	**1.82**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**265**	**172**	-	-	**4.34**	-	-
-	-	-	-	**1.81**	**1.98**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**267**	**174**	-	-	**4.62**	-	-
-	**0.6**	-	-	**2.02**	**2.06**	-	**2.9**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**270**	**176**	**161**	**9.0**	**4.54**	-	-
-	-	-	-	**2.19**	**2.15**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**29**	-	**279**	**181**	-	-	**4.9**	-	-
-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.22**	**170**	-
-	**1.0**	-	-	**0.93**	**0.87**	-	-	< 1.0	-	< 1.0	< 1.0	< 1.0	**8.0**	-	**124**	**81**	-	-	**4.43**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**33**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.6**	-	-	**0.52**	**0.46**	-	**1.88**	-	**2.0**	< 1.0	< 1.0	**2.0**	**4.0**	-	**66**	**43**	-	-	**4.83**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**2.4**	-	-	**2.76**	**2.77**	-	**4.44**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**352**	**229**	**258**	**438**	**4.46**	-	-
-	-	-	-	**2.45**	**2.27**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**319**	**207**	**253**	**138**	**4.77**	-	-
-	-	-	-	**2.88**	**2.68**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**29**	-	**264**	**172**	**223**	**121**	**4.76**	-	-
-	**0.4**	-	-	**2.37**	**2.43**	-	**4.86**	-	**1.0**	< 1.0	< 1.0	**1.0**	**16**	-	**302**	**196**	**354**	**312**	**4.9**	-	-
-	-	-	-	**2.46**	**2.59**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**315**	**205**	**194**	**83**	**4.82**	-	-
-	-	-	-	**2.89**	**4.87**	**26**	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**353**	**229**	**226**	**145**	**4.78**	-	-
-	-	-	-	**2.07**	**1.86**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**260**	**169**	**140**	**98**	**5.0**	-	-
-	-	**1.1**	-	**2.25**	**2.06**	-	**5.43**	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**293**	**190**	**206**	**79**	**4.85**	-	-
-	-	-	-	**2.29**	**2.06**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**303**	**197**	-	-	**5.02**	-	-
-	**1.3**	-	-	**2.46**	**2.42**	-	**5.06**	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**316**	**205**	-	-	**5.12**	-	-
-	-	-	-	**3.1**	**3.26**	**2.57**	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**391**	**254**	**216**	**34**	**4.79**	-	-
-	-	-	-	**2.2**	**2.22**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**268**	**174**	-	-	**5.01**	-	-
-	**0.6**	-	-	**2.58**	**2.35**	-	**4.1**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**341**	**222**	**212**	**14**	**4.75**	-	-
-	-	-	-	**1.85**	**1.87**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**256**	**166**	-	-	**4.82**	-	-
-	-	-	-	**2.32**	**2.44**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**317**	**206**	-	-	**4.76**	-	-
-	< 0.1	-	-	**2.67**	**2.58**	-	**4.27**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**335**	**218**	**184**	**63**	**4.68**	-	-
-	-	-	-	**2.67**	**2.51**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**329**	**214**	-	-	**4.57**	-	-
-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.0**	-	-	**2.8**	**3.2**	**6.58**	-	**5.0**	-	< 1.0	< 1.0	**5.0**	**20**	-	**329**	**214**	-	-	**4.67**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.7**	-	-	**0.78**	**0.93**	-	**3.0**	-	< 1.0	< 1.0	< 1.0	< 1.0	**4.0**	-	**135**	**88**	-	-	**4.93**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	**2.21**	**2.06**	-	-	-	**7.0**	< 1.0	< 1.0	**7.0**	**33**	-	**276**	**179**	**310**	**1,060**	**5.78**	-	-
-	-	-	-	**2.06**	**2.06**	-	-	-	**1.0**	< 1.0	< 1.0	**1.0**	**32**	-	**237**	**154**	-	-	**5.15**	-	-
-	**0.5**	-	-	**1.46**	**1.51**	-	**2.16**	-	**2.0**	< 1.0	< 1.0	**2.0**	**21**	-	**195**	**127**	**142**	**2,220**	**4.93**	-	-
-	-	-	-	**1.32**	**1.23**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**15**	-	**175**	**114**	-	-	**4.83**	-	-
-	-	-	-	**1.37**	**1.52**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**15**	-	**196**	**127**	-	-	**4.96**	-	-
-	**5.1**	-	-	**1.41**	**1.42**	-	**2.82**	-	**2.0**	< 1.0	< 1.0	**2.0**	**15**	-	**181**	**118**	**135**	**2,030**	**4.72**	-	-
-	-	-	-	**1.38**	**1.32**	-	-	-	**4.0**	< 1.0	< 1.0	**4.0**	**15**	-	**164**	**107**	-	-	**5.23**	-	-
-	**0.8**	-	-	**1.41**	**1.42**	-	**2.82**	-	**4.0**	< 1.0	< 1.0	**4.0**	**15**	-	**180**	**117**	-	-	**5.03**	-	-
-	**1.0**	-	-	**1.2**	**1.36**	-	**2.92**	-	**6.0**	< 1.0	< 1.0	**6.0**	**11**	-	**172**	**112**	-	-	**4.99**	-	-
-	**0.9**	-	-	**1.23**	**1.46**	-	**3.39**	-	**8.0**	< 1.0	< 1.0	**8.0**	**8.0**	-	**156**	**101**	-	-	**5.21**	**105**	-
-	**1.1**	-	-	**1.42**	**1.36**	-	**2.51**	-	**5.0**	< 1.0	< 1.0	**5.0**	-	**17**	**163**	**106**	-	-	**5.51**	-	-
-	**1.0**	-	-	**1.37**	**1.26**	-	-	< 1.0	-	< 1.0	< 1.0	< 1.0	**21**	-	**164**	**107**	-	-	**4.85**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**289**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 2
Groundwater Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Wiliamtown, NSW

Anions and Cations								Alkalinity								Inorganics						
Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Cations	Total Anions	Ionic Balance	Sodium Adsorption Ratio	Bicarbonate	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Total Alkalinity as CaCO3	Total Hardness as CaCO3	Hardness	Electrical Conductivity @ 25°C	Total Dissolved Solids	Total Dissolved Solids	Total suspended solids	pH	Turbidity	Phosphate Total (as P)
1.0	0.1	0.2	1.0	0.01	0.01	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	5.0	0.01	0.1	0.01
mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	pH units	NTU	mg/L
5.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**2.0**	-	-	**0.97**	**1.01**	-	**2.54**	-	**3.0**	< 1.0	< 1.0	**3.0**	**8.0**	-	**141**	**92**	-	-	**4.65**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.8**	-	-	**2.91**	**2.76**	-	**3.21**	-	< 1.0	< 1.0	< 1.0	< 1.0	**41**	-	**346**	**225**	**278**	**144**	**4.67**	-	-
-	-	-	-	**1.3**	**1.51**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**186**	**121**	**144**	**152**	**4.82**	-	-
-	-	-	-	**1.8**	**1.65**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**150**	**98**	**135**	**112**	**4.99**	-	-
-	**0.4**	-	-	**1.59**	**1.59**	-	**3.0**	-	< 1.0	< 1.0	< 1.0	< 1.0	**16**	-	**188**	**122**	**216**	**156**	**4.91**	-	-
-	-	-	-	**1.38**	**1.5**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**175**	**114**	**107**	**136**	**4.84**	-	-
-	-	-	-	**2.79**	**2.22**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**318**	**207**	**192**	**223**	**4.68**	-	-
-	-	-	-	**1.46**	**1.41**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**197**	**128**	**135**	**303**	**4.88**	-	-
-	**0.7**	-	-	**1.42**	**1.4**	-	**3.18**	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**195**	**127**	**140**	**533**	**4.66**	-	-
-	-	-	-	**1.46**	**1.3**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**194**	**126**	-	-	**4.92**	-	-
-	**5.8**	-	-	**1.46**	**1.5**	-	**3.3**	-	< 1.0	< 1.0	< 1.0	< 1.0	**12**	-	**193**	**125**	-	-	**5.12**	-	-
-	-	-	-	**1.67**	**1.48**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**223**	**145**	**111**	**136**	**4.61**	-	-
-	-	-	-	**1.76**	**1.8**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**218**	**142**	-	-	**4.8**	-	-
-	**0.5**	-	-	**1.58**	**1.51**	-	**2.51**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**217**	**141**	**146**	**100**	**4.81**	-	-
-	-	-	-	**1.84**	**1.84**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**249**	**162**	-	-	**4.74**	-	-
-	-	-	-	**1.88**	**2.03**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**264**	**172**	-	-	**4.41**	-	-
-	< 0.1	-	-	**1.83**	**1.8**	-	**2.98**	-	< 1.0	< 1.0	< 1.0	< 1.0	**20**	-	**235**	**153**	**149**	**386**	**4.73**	-	-
-	-	-	-	**1.76**	**1.71**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**223**	**145**	-	-	**4.66**	-	-
-	**1.4**	-	-	**3.1**	**3.29**	**3.0**	**4.6**	-	< 1.0	< 1.0	< 1.0	< 1.0	**29**	-	**403**	**262**	-	-	**4.38**	-	-
-	**0.8**	-	-	**3.01**	**3.1**	**1.54**	**4.18**	-	< 1.0	< 1.0	< 1.0	< 1.0	**25**	-	**382**	**248**	-	-	**4.47**	-	-
-	**0.8**	-	-	**2.88**	**3.14**	**4.42**	**3.79**	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**373**	**242**	-	-	**4.27**	**18**	-
-	**0.9**	-	-	**2.27**	**2.05**	-	**2.75**	-	< 1.0	< 1.0	< 1.0	< 1.0	-	**33**	**268**	**174**	-	-	**4.54**	-	-
-	**0.6**	-	-	**2.28**	**2.4**	-	-	**3.0**	-	< 1.0	< 1.0	**3.0**	**25**	-	**260**	**169**	-	-	**4.57**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**24**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.0**	-	-	**0.9**	**0.82**	-	**2.4**	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**118**	**77**	-	-	**4.54**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	**1.64**	**1.57**	-	-	-	**2.0**	< 1.0	< 1.0	**2.0**	**29**	-	**206**	**134**	**118**	**446**	**5.37**	-	-
-	**0.2**	-	-	**1.31**	**1.52**	-	**2.27**	-	**7.0**	< 1.0	< 1.0	**7.0**	**16**	-	**190**	**124**	**134**	**438**	**5.92**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.75**	**398**	-
-	**0.4**	-	-	**1.25**	**1.2**	-	-	**2.0**	-	< 1.0	< 1.0	**2.0**	**16**	-	**148**	**96**	-	-	**5.03**	-	< 0.01
-	**3.2**	-	-	**0.86**	**0.98**	-	**2.26**	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**129**	**84**	-	-	**4.91**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
Sample Name	Sample Date																
BH1	15-Mar-19	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.004**	< 0.001	< 0.001	**13**	< 0.001	**0.014**	< 0.0001	< 0.001	< 0.01	< 0.01	**1.27**
	23-Apr-19	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.004**	< 0.001	**0.002**	**10**	**0.001**	**0.015**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.363**
	16-May-19	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**8.33**	< 0.001	**0.009**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.132**
	14-Jun-19	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**6.31**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.074**
	16-Jul-19	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.002**	**7.35**	< 0.001	**0.01**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.116**
	15-Aug-19	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.002**	**7.96**	< 0.001	**0.008**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.023**
	16-Sep-19	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.004**	< 0.001	**0.001**	**8.84**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.034**
	15-Oct-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.006**	-	< 0.001	**0.007**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.037**
	18-Nov-19	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	**0.004**	< 0.001	< 0.001	**11**	< 0.001	**0.008**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.012**
	16-Sep-20	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.005**	**5.48**	< 0.001	**0.01**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.016**
	16-Oct-20	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**5.55**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.017**
	16-Nov-20	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.001**	**7.05**	< 0.001	**0.012**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.045**
	16-Dec-20	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.008**	**3.21**	< 0.001	**0.011**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.077**
	14-Jan-21	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**5.21**	< 0.001	**0.013**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.032**
	16-Feb-21	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**3.24**	< 0.001	**0.015**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.652**
	17-Mar-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**4.0**	< 0.001	**0.027**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.596**
	24-Feb-22	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**7.7**	< 0.001	**0.018**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.106**
BH1A	15-Feb-23	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	**0.003**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.013**
	14-Aug-23	< 0.001	**0.003**	-	-	-	**0.003**	-	**0.004**	**0.45**	-	**0.011**	-	< 0.001	-	-	**0.015**
	19-Dec-23	< 0.001	**0.005**	-	-	-	< 0.001	-	**0.003**	< 0.05	-	**0.006**	-	**0.002**	-	-	**0.021**
BH2	22-Feb-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**0.14**	< 0.001	**0.021**	< 0.0001	**0.015**	< 0.01	< 0.01	**0.006**
	15-Mar-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.003**	< 0.05	< 0.001	**0.02**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	23-Apr-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.004**	**0.19**	< 0.001	**0.018**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.008**
	16-May-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**0.06**	< 0.001	**0.014**	< 0.0001	**0.001**	< 0.01	< 0.01	< 0.005
	14-Jun-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.004**	**0.08**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Jul-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.008**	**0.05**	< 0.001	**0.013**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.006**
	15-Aug-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.012**	**0.08**	< 0.001	**0.011**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Sep-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.008**	**0.26**	< 0.001	**0.014**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.007**
	15-Oct-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.006**	-	< 0.001	**0.011**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.007**
	18-Nov-19	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.013**	**0.08**	< 0.001	**0.011**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.028**
	16-Sep-20	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.026**	**0.07**	< 0.001	**0.016**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	16-Oct-20	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.013**	< 0.05	< 0.001	**0.015**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Nov-20	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.02**	**0.36**	< 0.001	**0.015**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.018**
	16-Dec-20	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.011**	< 0.05	< 0.001	**0.014**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	14-Jan-21	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.006**	< 0.05	< 0.001	**0.016**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Feb-21	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.021**	< 0.05	< 0.001	**0.009**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.017**
	17-Mar-21	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.003**	< 0.05	< 0.001	**0.016**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	19-Aug-21	< 0.001	**0.003**	-	-	-	< 0.001	-	**0.007**	< 0.05	-	**0.015**	-	< 0.001	-	-	< 0.005
	22-Sep-21	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.013**	-	-	-	-	-
	13-Oct-21	< 0.001	-	-	-	-	-	-	-	**0.08**	-	**0.012**	-	-	-	-	-
	16-Nov-21	< 0.001	**0.003**	-	-	-	< 0.001	-	**0.006**	< 0.05	-	-	-	< 0.001	-	-	< 0.005
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.05**	-	**0.008**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**0.49**	-	**0.012**	-	-	-	-	-
	24-Feb-22	**0.002**	**0.003**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.01**	-	-	-	-	-
	12-Apr-22	**0.001**	-	-	-	-	-	-	-	**0.25**	-	**0.009**	-	-	-	-	-
	27-May-22	< 0.001	**0.002**	-	-	-	< 0.001	-	**0.004**	< 0.05	-	-	-	< 0.001	-	-	**0.005**
	17-Jun-22	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.007**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.008**	-	-	-	-	-
	12-Aug-22	< 0.001	**0.005**	-	-	-	< 0.001	-	**0.012**	< 0.05	-	-	-	**0.001**	-	-	**0.169**
	16-Sep-22	< 0.001	-	-	-	-	-	-	-	**0.15**	-	**0.009**	-	-	-	-	**0.125**
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.005**	-	-	-	-	**0.086**
	18-Nov-22	< 0.001	**0.004**	-	-	-	< 0.001	**0.001**	**0.002**	**0.14**	-	**0.005**	-	< 0.001	-	-	**0.086**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**0.09**	-	**0.004**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**0.12**	-	**0.005**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	< 0.05	< 0.001	**0.002**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.048**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.003**	-	-	-	-	-
	18-Apr-23	< 0.001	**0.003**	< 0.001	**0.05**	< 0.0001	< 0.001	< 0.001	**0.003**	**0.09**	< 0.001	**0.004**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.039**
	16-May-23	< 0.001	**0.002**	-	-	-	< 0.001	-	**0.004**	**0.08**	-	-	-	**0.001**	-	-	**0.05**
	14-Jun-23	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.002**	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**0.12**	-	**0.007**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.004**	-	-	-	< 0.001	-	**0.008**	**0.18**	-	**0.009**	-	< 0.001	-	-	**0.164**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**0.06**	-	**0.005**	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**0.11**	-	**0.007**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.002**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.002**	-	-	-	< 0.001	-	**0.002**	**0.21**	-	**0.003**	-	**0.001**	-	-	**0.015**
	18-Jan-24	< 0.001	< 0.001	-	-	-	< 0.001	-	< 0.001	< 0.05	-	< 0.001	-	**0.001**	-	-	**0.009**
BH3	21-Feb-19	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.06**	< 0.001	**0.005**	< 0.0001	**0.053**	< 0.01	< 0.01	< 0.005
	21-Feb-19	< 0.001	**0.014**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**0.16**	< 0.001	**0.039**	< 0.0001	**0.018**	< 0.01	< 0.01	**0.014**
	15-Mar-19	< 0.001	**0.014**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	< 0.05	< 0.001	**0.014**	< 0.0001	**0.022**	< 0.01	< 0.01	**0.043**
	23-Apr-19	< 0.001	**0.013**	< 0.001	**0.05**	< 0.0001	< 0.001	< 0.001	**0.002**	**0.99**	< 0.001	**0.045**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.008**
	16-May-19	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.27**	< 0.001	**0.022**	< 0.0001	**0.022**	< 0.01	< 0.01	**0.011**
	14-Jun-19	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.038**	< 0.05	< 0.001	**0.014**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.005**
	16-Jul-19	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.046**	< 0.05	< 0.001	**0.019**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.007**
	15-Aug-19	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.026**	< 0.05	< 0.001	**0.018**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.007**
	16-Sep-19	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.051**	**0.19**	< 0.001	**0.026**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.005**
	15-Oct-19	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.011**	-	< 0.001	**0.136**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.014**
	18-Nov-19	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.005**	< 0.05	< 0.001	**0.013**	< 0.0001	**0.001**	< 0.01	< 0.01	< 0.005
	16-Sep-20	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.078**	**0.06**	< 0.001	**0.012**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	16-Oct-20	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.003**	**0.25**	< 0.001	**0.021**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.018**
	16-Nov-20	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.005**	**0.18**	< 0.001	**0.008**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.005**
	16-Dec-20	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**0.46**	< 0.001	**0.027**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	14-Jan-21	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.012**	**0.27**	< 0.001	**0.012**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.006**
	16-Feb-21	< 0.001	**0.02**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**0.94**	< 0.001	**0.023**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.008**
	17-Mar-21	< 0.001	**0.027**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.006**	**1.39**	< 0.001	**0.029**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.019**
	19-Aug-21	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	**0.198**	**0.14**	< 0.001	**0.022**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.013**
	22-Sep-21	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.172**	**0.1**	< 0.001	**0.02**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	13-Oct-21	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.026**	**1.65**	< 0.001	**0.019**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Nov-21	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.012**	**0.38**	< 0.001	**0.021**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.006**
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.69**	-	**0.016**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**0.52**	-	**0.018**	-	-	-	-	-
BH4	24-Feb-22	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.62**	< 0.001	**0.017**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.008**
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	**0.09**	-	**0.018**	-	-	-	-	-
	12-Apr-22	< 0.001	-	-	-	-	-	-	-	**0.27**	-	**0.017**	-	-	-	-	-
	27-May-22	< 0.001	**0.011**	-	-	-	< 0.001	-	**0.097**	< 0.05	-	-	-	< 0.001	-	-	< 0.005
	17-Jun-22	< 0.001	-	-	-	-	-	-	**0.082**	< 0.05	-	**0.014**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	**0.09**	-	**0.014**	-	-	-	-	-
	12-Aug-22	< 0.001	**0.013**	-	-	-	< 0.001	-	**0.05**	< 0.05	-	-	-	< 0.001	-	-	**0.013**
	16-Sep-22	< 0.001	-	-	-	-	-	-	-	**0.11**	-	**0.014**	-	-	-	-	-
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	**0.19**	-	**0.016**	-	-	-	-	-
	18-Nov-22	< 0.001	**0.012**	-	-	-	< 0.001	< 0.001	**0.006**	**0.13**	-	**0.016**	-	< 0.001	-	-	**0.011**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**0.14**	-	**0.015**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**0.12**	-	**0.022**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.012**	**0.06**	< 0.001	**0.012**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.015**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.022**	-	-	-	-	-
	18-Apr-23	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.059**	**0.05**	< 0.001	**0.012**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.008**
	16-May-23	< 0.001	**0.008**	-	-	-	< 0.001	-	**0.135**	**0.09**	-	-	-	< 0.001	-	-	**0.017**
	14-Jun-23	< 0.001	-	-	-	-	-	-	**0.067**	< 0.05	-	**0.009**	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**0.06**	-	**0.013**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.009**	-	-	-	< 0.001	-	**0.119**	**0.09**	-	**0.015**	-	< 0.001	-	-	**0.028**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**0.13**	-	**0.013**	-	-	-	-	-
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**0.08**	-	**0.013**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	**0.06**	-	**0.013**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.008**	-	-	-	< 0.001	-	**0.003**	**0.12**	-	**0.007**	-	< 0.001	-	-	< 0.005
	18-Jan-24	< 0.001	**0.011**	-	-	-	< 0.001	-	**0.014**	< 0.05	-	**0.01**	-	< 0.001	-	-	**0.012**
BH5	22-Feb-19	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.4**	< 0.001	**0.005**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.008**
	24-Feb-22	< 0.001	**0.024**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.64**	< 0.001	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	15-Feb-23	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.47**	< 0.001	**0.002**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.018**
	22-Feb-19	< 0.001	**0.03**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.03**	< 0.001	**0.014**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.019**
	14-Mar-19	< 0.001	**0.027**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.9**	< 0.001	**0.01**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.012**
	23-Apr-19	< 0.001	**0.03**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**0.96**	< 0.001	**0.01**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.022**
	16-May-19	< 0.001	**0.029**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**2.57**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	14-Jun-19	< 0.001	**0.027**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**2.86**	< 0.001	**0.008**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.008**
	16-Jul-19	< 0.001	**0.026**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**2.41**	< 0.001	**0.008**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.005**
	15-Aug-19	< 0.001	**0.026**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**2.19**	< 0.001	**0.008**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.007**
	16-Sep-19	< 0.001	**0.034**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.008**	**2.08**	< 0.001	**0.012**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.035**
	15-Oct-19	< 0.001	**0.026**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	-	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
BH6	18-Nov-19	< 0.001	**0.03**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.58**	< 0.001	**0.009**	< 0.0001	**0.008**	< 0.01	< 0.01	**0.073**
	16-Sep-20	< 0.001	**0.047**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.002**	**1.78**	< 0.001	**0.01**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	16-Oct-20	< 0.001	**0.04**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.84**	< 0.001	**0.011**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.007**
	16-Nov-20	< 0.001	**0.061**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.72**	< 0.001	**0.014**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.01**
	16-Dec-20	< 0.001	**0.07**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.64**	< 0.001	**0.014**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.007**
	14-Jan-21	< 0.001	**0.054**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.011**	**1.06**	< 0.001	**0.014**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.025**
	16-Feb-21	< 0.001	**0.048**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.013**	**1.18**	< 0.001	**0.012**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.012**
	17-Mar-21	< 0.001	**0.068**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**1.39**	< 0.001	**0.012**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.006**
	19-Aug-21	**0.005**	**0.037**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.55**	< 0.001	**0.004**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	22-Sep-21	**0.002**	**0.02**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.55**	< 0.001	**0.005**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	13-Oct-21	**0.002**	**0.014**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.65**	< 0.001	**0.004**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Nov-21	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.83**	< 0.001	**0.004**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.66**	-	**0.002**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**0.7**	-	**0.003**	-	-	-	-	-
	24-Feb-22	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.55**	< 0.001	**0.001**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.031**
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	**0.81**	-	**0.002**	-	-	-	-	-
	12-Apr-22	< 0.001	-	-	-	-	-	-	-	**3.24**	-	**0.016**	-	-	-	-	-
	27-May-22	< 0.001	**0.007**	-	-	-	< 0.001	-	< 0.001	**3.45**	-	-	-	< 0.001	-	-	< 0.005
	17-Jun-22	< 0.001	-	-	-	-	-	-	-	**2.7**	-	**0.005**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	**2.38**	-	**0.001**	-	-	-	-	-
	12-Aug-22	< 0.001	**0.008**	-	-	-	< 0.001	-	< 0.001	**2.38**	-	-	-	< 0.001	-	-	**0.008**
	16-Sep-22	**0.001**	-	-	-	-	-	-	-	**3.45**	-	**0.002**	-	-	-	-	-
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	**3.44**	-	**0.002**	-	-	-	-	-
	18-Nov-22	< 0.001	**0.009**	-	-	-	< 0.001	< 0.001	< 0.001	**4.39**	-	**0.006**	-	**0.002**	-	-	**0.005**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**3.23**	-	**0.012**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**3.61**	-	**0.014**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.002**	**3.82**	< 0.001	**0.009**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.032**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	**4.97**	-	**0.006**	-	-	-	-	-
	18-Apr-23	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**4.13**	< 0.001	**0.003**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-May-23	< 0.001	**0.007**	-	-	-	< 0.001	-	< 0.001	**4.56**	-	-	-	< 0.001	-	-	**0.024**
	14-Jun-23	< 0.001	-	-	-	-	-	-	-	**5.53**	-	< 0.001	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**6.78**	-	**0.005**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.008**	-	-	-	< 0.001	-	**0.001**	**6.34**	-	**0.006**	-	< 0.001	-	-	**0.062**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**4.68**	-	**0.004**	-	-	-	-	-
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**4.27**	-	**0.006**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	**3.21**	-	**0.006**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.011**	-	-	-	< 0.001	-	< 0.001	**1.7**	-	**0.004**	-	< 0.001	-	-	**0.04**
	18-Jan-24	< 0.001	**0.014**	-	-	-	< 0.001	-	< 0.001	**1.48**	-	**0.002**	-	< 0.001	-	-	**0.02**
BH7	22-Feb-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	< 0.001	**1.8**	< 0.001	**0.026**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.019**
	14-Mar-19	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.003**	< 0.001	**1.8**	< 0.001	**0.02**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.009**
	23-Apr-19	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	< 0.001	**2.0**	< 0.001	**0.026**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.01**
	16-May-19	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	< 0.001	**2.32**	< 0.001	**0.035**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.013**
	14-Jun-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**2.06**	< 0.001	**0.03**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.006**
	16-Jul-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.66**	< 0.001	**0.025**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	15-Aug-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.54**	< 0.001	**0.023**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	16-Sep-19	< 0.001	**0.016**	< 0.001	**0.06**	< 0.0001	**0.002**	**0.002**	**0.007**	**1.42**	**0.001**	**0.024**	< 0.0001	**0.02**	< 0.01	< 0.01	**0.085**
	15-Oct-19	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	**0.003**	-	< 0.001	**0.018**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.011**
	18-Nov-19	< 0.001	**0.016**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.1**	< 0.001	**0.015**	< 0.0001	**0.013**	< 0.01	< 0.01	**0.053**
	16-Sep-20	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.67**	< 0.001	**0.021**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.006**
	16-Oct-20	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.49**	< 0.001	**0.015**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.015**
	16-Nov-20	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	< 0.001	**1.72**	< 0.001	**0.023**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.006**
	16-Dec-20	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**1.79**	< 0.001	**0.024**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	14-Jan-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	**0.004**	**1.65**	< 0.001	**0.025**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.017**
	16-Feb-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	**0.002**	**1.74**	< 0.001	**0.025**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.013**
	17-Mar-21	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	< 0.001	**2.28**	< 0.001	**0.028**	< 0.0001	**0.005**	< 0.01	< 0.01	< 0.005
	19-Aug-21	**0.003**	**0.004**	< 0.001	< 0.05	< 0.0001	**0.003**	**0.001**	< 0.001	**0.79**	< 0.001	**0.006**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.006**
	22-Sep-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.62**	< 0.001	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	13-Oct-21	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.69**	**0.002**	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	16-Nov-21	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.39**	< 0.001	**0.003**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.007**
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.47**	-	**0.002**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**0.45**	-	**0.002**	-	-	-	-	-
	24-Feb-22	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.66**	< 0.001	**0.003**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	**0.45**	-	**0.003**	-	-	-	-	-
	12-Apr-22	< 0.001	-	-	-	-	-	-	-	**0.43**	-	**0.004**	-	-	-	-	-

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
BH8	27-May-22	< 0.001	**0.003**	-	-	-	**0.003**	-	< 0.001	**0.52**	-	-	-	**0.002**	-	-	**0.005**
	17-Jun-22	< 0.001	-	-	-	-	-	-	-	**0.56**	-	**0.004**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	**0.51**	-	**0.004**	-	-	-	-	-
	12-Aug-22	< 0.001	**0.003**	-	-	-	**0.002**	-	**0.003**	**0.56**	-	-	-	**0.002**	-	-	< 0.005
	16-Sep-22	**0.001**	-	-	-	-	-	-	-	**0.54**	-	**0.004**	-	-	-	-	-
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	**0.5**	-	**0.003**	-	-	-	-	-
	18-Nov-22	**0.001**	**0.002**	-	-	-	**0.002**	< 0.001	< 0.001	**0.43**	-	**0.001**	-	**0.001**	-	-	**0.009**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**0.32**	-	**0.002**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**0.29**	-	**0.002**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.31**	< 0.001	**0.003**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.011**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	**0.34**	-	**0.003**	-	-	-	-	-
	18-Apr-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.002**	**0.46**	< 0.001	**0.003**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.011**
	16-May-23	< 0.001	**0.002**	-	-	-	**0.002**	-	**0.001**	**0.47**	-	-	-	**0.002**	-	-	**0.025**
	14-Jun-23	< 0.001	-	-	-	-	-	-	-	**0.44**	-	**0.003**	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**0.53**	-	**0.004**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.002**	-	-	-	**0.002**	-	**0.003**	**0.41**	-	**0.003**	-	**0.002**	-	-	**0.024**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**0.55**	-	**0.004**	-	-	-	-	-
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**0.53**	-	**0.004**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	**0.36**	-	**0.004**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.004**	-	-	-	**0.003**	-	< 0.001	**0.4**	-	**0.004**	-	**0.002**	-	-	**0.054**
	18-Jan-24	< 0.001	**0.002**	-	-	-	**0.002**	-	< 0.001	**0.34**	-	**0.001**	-	< 0.001	-	-	**0.005**
	21-Feb-19	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**4.1**	< 0.001	**0.012**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.005**
	14-Mar-19	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**3.25**	< 0.001	**0.008**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	23-Apr-19	**0.001**	**0.008**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**3.2**	< 0.001	**0.009**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.008**
	16-May-19	**0.003**	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**3.0**	< 0.001	**0.01**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	14-Jun-19	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**2.5**	< 0.001	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.006**
	16-Jul-19	**0.001**	**0.012**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**2.6**	< 0.001	**0.004**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	15-Aug-19	**0.001**	**0.008**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.72**	< 0.001	**0.004**	< 0.0001	**0.001**	< 0.01	< 0.01	< 0.005
	16-Sep-19	**0.001**	**0.01**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**2.06**	< 0.001	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	15-Oct-19	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.002**	-	< 0.001	**0.009**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.011**
	18-Nov-19	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.002**	**2.49**	< 0.001	**0.01**	< 0.0001	**0.013**	< 0.01	< 0.01	**0.053**
	16-Sep-20	< 0.001	**0.014**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.035**	**3.35**	**0.001**	**0.009**	< 0.0001	**0.009**	< 0.01	< 0.01	**0.039**
	16-Oct-20	**0.001**	**0.009**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**3.03**	< 0.001	**0.007**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.012**
	16-Nov-20	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**3.48**	< 0.001	**0.008**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	16-Dec-20	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.001**	**2.98**	< 0.001	**0.01**	< 0.0001	**0.001**	< 0.01	< 0.01	< 0.005
	14-Jan-21	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.002**	**2.71**	< 0.001	**0.01**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.009**
	16-Feb-21	**0.001**	**0.009**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.004**	**2.99**	< 0.001	**0.01**	< 0.0001	**0.006**	< 0.01	< 0.01	**0.013**
	17-Mar-21	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**3.86**	< 0.001	**0.01**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	19-Aug-21	**0.003**	**0.008**	-	-	-	**0.002**	-	< 0.001	**3.72**	-	-	-	**0.002**	-	-	< 0.005
	16-Nov-21	**0.001**	**0.01**	-	-	-	**0.002**	-	< 0.001	**4.23**	-	-	-	**0.002**	-	-	< 0.005
	16-Dec-21	-	-	-	-	-	-	-	-	**3.78**	-	-	-	-	-	-	-
	24-Feb-22	**0.001**	**0.009**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**2.98**	< 0.001	**0.007**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.012**
	27-May-22	**0.001**	**0.004**	-	-	-	**0.002**	-	< 0.001	**1.1**	-	-	-	**0.001**	-	-	< 0.005
	12-Aug-22	**0.001**	**0.006**	-	-	-	**0.002**	-	< 0.001	**1.54**	-	-	-	**0.001**	-	-	**0.007**
	18-Nov-22	**0.002**	**0.004**	-	-	-	**0.002**	< 0.001	< 0.001	**1.16**	-	**0.001**	-	< 0.001	-	-	**0.008**
	15-Feb-23	**0.001**	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**0.96**	< 0.001	**0.002**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.034**
	16-May-23	**0.002**	**0.004**	-	-	-	**0.003**	-	< 0.001	**1.37**	-	-	-	**0.001**	-	-	**0.015**
	14-Aug-23	**0.002**	**0.005**	-	-	-	**0.003**	-	< 0.001	**1.78**	-	**0.006**	-	**0.001**	-	-	**0.024**
	19-Dec-23	**0.002**	**0.011**	-	-	-	**0.002**	-	< 0.001	**2.03**	-	**0.006**	-	**0.002**	-	-	**0.029**
	16-Sep-20	< 0.001	**0.028**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.004**	**0.14**	< 0.001	**0.076**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.02**
	16-Oct-20	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	**0.001**	**0.06**	< 0.001	**0.042**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.016**
	16-Nov-20	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	**0.001**	**0.11**	< 0.001	**0.03**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.011**
	16-Dec-20	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**0.31**	< 0.001	**0.024**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.006**
	14-Jan-21	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.017**	**0.14**	< 0.001	**0.025**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.011**
	16-Feb-21	< 0.001	**0.001**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	< 0.001	**0.35**	< 0.001	**0.024**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.006**
	17-Mar-21	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.27**	< 0.001	**0.024**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.01**
	19-Aug-21	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.26**	< 0.001	**0.03**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.006**
	22-Sep-21	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.32**	< 0.001	**0.027**	< 0.0001	**0.003**	< 0.01	< 0.01	< 0.005
	13-Oct-21	< 0.001	**0.003**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.51**	< 0.001	**0.033**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.021**
	16-Nov-21	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	< 0.001	**0.33**	< 0.001	**0.025**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.031**
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.48**	-	**0.025**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**0.44**	-	**0.03**	-	-	-	-	-
	24-Feb-22	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	< 0.001	**0.5**	< 0.001	**0.042**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.006**
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	**0.32**	-	**0.036**	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
BH9A	12-Apr-22	< 0.001	-	-	-	-	-	-	-	**0.48**	-	**0.038**	-	-	-	-	-
	27-May-22	< 0.001	**0.007**	-	-	-	< 0.001	-	< 0.001	**0.35**	-	-	-	**0.003**	-	-	< 0.005
	17-Jun-22	< 0.001	-	-	-	-	-	-	-	**0.42**	-	**0.032**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	**0.16**	-	**0.019**	-	-	-	-	-
	12-Aug-22	< 0.001	**0.009**	-	-	-	< 0.001	-	**0.004**	**0.53**	-	-	-	**0.004**	-	-	**0.008**
	16-Sep-22	< 0.001	-	-	-	-	-	-	-	**0.54**	-	**0.031**	-	-	-	-	-
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	**0.27**	-	**0.022**	-	-	-	-	-
	18-Nov-22	< 0.001	**0.007**	-	-	-	< 0.001	< 0.001	< 0.001	**0.56**	-	**0.034**	-	**0.002**	-	-	**0.012**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**0.18**	-	**0.023**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**0.49**	-	**0.035**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**0.61**	< 0.001	**0.041**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.015**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	**0.15**	-	**0.02**	-	-	-	-	-
	18-Apr-23	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.004**	**0.5**	< 0.001	**0.033**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.038**
	16-May-23	< 0.001	**0.004**	-	-	-	< 0.001	-	< 0.001	**0.26**	-	-	-	**0.002**	-	-	**0.029**
	14-Jun-23	< 0.001	-	-	-	-	-	-	-	**0.16**	-	**0.013**	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**0.67**	-	**0.045**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.006**	-	-	-	< 0.001	-	**0.003**	**0.63**	-	**0.041**	-	**0.003**	-	-	**0.038**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**0.21**	-	**0.023**	-	-	-	-	-
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**0.63**	-	**0.051**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	**0.8**	-	**0.061**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.007**	-	-	-	< 0.001	-	**0.002**	**0.4**	-	**0.032**	-	**0.003**	-	-	**0.05**
	18-Jan-24	< 0.001	**0.006**	-	-	-	< 0.001	-	**0.003**	**0.38**	-	**0.029**	-	**0.003**	-	-	**0.012**
BH11	21-Feb-19	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.001**	< 0.001	**0.26**	< 0.001	**0.003**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.031**
	15-Mar-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.49**	< 0.001	**0.007**	< 0.0001	**0.037**	< 0.01	< 0.01	**0.016**
	23-Apr-19	< 0.001	**0.006**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.98**	< 0.001	**0.007**	< 0.0001	**0.07**	< 0.01	< 0.01	**0.04**
	16-May-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.97**	< 0.001	**0.006**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.024**
	14-Jun-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**0.98**	< 0.001	**0.005**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.005**
	16-Jul-19	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.47**	< 0.001	**0.003**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.007**
	15-Aug-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.001**	**0.87**	< 0.001	**0.007**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.005**
	16-Sep-19	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**0.79**	< 0.001	**0.008**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.012**
	15-Oct-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	**0.004**	-	< 0.001	**0.006**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.016**
	18-Nov-19	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.95**	< 0.001	**0.008**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	16-Sep-20	< 0.001	**0.014**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.005**	**0.9**	< 0.001	**0.008**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.009**
	16-Oct-20	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.06**	< 0.001	**0.009**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.01**
	16-Nov-20	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**0.84**	< 0.001	**0.011**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.016**
	16-Dec-20	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**1.0**	< 0.001	**0.009**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.008**
	14-Jan-21	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.025**	**0.56**	< 0.001	**0.006**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.018**
	16-Feb-21	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.018**	**0.59**	< 0.001	**0.008**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.03**
	17-Mar-21	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**0.2**	< 0.001	**0.002**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.014**
	19-Aug-21	**0.001**	**0.009**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.62**	< 0.001	**0.003**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.047**
	22-Sep-21	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.72**	< 0.001	**0.003**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.042**
	13-Oct-21	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.69**	< 0.001	**0.005**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.037**
	16-Nov-21	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**0.92**	< 0.001	**0.002**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.036**
	15-Dec-21	< 0.001	-	-	-	-	-	-	-	**0.92**	-	**0.003**	-	-	-	-	-
	18-Jan-22	< 0.001	-	-	-	-	-	-	-	**1.06**	-	**0.003**	-	-	-	-	-
	24-Feb-22	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	< 0.001	**1.25**	< 0.001	**0.003**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.036**
	06-Mar-22	< 0.001	**0.004**	-	-	-	**0.002**	-	< 0.001	**1.27**	-	-	-	**0.002**	-	-	**0.028**
	17-Mar-22	< 0.001	-	-	-	-	-	-	-	**1.06**	-	**0.004**	-	-	-	-	-
	12-Apr-22	< 0.001	-	-	-	-	-	-	-	**1.06**	-	**0.004**	-	-	-	-	-
	17-Jun-22	< 0.001	-	-	-	-	-	-	-	**1.24**	-	**0.004**	-	-	-	-	-
	27-Jul-22	< 0.001	-	-	-	-	-	-	-	**1.03**	-	**0.004**	-	-	-	-	-
	16-Sep-22	< 0.001	-	-	-	-	-	-	-	**1.14**	-	**0.004**	-	-	-	-	-
	24-Oct-22	< 0.001	-	-	-	-	-	-	-	**1.14**	-	**0.003**	-	-	-	-	-
	18-Nov-22	< 0.001	**0.002**	-	-	-	**0.003**	< 0.001	< 0.001	**1.06**	-	**0.003**	-	**0.003**	-	-	**0.042**
	14-Dec-22	< 0.001	-	-	-	-	-	-	-	**0.96**	-	**0.003**	-	-	-	-	-
	17-Jan-23	< 0.001	-	-	-	-	-	-	-	**0.86**	-	**0.003**	-	-	-	-	-
	15-Feb-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.008**	**0.91**	< 0.001	**0.003**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.076**
	15-Mar-23	< 0.001	-	-	-	-	-	-	-	**0.99**	-	**0.002**	-	-	-	-	-
	18-Apr-23	**0.001**	**0.001**	< 0.001	< 0.05	< 0.0001	**0.004**	< 0.001	< 0.001	**1.07**	< 0.001	**0.003**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.029**
	16-May-23	< 0.001	**0.002**	-	-	-	**0.003**	-	**0.001**	**1.04**	-	-	-	**0.003**	-	-	**0.065**
	14-Jun-23	< 0.001	-	-	-	-	-	-	-	**0.59**	-	**0.001**	-	-	-	-	-
	24-Jul-23	< 0.001	-	-	-	-	-	-	-	**0.86**	-	**0.002**	-	-	-	-	-
	14-Aug-23	< 0.001	**0.002**	-	-	-	**0.003**	-	**0.001**	**0.88**	-	**0.004**	-	**0.002**	-	-	**0.081**
	13-Sep-23	< 0.001	-	-	-	-	-	-	-	**0.78**	-	**0.002**	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 3
Groundwater Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Groundwater		0.003	0.07	0.002	0.1	0.0002	0.004	0.006	0.083	4.1	0.001	0.136	0.0001	0.02	0.01	0.01	0.085
	23-Oct-23	< 0.001	-	-	-	-	-	-	-	**0.66**	-	**0.003**	-	-	-	-	-
	22-Nov-23	< 0.001	-	-	-	-	-	-	-	**0.55**	-	**0.004**	-	-	-	-	-
	19-Dec-23	< 0.001	**0.003**	-	-	-	**0.002**	-	< 0.001	**0.68**	-	**0.004**	-	**0.001**	-	-	**0.019**
	18-Jan-24	< 0.001	**0.003**	-	-	-	**0.002**	-	< 0.001	**0.79**	-	**0.004**	-	< 0.001	-	-	**0.006**
BH12	16-Nov-20	< 0.001	-	-	-	< 0.0001	**0.002**	-	**0.002**	-	< 0.001	-	< 0.0001	**0.002**	-	-	**0.017**
	24-Feb-22	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**0.33**	< 0.001	**0.006**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
BH12A	15-Feb-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	**0.003**	< 0.001	**0.003**	**3.64**	< 0.001	**0.019**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.015**
	14-Aug-23	< 0.001	**0.006**	-	-	-	< 0.001	-	**0.001**	< 0.05	-	**0.006**	-	< 0.001	-	-	**0.025**
	19-Dec-23	< 0.001	**0.004**	-	-	-	**0.003**	-	**0.001**	**1.41**	-	**0.017**	-	< 0.001	-	-	**0.046**

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
mg/L - Milligrams per litre
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl		
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	0.56	--	--	--
Sample Name	Sample Date															
BH1	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH1A	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH2	22-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH3	21-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH4	21-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Mar-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	23-Apr-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Jul-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Aug-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Oct-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH5	22-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Mar-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	23-Apr-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Jul-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Aug-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Oct-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl		
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	0.56	--	--	--
BH6	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH7	22-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Mar-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	23-Apr-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Jul-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Aug-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Oct-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH8	21-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Mar-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	23-Apr-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Jul-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Aug-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Oct-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids		Perfluoroalkyl Carboxylic Acids			Perfluoroalkyl		
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Groundwater		--	--	--	--	--	--	--	--	--	--	--	0.56	--	--	--
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH9A	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH11	21-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	06-Mar-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH12	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
BH12A	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
Bold indicates a detection above the laboratory limit of reporting

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	**0.02**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	**0.02**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	**0.15**	< 0.05	< 0.05	< 0.01	**0.15**	**0.15**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	**0.06**	< 0.05	< 0.05	< 0.01	**0.06**	**0.06**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	**0.05**	< 0.05	< 0.05	< 0.01	**0.05**	**0.05**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

KLEINFELDER

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Table 4
Groundwater Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	**0.07**	< 0.05	< 0.05	< 0.01	**0.07**	**0.07**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 5
Surface Water Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown

Analyte		BTEXN								Total Petroleum Hydrocarbons					Total Petroleum Hydro	
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Surface Water		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sample Name	Sample Date															
SW1	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Dec-23	< 1.0	**4.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**4.0**	< 20	-	-	-	-	< 50	< 100
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-	-
SW2	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	22-Sep-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	13-Oct-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	22-Feb-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Mar-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 5
Surface Water Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown

Analyte		BTEXN								Total Petroleum Hydrocarbons					Total Petroleum Hydro	
		Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} sum	C_{10}-C_{14} - Silica Cleanup	C_{15}-C_{28} - Silica Cleanup
LOR		1.0	2.0	2.0	2.0	2.0	2.0	5.0	1.0	20	50	100	50	50	50	100
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Surface Water		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SW3	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Aug-21	< 1.0	**2.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**2.0**	< 20	-	-	-	-	< 50	< 100
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Dec-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Jan-24	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	-	-	-	-	-	-	-
SW4	23-Apr-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-May-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	14-Jun-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Jul-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Aug-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	< 50	< 100	< 50	< 50	-	-
	16-Sep-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Oct-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-19	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Sep-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Oct-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Dec-20	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Jan-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Feb-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	17-Mar-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Aug-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-Nov-21	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	24-Feb-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	27-May-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	12-Aug-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	18-Nov-22	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	15-Feb-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	16-May-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	14-Aug-23	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 20	-	-	-	-	< 50	< 100
	19-Dec-23	< 1.0	**6.0**	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	**6.0**	< 20	-	-	-	-	< 50	< 100

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
BTEXN - Benzene, toluene, ethylbenzene, total xylenes, naphthalene
Bold indicates a detection above the laboratory limit of reporting

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 5
Surface Water Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown

bcarbons - Silica Clean-up		Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	$>C_{10}$ - C_{16}	$>C_{10}$ - C_{16} minus Naphthalene (F2)	$>C_{16}$ - C_{34}	$>C_{34}$ - C_{40}	$>C_{10}$ - C_{40} (sum)	$>C_{10}$-C_{16} - Silica Cleanup	F2 - Silica Cleanup	$>C_{16}$-C_{34} - Silica Cleanup	$>C_{34}$-C_{40} - Silica Cleanup	$>C_{10}$-C_{40} - Silica Cleanup
50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	20	20	100	--	100	100	--	--	--	--	--	--
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 5
Surface Water Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown

bcarbons - Silica Clean-up		Total Recoverable Hydrocarbons							Total Recoverable Hydrocarbons - Silica Clean-up				
C_{29}-C_{36} - Silica Cleanup	C_{10}-C_{36} Sum - Silica Cleanup	C_6 - C_{10}	C_6 - C_{10} minus BTEX (F1)	$>C_{10}$ - C_{16}	$>C_{10}$ - C_{16} minus Naphthalene (F2)	$>C_{16}$ - C_{34}	$>C_{34}$ - C_{40}	$>C_{10}$ - C_{40} (sum)	$>C_{10}$-C_{16} - Silica Cleanup	F2 - Silica Cleanup	$>C_{16}$-C_{34} - Silica Cleanup	$>C_{34}$-C_{40} - Silica Cleanup	$>C_{10}$-C_{40} - Silica Cleanup
50	50	20	20	100	100	100	100	100	100	100	100	100	100
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	20	20	100	--	100	100	--	--	--	--	--	--
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
-	-	< 20	< 20	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100
< 50	< 50	< 20	< 20	-	-	-	-	-	< 100	< 100	< 100	< 100	< 100

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 6
Surface Water Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Anions and Cations																			
		Sodium	Calcium	Magnesium	Potassium	Sulphate	Sulphate	Sulphate	Chloride	Chloride	Chloride	Fluoride	Phosphorus	Reactive phosphorus as P	Total Phosphorus	Nitrite	Nitrite as N	Nitrate	Nitrate as N	Nitrite + Nitrate as N	Ammonia as N
LOR		1.0	1.0	1.0	1.0	1.0	10	5.0	1.0	10	5.0	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Surface Water		142	40	52	8	324	324	324	234	234	234	0.8	--	--	0.17	--	--	--	--	--	--
Sample Name	Sample Date																				
SW1	23-Apr-19	**94**	**34**	**52**	**6.0**	**310**	-	-	**95**	-	-	**0.5**	-	-	-	-	-	-	-	-	-
	16-May-19	**86**	**24**	**42**	**6.0**	**324**	-	-	**112**	-	-	**0.3**	-	< 0.01	**0.13**	-	< 0.01	-	< 0.01	< 0.01	< 0.01
	14-Jun-19	**77**	**20**	**34**	**5.0**	-	**182**	-	-	**112**	-	**0.4**	-	-	-	-	-	-	-	-	-
	16-Jul-19	**90**	**20**	**35**	**4.0**	**240**	-	-	**130**	-	-	**0.4**	-	-	-	-	-	-	-	-	-
	15-Aug-19	**97**	**18**	**32**	**4.0**	**212**	-	-	**134**	-	-	**0.4**	-	-	-	-	-	-	-	-	-
	16-Sep-19	**117**	**21**	**39**	**4.0**	**244**	-	-	**193**	-	-	**0.7**	-	< 0.01	**0.05**	-	< 0.01	-	**0.02**	**0.02**	< 0.01
	15-Oct-19	**124**	**16**	**31**	**3.0**	-	-	**127**	-	-	**191**	**0.6**	-	-	-	-	-	-	-	-	-
	18-Nov-19	**142**	**14**	**30**	**4.0**	**165**	-	-	**234**	-	-	**0.5**	**0.02**	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-
	16-Sep-20	**9.0**	**16**	**3.0**	**3.0**	< 1.0	-	-	< 1.0	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Oct-20	**12**	**40**	**4.0**	**4.0**	< 1.0	-	-	**16**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	16-Nov-20	**8.0**	**13**	**2.0**	**3.0**	< 1.0	-	-	**10**	-	-	< 0.1	-	< 0.01	**0.03**	-	< 0.01	-	**0.04**	**0.04**	-
	16-Dec-20	**10**	**19**	**2.0**	**3.0**	**5.0**	-	-	**12**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	14-Jan-21	**10**	**18**	**2.0**	**3.0**	< 1.0	-	-	**13**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Feb-21	**10**	**15**	**2.0**	**3.0**	< 1.0	-	-	**12**	-	-	**0.1**	-	< 0.01	**0.02**	-	< 0.01	-	< 0.01	< 0.01	-
	17-Mar-21	**10**	**15**	**2.0**	**2.0**	< 1.0	-	-	**13**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-21	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**6.0**	**9.0**	**2.0**	**2.0**	< 1.0	-	-	**10**	-	-	< 0.1	-	-	**0.11**	< 0.01	-	< 0.01	-	< 0.01	**0.02**
	27-May-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**15**	**10**	**2.0**	< 1.0	**6.0**	-	-	**22**	-	-	**0.1**	-	**0.06**	**0.06**	-	< 0.01	-	< 0.01	< 0.01	-
	16-May-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW2	17-Mar-21	**12**	**2.0**	**2.0**	< 1.0	**6.0**	-	-	**16**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	19-Aug-21	**12**	< 1.0	**1.0**	< 1.0	**6.0**	-	-	**22**	-	-	< 0.1	-	< 0.01	**0.07**	-	< 0.01	-	< 0.01	< 0.01	-
	22-Sep-21	**14**	**2.0**	**2.0**	**2.0**	**16**	-	-	**30**	-	-	**0.1**	-	< 0.01	**0.08**	-	< 0.01	-	**1.77**	**1.77**	-
	13-Oct-21	**10**	< 1.0	**1.0**	< 1.0	**6.0**	-	-	**18**	-	-	< 0.1	-	< 0.01	**0.03**	-	< 0.01	-	**0.02**	**0.02**	-
	16-Nov-21	**10**	**2.0**	**2.0**	< 1.0	**7.0**	-	-	**16**	-	-	**0.1**	-	< 0.01	**0.09**	-	< 0.01	-	< 0.01	< 0.01	-
	24-Feb-22	**10**	**1.0**	**1.0**	< 1.0	**2.0**	-	-	**21**	-	-	**0.1**	-	-	**0.63**	< 0.01	-	< 0.01	-	< 0.01	**0.31**
	17-Mar-22	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.01	-	-	-	-	**0.04**	-
	27-May-22	-	-	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**14**	**2.0**	**3.0**	< 1.0	**6.0**	-	-	**36**	-	-	**0.4**	-	< 0.01	**0.16**	-	< 0.01	-	< 0.01	< 0.01	-
	16-May-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW3	22-Feb-19	**40**	**4.0**	**4.0**	**1.0**	**16**	-	-	**82**	-	-	< 0.1	-	< 0.01	**0.06**	-	< 0.01	-	< 0.01	< 0.01	**0.16**
	14-Mar-19	**45**	**6.0**	**6.0**	**2.0**	**44**	-	-	**64**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	23-Apr-19	**37**	**8.0**	**6.0**	**1.0**	**42**	-	-	**53**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	16-May-19	**35**	**7.0**	**5.0**	< 1.0	**34**	-	-	**54**	-	-	< 0.1	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	< 0.01
	14-Jun-19	**32**	**7.0**	**6.0**	< 1.0	**41**	-	-	**55**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	16-Jul-19	**46**	**8.0**	**12**	< 1.0	**104**	-	-	**57**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	15-Aug-19	**38**	**6.0**	**7.0**	< 1.0	**54**	-	-	**56**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Sep-19	**42**	**7.0**	**8.0**	< 1.0	**48**	-	-	**57**	-	-	**0.1**	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	**0.01**
	15-Oct-19	**40**	**5.0**	**7.0**	< 1.0	**42**	-	-	**57**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	18-Nov-19	**36**	**5.0**	**5.0**	< 1.0	**29**	-	-	**56**	-	-	< 0.1	**0.04**	< 0.01	-	-	< 0.01	**0.01**	-	**0.01**	-
	16-Sep-20	**39**	**3.0**	**8.0**	< 1.0	**65**	-	-	**55**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Oct-20	**40**	**4.0**	**6.0**	< 1.0	**40**	-	-	**63**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	16-Nov-20	**34**	**2.0**	**5.0**	< 1.0	**67**	-	-	**53**	-	-	< 0.1	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-
	16-Dec-20	**36**	**1.0**	**5.0**	**1.0**	**27**	-	-	**61**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	14-Jan-21	**27**	< 1.0	**2.0**	< 1.0	**26**	-	-	**54**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	16-Feb-21	**30**	**2.0**	**3.0**	< 1.0	**21**	-	-	**56**	-	-	< 0.1	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-
	17-Mar-21	**29**	< 1.0	**2.0**	< 1.0	**15**	-	-	**51**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Nov-21	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**27**	< 1.0	**2.0**	< 1.0	**8.0**	-	-	**53**	-	-	< 0.1	-	-	**0.03**	< 0.01	-	< 0.01	-	< 0.01	**0.02**
	27-May-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**33**	< 1.0	**2.0**	**1.0**	**20**	-	-	**76**	-	-	< 0.1	-	< 0.01	< 0.01	-	**0.02**	-	< 0.01	**0.02**	-
	16-May-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW4	23-Apr-19	**39**	**5.0**	**5.0**	< 1.0	**60**	-	-	**64**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-May-19	**41**	**5.0**	**5.0**	< 1.0	**41**	-	-	**59**	-	-	< 0.1	-	**0.01**	< 0.01	-	< 0.01	-	**0.05**	**0.05**	< 0.01
	14-Jun-19	**40**	**5.0**	**5.0**	< 1.0	**39**	-	-	**60**	-	-	< 0.1	-	-	-	-	-	-	-	-	-
	16-Jul-19	**46**	**7.0**	**7.0**	< 1.0	**67**	-	-	**56**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	15-Aug-19	**40**	**5.0**	**5.0**	< 1.0	**43**	-	-	**55**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Sep-19	**45**	**7.0**	**6.0**	< 1.0	**45**	-	-	**58**	-	-	**0.1**	-	< 0.01	**0.01**	-	< 0.01	-	< 0.01	< 0.01	< 0.01
	15-Oct-19	**44**	**6.0**	**6.0**	< 1.0	**38**	-	-	**57**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	18-Nov-19	**41**	**4.0**	**5.0**	< 1.0	**41**	-	-	**64**	-	-	**0.2**	< 0.01	< 0.01	-	-	< 0.01	**0.02**	-	**0.02**	-
	16-Sep-20	**45**	**6.0**	**7.0**	< 1.0	**58**	-	-	**59**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Oct-20	**43**	**5.0**	**5.0**	< 1.0	**40**	-	-	**67**	-	-	**0.1**	-	-	-	-	-	-	-	-	-
	16-Nov-20	**37**	**8.0**	**6.0**	**2.0**	**42**	-	-	**54**	-	-	**0.2**	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-
	16-Dec-20	**43**	**4.0**	**4.0**	**2.0**	**24**	-	-	**70**	-	-	**0.2**	-	-	-	-	-	-	-	-	-
	14-Jan-21	**36**	**16**	**4.0**	**2.0**	**15**	-	-	**58**	-	-	**0.8**	-	-	-	-	-	-	-	-	-
	16-Feb-21	**37**	**6.0**	**4.0**	**2.0**	**14**	-	-	**61**	-	-	**0.3**	-	< 0.01	**0.03**	-	< 0.01	-	< 0.01	< 0.01	-
	17-Mar-21	**36**	**10**	**4.0**	**2.0**	**10**	-	-	**54**	-	-	**0.4**	-	-	-	-	-	-	-	-	-
	19-Aug-21	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Oct-21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 6
Surface Water Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Anions and Cations																			
		Sodium	Calcium	Magnesium	Potassium	Sulphate	Sulphate	Sulphate	Chloride	Chloride	Chloride	Fluoride	Phosphorus	Reactive phosphorus as P	Total Phosphorus	Nitrite	Nitrite as N	Nitrate	Nitrate as N	Nitrite + Nitrate as N	Ammonia as N
LOR		1.0	1.0	1.0	1.0	1.0	10	5.0	1.0	10	5.0	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Surface Water		142	40	52	8	324	324	324	234	234	234	0.8	--	--	0.17	--	--	--	--	--	--
	16-Nov-21	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Feb-22	**35**	**3.0**	**4.0**	< 1.0	**27**	-	-	**63**	-	-	< 0.1	-	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01
	27-May-22	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12-Aug-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-22	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Feb-23	**34**	**1.0**	**3.0**	< 1.0	**9.0**	-	-	**63**	-	-	< 0.1	-	< 0.01	**0.02**	-	< 0.01	-	< 0.01	< 0.01	-
	16-May-23	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	14-Aug-23	-	-	**4.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19-Dec-23	-	-	**3.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
LOR - Laboratory limit of reporting
mg/L - Milligrams per litre
µS/cm - Microsiemens per centimeter
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 6
Surface Water Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

	Anions and Cations					Anions and Cations		Alkalinity							Inorganics					
Total Ammonia as Nitrogen	Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Cations	Total Anions	Ionic Balance	Sodium Adsorption Ratio	Sodium Adsorption Ratio	Bicarbonate	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Total Alkalinity as CaCO3	Total Hardness as CaCO3	Hardness	Electrical Conductivity @ 25°C	Total Dissolved Solids	Total Dissolved Solids	Total suspended solids	pH	Turbidity	Phosphate Total (as P)
0.01	0.1	0.1	0.01	0.01	0.01	--	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	5.0	0.01	0.1	0.01
mg/L	mg/L	mg/L	meq/L	meq/L	%		-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	pH units	NTU	mg/L
0.2	5.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-	-	-	**10**	**9.13**	**5.6**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**299**	-	**893**	**580**	**707**	**32**	**4.01**	-	-
-	**1.8**	**1.8**	**8.94**	**9.9**	**5.13**	-	**2.45**	-	< 1.0	< 1.0	< 1.0	< 1.0	**233**	-	**947**	**616**	**715**	**59**	**4.6**	-	-
-	-	-	**7.27**	**6.95**	**2.28**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**190**	-	**847**	**550**	**512**	**26**	**4.5**	-	-
-	-	-	**7.9**	**8.66**	**4.64**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**194**	-	**876**	**569**	**568**	**17**	**4.42**	-	-
-	-	-	**7.85**	**8.19**	**2.12**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**177**	-	**813**	**528**	**548**	**5.0**	**4.53**	-	-
-	**1.2**	**1.2**	**9.45**	**11**	**5.38**	-	**3.49**	-	< 1.0	< 1.0	< 1.0	< 1.0	**213**	-	**1,080**	**702**	**689**	**15**	**4.32**	-	-
-	-	-	**8.82**	**8.03**	**4.68**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**168**	-	**1,050**	**682**	-	-	**5.32**	-	-
0.03	**1.1**	**1.1**	**9.45**	**10**	**3.03**	-	**4.91**	-	< 1.0	< 1.0	< 1.0	< 1.0	**158**	-	**1,090**	**708**	-	-	**5.06**	-	-
-	-	-	**1.51**	**1.1**	-	-	-	-	**55**	< 1.0	< 1.0	**55**	**52**	-	**137**	**89**	**152**	**8.0**	**6.5**	-	-
-	-	-	**2.95**	**2.69**	-	-	-	-	**112**	< 1.0	< 1.0	**112**	**116**	-	**268**	**174**	-	-	**7.29**	-	-
< 0.01	**0.6**	**0.6**	**1.24**	**1.12**	-	-	**0.54**	-	**42**	< 1.0	< 1.0	**42**	**41**	-	**127**	**82**	**127**	< 5.0	**6.5**	-	-
-	-	-	**1.62**	**1.68**	-	-	-	-	**62**	< 1.0	< 1.0	**62**	**56**	-	**171**	**111**	-	-	**7.01**	-	-
-	-	-	**1.57**	**1.46**	-	-	-	-	**55**	< 1.0	< 1.0	**55**	**53**	-	**154**	**100**	-	-	**6.71**	-	-
< 0.01	**0.5**	**0.5**	**1.42**	**1.36**	-	-	**0.64**	-	**51**	< 1.0	< 1.0	**51**	**46**	-	**141**	**92**	**115**	**6.0**	**6.93**	-	-
-	-	-	**1.4**	**1.26**	-	-	-	-	**45**	< 1.0	< 1.0	**45**	**46**	-	**139**	**90**	-	-	**6.63**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6.82**	**3.3**	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.0**	**1.0**	**0.92**	**0.8**	-	-	-	**26**	-	< 1.0	< 1.0	**26**	**31**	-	**89**	**58**	-	-	**6.38**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.03	**1.1**	**1.1**	**1.32**	**1.36**	-	-	**1.13**	-	**31**	< 1.0	< 1.0	**31**	**33**	-	**141**	**92**	-	-	**6.59**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	**0.79**	**0.58**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**83**	**54**	-	-	**5.08**	-	-
0.17	**1.2**	**1.2**	**0.6**	**0.74**	-	-	**2.25**	-	< 1.0	< 1.0	< 1.0	< 1.0	**4.0**	-	**103**	**67**	-	-	**4.21**	-	-
< 0.01	**3.0**	**1.2**	**0.92**	**1.18**	-	-	**1.67**	-	< 1.0	< 1.0	< 1.0	< 1.0	**13**	-	**235**	**153**	-	-	**3.55**	-	-
< 0.01	**0.6**	**0.6**	**0.52**	**0.63**	-	-	**1.88**	-	< 1.0	< 1.0	< 1.0	< 1.0	**4.0**	-	**77**	**50**	-	-	**4.58**	**4.7**	-
< 0.01	**1.8**	**1.8**	**0.7**	**0.6**	-	-	**1.2**	-	< 1.0	< 1.0	< 1.0	< 1.0	-	**13**	**93**	**60**	-	-	**4.39**	-	-
-	**7.5**	**7.5**	**0.57**	**0.63**	-	-	-	< 1.0	-	< 1.0	< 1.0	< 1.0	**7.0**	-	**97**	**63**	-	-	**4.32**	-	< 0.01
0.13	**0.4**	**0.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.05	**5.4**	**5.4**	**0.96**	**1.14**	-	-	**1.46**	-	< 1.0	< 1.0	< 1.0	< 1.0	**17**	-	**150**	**98**	-	-	**4.2**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**1.0**	**1.0**	**2.55**	**2.87**	-	-	**3.38**	-	**11**	< 1.0	< 1.0	**11**	**26**	-	**262**	**170**	**228**	**58**	**6.21**	-	-
-	-	-	**2.8**	**2.8**	-	-	-	-	**4.0**	< 1.0	< 1.0	**4.0**	**40**	-	**344**	**224**	**279**	**34**	**5.42**	-	-
-	-	-	**2.53**	**2.37**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**45**	-	**220**	**143**	**190**	**9.0**	**5.2**	-	-
-	**0.1**	**0.1**	**2.28**	**2.25**	-	-	**2.47**	-	**1.0**	< 1.0	< 1.0	**1.0**	**38**	-	**271**	**176**	**300**	**14**	**5.24**	-	-
-	-	-	**2.24**	**2.4**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**42**	-	**300**	**195**	**170**	**12**	**4.58**	-	-
-	-	-	**3.39**	**3.77**	**5.38**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**69**	-	**451**	**293**	**246**	**7.0**	**4.47**	-	-
-	-	-	**2.53**	**2.7**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**44**	-	**338**	**220**	**192**	< 5.0	**4.47**	-	-
-	**0.1**	**0.1**	**2.83**	**2.61**	-	-	**2.57**	-	< 1.0	< 1.0	< 1.0	< 1.0	**50**	-	**374**	**243**	**201**	**7.0**	**4.3**	-	-
-	-	-	**2.56**	**2.48**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**41**	-	**383**	**249**	-	-	**4.75**	-	-
0.03	**0.6**	**0.6**	**2.23**	**2.18**	-	-	**2.72**	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**278**	**181**	-	-	**5.39**	-	-
-	-	-	**3.12**	**2.9**	**3.5**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**40**	-	**402**	**261**	**224**	**6.0**	**4.41**	-	-
-	-	-	**2.73**	**2.61**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**35**	-	**333**	**216**	-	-	**4.15**	-	-
< 0.01	**0.3**	**0.3**	**2.6**	**2.89**	-	-	**2.92**	-	< 1.0	< 1.0	< 1.0	< 1.0	**26**	-	**460**	**299**	**201**	< 5.0	**3.95**	-	-
-	-	-	**2.05**	**2.3**	-	-	-	-	**1.0**	< 1.0	< 1.0	**1.0**	**23**	-	**303**	**197**	-	-	**4.8**	-	-
-	-	-	**1.82**	**2.06**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**301**	**196**	-	-	**4.06**	-	-
< 0.01	**0.5**	**0.5**	**1.65**	**2.02**	-	-	**3.13**	-	< 1.0	< 1.0	< 1.0	< 1.0	**17**	-	**273**	**177**	**172**	< 5.0	**4.15**	-	-
-	-	-	**1.43**	**1.75**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**237**	**154**	-	-	**4.65**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.9**	**0.9**	**1.34**	**1.7**	-	-	-	**2.0**	-	< 1.0	< 1.0	**2.0**	**8.0**	-	**183**	**119**	-	-	**4.59**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.21	**2.8**	**2.8**	**2.13**	**2.56**	-	-	**4.66**	-	< 1.0	< 1.0	< 1.0	< 1.0	**8.0**	-	**247**	**160**	-	-	**4.08**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	**2.36**	**3.05**	**13**	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**293**	**190**	**198**	< 5.0	**4.0**	-	-
-	**0.2**	**0.2**	**2.44**	**2.52**	-	-	**3.1**	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**331**	**215**	**288**	**13**	**4.08**	-	-
-	-	-	**2.4**	**2.5**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**316**	**205**	**163**	< 5.0	**4.31**	-	-
-	-	-	**2.93**	**2.97**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**46**	-	**367**	**238**	**207**	**6.0**	**4.46**	-	-
-	-	-	**2.4**	**2.45**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**308**	**200**	**160**	< 5.0	**4.48**	-	-
-	**0.1**	**0.1**	**2.8**	**2.57**	-	-	**3.01**	-	< 1.0	< 1.0	< 1.0	< 1.0	**42**	-	**360**	**234**	**208**	< 5.0	**4.47**	-	-
-	-	-	**2.71**	**2.4**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**40**	-	**365**	**237**	-	-	**4.48**	-	-
< 0.01	**0.2**	**0.2**	**2.76**	**2.66**	-	-	**3.22**	-	< 1.0	< 1.0	< 1.0	< 1.0	**30**	-	**348**	**226**	-	-	**4.48**	-	-
-	-	-	**2.83**	**2.87**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**44**	-	**421**	**274**	**228**	< 5.0	**4.16**	-	-
-	-	-	**2.53**	**2.72**	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	**33**	-	**355**	**231**	-	-	**3.94**	-	-
< 0.01	**0.1**	**0.1**	**2.55**	**2.4**	-	-	**2.41**	-	< 1.0	< 1.0	< 1.0	< 1.0	**45**	-	**338**	**220**	**196**	**6.0**	**4.21**	-	-
-	-	-	**2.45**	**2.79**	-	-	-	-	**16**	< 1.0	< 1.0	**16**	**26**	-	**323**	**210**	-	-	**6.15**	-	-
-	-	-	**2.74**	**2.69**	-	-	-	-	**37**	< 1.0	< 1.0	**37**	**56**	-	**316**	**205**	-	-	**6.38**	-	-
0.02	**1.2**	**1.2**	**2.29**	**2.15**	-	-	**2.87**	-	**7.0**	< 1.0	< 1.0	**7.0**	**31**	-	**267**	**174**	**240**	**48**	**5.91**	-	-
-	-	-	**2.44**	**2.25**	-	-	-	-	**26**	< 1.0	< 1.0	**26**	**41**	-	**271**	**176**	-	-	**6.23**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.86**	**8.6**	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 6
Surface Water Analytical Results - Anions, Cations, and Inorganics
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

	Anions and Cations					Anions and Cations		Alkalinity								Inorganics					
Total Ammonia as Nitrogen	Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Cations	Total Anions	Ionic Balance	Sodium Adsorption Ratio	Sodium Adsorption Ratio	Bicarbonate	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Total Alkalinity as CaCO3	Total Hardness as CaCO3	Hardness	Electrical Conductivity @ 25°C	Total Dissolved Solids	Total Dissolved Solids	Total suspended solids	pH	Turbidity	Phosphate Total (as P)
0.01	0.1	0.1	0.01	0.01	0.01	--	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	5.0	0.01	0.1	0.01
mg/L	mg/L	mg/L	meq/L	meq/L	%		-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	pH units	NTU	mg/L
0.2	5.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	**0.3**	**0.3**	**2.0**	**2.34**	-	-	-	< 1.0	-	< 1.0	< 1.0	< 1.0	**24**	-	**275**	**179**	-	-	**3.96**	-	< 0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.04	**0.7**	**0.7**	**1.78**	**2.02**	-	-	**3.84**	-	**3.0**	< 1.0	< 1.0	**3.0**	**15**	-	**250**	**162**	-	-	**5.44**	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 7
Surface Water Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Surface Water		0.006	0.08	0.002	0.1	0.0002	0.004	0.006	0.033	7.25	0.003	0.841	0.0001	0.02	0.01	0.01	0.535
Sample Name	Sample Date																
SW1	23-Apr-19	< 0.001	**0.043**	< 0.001	**0.14**	< 0.0001	< 0.001	**0.017**	**0.002**	**4.16**	< 0.001	**0.841**	< 0.0001	**0.02**	< 0.01	< 0.01	**0.356**
	16-May-19	< 0.001	**0.029**	< 0.001	**0.1**	< 0.0001	< 0.001	**0.01**	**0.003**	**7.25**	< 0.001	**0.666**	< 0.0001	**0.012**	< 0.01	< 0.01	**0.077**
	14-Jun-19	< 0.001	**0.029**	< 0.001	**0.09**	**0.0002**	< 0.001	**0.009**	**0.006**	**2.75**	< 0.001	**0.595**	< 0.0001	**0.011**	< 0.01	< 0.01	**0.535**
	16-Jul-19	< 0.001	**0.032**	< 0.001	**0.08**	**0.0001**	< 0.001	**0.007**	**0.003**	**1.86**	< 0.001	**0.59**	< 0.0001	**0.008**	< 0.01	< 0.01	**0.239**
	15-Aug-19	< 0.001	**0.027**	< 0.001	**0.09**	< 0.0001	< 0.001	**0.005**	**0.003**	**2.15**	< 0.001	**0.482**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.075**
	16-Sep-19	< 0.001	**0.056**	< 0.001	**0.09**	**0.0002**	**0.001**	**0.008**	**0.012**	**2.45**	**0.001**	**0.587**	< 0.0001	**0.014**	< 0.01	< 0.01	**0.282**
	15-Oct-19	< 0.001	**0.036**	< 0.001	**0.07**	< 0.0001	< 0.001	**0.005**	**0.003**	-	< 0.001	**0.383**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.055**
	18-Nov-19	< 0.001	**0.042**	< 0.001	**0.11**	< 0.0001	**0.001**	**0.003**	< 0.001	**1.14**	< 0.001	**0.366**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.026**
	16-Sep-20	< 0.001	**0.021**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	**0.005**	**0.87**	**0.001**	**0.096**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.061**
	16-Oct-20	**0.001**	**0.021**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.001**	**0.76**	< 0.001	**0.15**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.005**
	16-Nov-20	< 0.001	**0.02**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.005**	**0.18**	< 0.001	**0.017**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.03**
	16-Dec-20	< 0.001	**0.015**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.003**	**0.18**	< 0.001	**0.058**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.013**
	14-Jan-21	< 0.001	**0.012**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.02**	**0.35**	< 0.001	**0.04**	< 0.0001	**0.006**	< 0.01	< 0.01	**0.037**
	16-Feb-21	< 0.001	**0.011**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.12**	< 0.001	**0.028**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.024**
	17-Mar-21	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.16**	< 0.001	**0.036**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.04**
	19-Aug-21	< 0.001	**0.011**	-	< 0.05	-	**0.001**	< 0.001	**0.002**	**0.86**	-	-	-	**0.002**	-	-	**0.056**
	16-Nov-21	< 0.001	**0.006**	-	< 0.05	-	< 0.001	< 0.001	**0.002**	**1.0**	-	-	-	**0.001**	-	-	**0.036**
	24-Feb-22	< 0.001	**0.01**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.12**	< 0.001	**0.025**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.014**
	27-May-22	< 0.001	**0.01**	-	< 0.05	-	**0.003**	**0.001**	< 0.001	**4.39**	-	-	-	**0.002**	-	-	**0.047**
	12-Aug-22	< 0.001	**0.007**	-	< 0.05	-	**0.003**	< 0.001	**0.001**	**2.92**	-	-	-	**0.002**	-	-	**0.019**
	18-Nov-22	< 0.001	**0.01**	-	< 0.05	-	< 0.001	**0.001**	< 0.001	**2.89**	-	**0.038**	-	< 0.001	-	-	**0.022**
	15-Feb-23	< 0.001	**0.002**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.005**	**0.51**	< 0.001	**0.06**	< 0.0001	**0.001**	< 0.01	< 0.01	**0.007**
	16-May-23	< 0.001	< 0.001	-	< 0.05	-	< 0.001	< 0.001	**0.001**	**0.39**	-	-	-	< 0.001	-	-	**0.013**
	14-Aug-23	< 0.001	**0.004**	-	< 0.05	-	< 0.001	< 0.001	**0.003**	**0.16**	-	**0.026**	-	< 0.001	-	-	**0.013**
	19-Dec-23	< 0.001	**0.016**	-	< 0.05	-	< 0.001	< 0.001	**0.001**	**0.7**	-	**0.074**	-	< 0.001	-	-	**0.006**
SW2	17-Mar-21	< 0.001	**0.005**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.002**	< 0.001	**0.62**	< 0.001	**0.11**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.097**
	19-Aug-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	< 0.001	**0.55**	< 0.001	**0.045**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.022**
	22-Sep-21	< 0.001	**0.007**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	< 0.001	**1.11**	< 0.001	**0.087**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.134**
	13-Oct-21	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**0.88**	< 0.001	**0.049**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.06**
	16-Nov-21	**0.001**	**0.005**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.002**	< 0.001	**5.59**	< 0.001	**0.064**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.083**
	24-Feb-22	< 0.001	**0.008**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.002**	< 0.001	**16**	< 0.001	**0.032**	< 0.0001	**0.006**	< 0.01	< 0.01	**0.099**
	17-Mar-22	-	-	-	-	-	-	-	-	**1.62**	-	-	-	-	-	-	-
	27-May-22	< 0.001	**0.005**	-	< 0.05	-	**0.001**	**0.001**	< 0.001	**1.7**	-	-	-	**0.002**	-	-	**0.111**
	12-Aug-22	< 0.001	**0.005**	-	< 0.05	-	**0.001**	< 0.001	< 0.001	**2.79**	-	-	-	**0.001**	-	-	**0.09**
	18-Nov-22	< 0.001	**0.004**	-	< 0.05	-	< 0.001	< 0.001	< 0.001	**0.45**	-	**0.011**	-	< 0.001	-	-	**0.031**
	15-Feb-23	< 0.001	**0.013**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.003**	**2.37**	< 0.001	**0.056**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.063**
	16-May-23	< 0.001	**0.018**	-	< 0.05	-	< 0.001	**0.004**	**0.003**	**0.87**	-	-	-	**0.005**	-	-	**0.284**
	14-Aug-23	< 0.001	**0.01**	-	< 0.05	-	**0.001**	**0.003**	< 0.001	**6.48**	-	**0.061**	-	**0.004**	-	-	**0.062**
SW3	22-Feb-19	**0.003**	**0.075**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**4.84**	< 0.001	**0.033**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.016**
	14-Mar-19	**0.006**	**0.08**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	< 0.001	**9.26**	< 0.001	**0.048**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.009**
	23-Apr-19	< 0.001	**0.043**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	**0.001**	**2.01**	< 0.001	**0.046**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.016**
	16-May-19	< 0.001	**0.034**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	< 0.001	**1.78**	< 0.001	**0.038**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.012**
	14-Jun-19	< 0.001	**0.035**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	< 0.001	**1.68**	< 0.001	**0.038**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.016**
	16-Jul-19	< 0.001	**0.055**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.007**	**0.002**	**1.25**	< 0.001	**0.043**	< 0.0001	**0.006**	< 0.01	< 0.01	**0.029**
	15-Aug-19	< 0.001	**0.035**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	**0.002**	**1.16**	< 0.001	**0.036**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.013**
	16-Sep-19	< 0.001	**0.045**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.004**	**0.02**	**0.69**	**0.001**	**0.036**	< 0.0001	**0.017**	< 0.01	< 0.01	**0.094**
	15-Oct-19	< 0.001	**0.034**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.005**	**0.002**	-	< 0.001	**0.027**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.022**
	18-Nov-19	< 0.001	**0.031**	< 0.001	< 0.05	< 0.0001	**0.001**	< 0.001	< 0.001	**2.6**	< 0.001	**0.026**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	16-Sep-20	< 0.001	**0.034**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.007**	**0.007**	**3.49**	< 0.001	**0.029**	< 0.0001	**0.007**	< 0.01	< 0.01	**0.031**
	16-Oct-20	< 0.001	**0.028**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.004**	**0.003**	**7.09**	< 0.001	**0.027**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.019**
	16-Nov-20	< 0.001	**0.029**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.009**	**0.002**	**4.79**	< 0.001	**0.032**	< 0.0001	**0.009**	< 0.01	< 0.01	**0.03**
	16-Dec-20	**0.002**	**0.015**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.002**	**0.005**	**16**	< 0.001	**0.023**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.054**
	14-Jan-21	**0.002**	**0.015**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.004**	**0.02**	**8.28**	< 0.001	**0.026**	< 0.0001	**0.01**	< 0.01	< 0.01	**0.025**
	16-Feb-21	**0.004**	**0.014**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	**0.001**	**11**	< 0.001	**0.015**	< 0.0001	**0.004**	< 0.01	< 0.01	**0.011**
	17-Mar-21	**0.004**	**0.013**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.002**	< 0.001	**12**	< 0.001	**0.016**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.007**
	19-Aug-21	**0.001**	**0.005**	-	< 0.05	-	< 0.001	< 0.001	< 0.001	**7.14**	-	-	-	< 0.001	-	-	< 0.005
	16-Nov-21	**0.001**	**0.006**	-	< 0.05	-	< 0.001	< 0.001	< 0.001	**4.89**	-	-	-	< 0.001	-	-	< 0.005
	24-Feb-22	**0.004**	**0.004**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**10**	< 0.001	**0.015**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.005**
	27-May-22	< 0.001	**0.01**	-	< 0.05	-	**0.001**	**0.002**	< 0.001	**13**	-	-	-	**0.002**	-	-	< 0.005
	12-Aug-22	< 0.001	**0.012**	-	< 0.05	-	**0.001**	**0.003**	< 0.001	**9.73**	-	-	-	**0.004**	-	-	**0.007**
	18-Nov-22	**0.001**	**0.012**	-	< 0.05	-	< 0.001	**0.002**	**0.002**	**7.82**	-	**0.05**	-	< 0.001	-	-	< 0.005
	15-Feb-23	< 0.001	**0.004**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**5.16**	< 0.001	**0.01**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.009**
	16-May-23	**0.001**	**0.004**	-	< 0.05	-	< 0.001	< 0.001	< 0.001	**4.81**	-	-	-	< 0.001	-	-	**0.008**

Table 7
Surface Water Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals															
		Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WSS - Surface Water		0.006	0.08	0.002	0.1	0.0002	0.004	0.006	0.033	7.25	0.003	0.841	0.0001	0.02	0.01	0.01	0.535
SW4	14-Aug-23	< 0.001	**0.005**	-	< 0.05	-	< 0.001	< 0.001	< 0.001	**4.72**	-	**0.034**	-	< 0.001	-	-	< 0.005
	19-Dec-23	**0.002**	**0.013**	-	< 0.05	-	**0.001**	< 0.001	**0.003**	**8.6**	-	**0.023**	-	**0.001**	-	-	**0.005**
	23-Apr-19	< 0.001	**0.059**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.003**	**0.003**	**2.09**	< 0.001	**0.037**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.03**
	16-May-19	< 0.001	**0.047**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	< 0.001	**1.12**	< 0.001	**0.03**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.019**
	14-Jun-19	< 0.001	**0.041**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.003**	**0.79**	< 0.001	**0.034**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.014**
	16-Jul-19	< 0.001	**0.044**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.002**	**0.96**	< 0.001	**0.043**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.014**
	15-Aug-19	< 0.001	**0.04**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.001**	**0.001**	**0.57**	< 0.001	**0.032**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.009**
	16-Sep-19	< 0.001	**0.046**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.02**	**0.7**	**0.001**	**0.039**	< 0.0001	**0.017**	< 0.01	< 0.01	**0.085**
	15-Oct-19	< 0.001	**0.037**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.004**	-	< 0.001	**0.031**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.018**
	18-Nov-19	< 0.001	**0.035**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	< 0.001	**6.32**	< 0.001	**0.032**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	16-Sep-20	< 0.001	**0.041**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.004**	**0.005**	**0.97**	< 0.001	**0.053**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.02**
	16-Oct-20	< 0.001	**0.03**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	**0.001**	**2.26**	< 0.001	**0.042**	< 0.0001	**0.003**	< 0.01	< 0.01	**0.007**
	16-Nov-20	< 0.001	**0.031**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.004**	**0.001**	**1.93**	< 0.001	**0.074**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.016**
	16-Dec-20	< 0.001	**0.017**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.001**	**0.002**	**32**	< 0.001	**0.035**	< 0.0001	**0.002**	< 0.01	< 0.01	< 0.005
	14-Jan-21	**0.002**	**0.028**	< 0.001	< 0.05	< 0.0001	**0.002**	**0.003**	**0.026**	**20**	< 0.001	**0.171**	< 0.0001	**0.005**	< 0.01	< 0.01	**0.013**
	16-Feb-21	**0.003**	**0.02**	< 0.001	< 0.05	< 0.0001	**0.003**	**0.001**	< 0.001	**27**	< 0.001	**0.054**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.01**
	17-Mar-21	**0.002**	**0.02**	< 0.001	< 0.05	< 0.0001	**0.002**	< 0.001	< 0.001	**16**	< 0.001	**0.057**	< 0.0001	< 0.001	< 0.01	< 0.01	< 0.005
	19-Aug-21	< 0.001	**0.022**	-	< 0.05	-	< 0.001	**0.001**	< 0.001	**2.13**	-	-	-	**0.001**	-	-	**0.005**
	16-Nov-21	< 0.001	**0.016**	-	< 0.05	-	< 0.001	**0.001**	< 0.001	**6.59**	-	-	-	< 0.001	-	-	< 0.005
	24-Feb-22	< 0.001	**0.03**	< 0.001	< 0.05	< 0.0001	< 0.001	**0.002**	< 0.001	**1.19**	< 0.001	**0.034**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.011**
	27-May-22	< 0.001	**0.021**	-	< 0.05	-	< 0.001	**0.001**	< 0.001	**0.68**	-	-	-	**0.001**	-	-	< 0.005
	12-Aug-22	< 0.001	**0.022**	-	< 0.05	-	**0.002**	**0.003**	< 0.001	**0.39**	-	-	-	**0.004**	-	-	**0.011**
	18-Nov-22	**0.002**	**0.013**	-	< 0.05	-	**0.002**	**0.001**	**0.003**	**20**	-	**0.084**	-	**0.001**	-	-	< 0.005
	15-Feb-23	**0.001**	**0.01**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.001**	< 0.001	**12**	< 0.001	**0.017**	< 0.0001	**0.001**	< 0.01	< 0.01	< 0.005
	16-May-23	< 0.001	**0.025**	-	< 0.05	-	< 0.001	**0.003**	**0.004**	**0.38**	-	-	-	**0.003**	-	-	**0.018**
	14-Aug-23	< 0.001	**0.028**	-	< 0.05	-	< 0.001	**0.002**	< 0.001	**0.26**	-	**0.022**	-	**0.003**	-	-	**0.021**
	19-Dec-23	**0.006**	**0.009**	-	< 0.05	-	**0.003**	< 0.001	< 0.001	**45**	-	**0.017**	-	< 0.001	-	-	**0.006**

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
mg/L - Milligrams per litre
Bold indicates a detection above the laboratory limit of reporting
Highlighting indicates an exceedance of the corresponding criteria (highlighting corresponds to the guideline with the highest criteria value where analytical result exceeds more than one guideline)

Criteria:
SWMP 2021 - Soil and Water Management Plan, July 2021

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 8
Surface Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

KLEINFELDER
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Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids							Perfluoroalkyl
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Surface Water		--	--	--	--	--	--	--	--	--	--	--	0.56	--	--	--
Sample Name	Sample Date															
SW1	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
SW2	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
SW3	22-Feb-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
SW4	16-May-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-19	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Oct-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Dec-20	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jan-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Feb-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Table 8
Surface Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids							Perfluoroalkyl
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WSS - Surface Water		--	--	--	--	--	--	--	--	--	--	--	0.56	--	--	--
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
Bold indicates a detection above the laboratory limit of reporting

Criteria:

Table 8
Surface Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.01**	**0.01**	**0.01**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.01**	**0.01**	**0.01**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.02**	**0.02**	**0.02**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.02**	**0.02**	**0.02**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	**0.03**	< 0.02	**0.04**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.07**	**0.07**	**0.07**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.03**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	**0.02**	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.04**	**0.04**	**0.04**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Williamtown Sand Syndicate
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Table 8
Surface Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Williamtown Sand Syndicate
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Monthly Water Monitoring Event

Table 9
Wash Plant Water Analytical Results - Dissolved Metals
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Metals																
		Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc
LOR		0.01	0.001	0.001	0.001	0.05	0.0001	0.001	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.01	0.01	0.005
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample Name	Sample Date																	
WPW	19-Aug-21	-	< 0.001	-	-	-	-	-	-	-	< 0.05	-	**0.062**	-	-	-	-	-
	22-Sep-21	-	< 0.001	-	-	-	-	-	-	-	**0.08**	-	**0.051**	-	-	-	-	-
	13-Oct-21	-	< 0.001	-	-	-	-	-	-	-	**0.22**	-	**0.079**	-	-	-	-	-
	16-Nov-21	-	< 0.001	-	-	-	-	-	-	-	**0.29**	-	**0.045**	-	-	-	-	-
	15-Dec-21	-	< 0.001	-	-	-	-	-	-	-	**0.2**	-	**0.078**	-	-	-	-	-
	18-Jan-22	-	< 0.001	-	-	-	-	-	-	-	**0.56**	-	**0.038**	-	-	-	-	-
	24-Feb-22	-	< 0.001	-	-	-	-	-	-	-	**1.02**	-	**0.084**	-	-	-	-	-
	17-Mar-22	-	< 0.001	-	-	-	-	-	-	-	**0.97**	-	**0.05**	-	-	-	-	-
	12-Apr-22	-	< 0.001	-	-	-	-	-	-	-	**0.44**	-	**0.042**	-	-	-	-	-
	27-May-22	-	< 0.001	-	-	-	-	-	-	-	**0.07**	-	**0.038**	-	-	-	-	-
	17-Jun-22	-	< 0.001	-	-	-	-	-	-	-	**0.94**	-	**0.061**	-	-	-	-	-
	27-Jul-22	-	< 0.001	-	-	-	-	-	-	-	**0.27**	-	**0.038**	-	-	-	-	-
	12-Aug-22	-	< 0.001	-	-	-	-	-	-	-	**0.17**	-	**0.026**	-	-	-	-	-
	16-Sep-22	-	< 0.001	-	-	-	-	-	-	-	**0.58**	-	**0.069**	-	-	-	-	-
	24-Oct-22	-	**0.002**	-	-	-	-	-	-	-	**2.22**	-	**0.118**	-	-	-	-	-
	18-Nov-22	-	< 0.001	-	-	-	-	-	-	-	**0.56**	-	**0.066**	-	-	-	-	-
	14-Dec-22	-	< 0.001	-	-	-	-	-	-	-	**0.42**	-	**0.062**	-	-	-	-	-
	17-Jan-23	-	< 0.001	-	-	-	-	-	-	-	**0.36**	-	**0.05**	-	-	-	-	-
WPW2	15-Feb-23	-	< 0.001	**0.015**	< 0.001	< 0.05	< 0.0001	< 0.001	< 0.001	**0.003**	< 0.05	< 0.001	**0.004**	< 0.0001	< 0.001	< 0.01	< 0.01	**0.115**
	15-Mar-23	-	< 0.001	-	-	-	-	-	-	-	**0.15**	-	**0.061**	-	-	-	-	-
	18-Apr-23	-	< 0.001	**0.009**	< 0.001	< 0.05	< 0.0001	**0.001**	**0.001**	**0.004**	**0.6**	< 0.001	**0.049**	< 0.0001	**0.002**	< 0.01	< 0.01	**0.053**
	16-May-23	-	< 0.001	-	-	-	-	-	-	-	**0.28**	-	**0.07**	-	-	-	-	-
	14-Jun-23	-	< 0.001	-	-	-	-	-	-	-	**0.33**	-	**0.047**	-	-	-	-	-
	24-Jul-23	-	< 0.001	-	-	-	-	-	-	-	**0.39**	-	**0.08**	-	-	-	-	-
	14-Aug-23	-	< 0.001	-	-	-	-	-	-	-	**0.88**	-	**0.058**	-	-	-	-	-
	13-Sep-23	-	< 0.001	-	-	-	-	-	-	-	**0.2**	-	**0.047**	-	-	-	-	-
	23-Oct-23	-	< 0.001	-	-	-	-	-	-	-	**0.26**	-	**0.062**	-	-	-	-	-
	22-Nov-23	-	< 0.001	-	-	-	-	-	-	-	**0.31**	-	**0.055**	-	-	-	-	-
	19-Dec-23	**0.1**	-	-	-	-	-	-	-	-	**0.07**	-	**0.063**	-	-	-	-	-
	18-Jan-24	-	< 0.001	**0.007**	-	-	-	< 0.001	-	**0.006**	**0.16**	-	**0.031**	-	**0.002**	-	-	**0.023**

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
mg/L - Milligrams per litre
Bold indicates a detection above the laboratory limit of reporting

Table 10
Wash Plant Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte		Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl		
		Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluorotridecanoic acid (PFTrDA)
LOR		0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample Name	Sample Date															
WPW	19-Aug-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Sep-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Oct-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Nov-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Dec-21	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Jan-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Feb-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Mar-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Apr-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-May-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	17-Jun-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	27-Jul-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	12-Aug-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	16-Sep-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Oct-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Nov-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	**0.01**	< 0.02	< 0.02	< 0.02
	14-Dec-22	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	**0.01**	< 0.02	< 0.02	< 0.02
	17-Jan-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
WPW2	15-Feb-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	15-Mar-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	18-Apr-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	**0.01**	< 0.02	< 0.02	< 0.02
	16-May-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Jun-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	24-Jul-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	14-Aug-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	13-Sep-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	23-Oct-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	22-Nov-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02
	19-Dec-23	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	**0.01**	< 0.02	< 0.02	< 0.02
	18-Jan-24	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
Bold indicates a detection above the laboratory limit of reporting

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 10
Wash Plant Water Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Carboxylic Acids				Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)	Sum of PFAS
0.02	0.02	0.05	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.05	0.05	0.05	0.05	0.01	0.01	0.01
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	-	< 0.02	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.01**	**0.01**	**0.01**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	**0.03**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	**0.03**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.01**	**0.01**	**0.01**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.02**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.04**	**0.05**	**0.05**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.04**	**0.04**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.02**	**0.02**	**0.02**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.02**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.04**	**0.05**	**0.05**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	**0.03**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.03**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	**0.02**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.02**	**0.02**	**0.02**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	**0.01**	-	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.02**	**0.03**	**0.03**
< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	-	< 0.02	**0.01**	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	**0.01**	**0.01**	**0.01**

Notes:
- - Not analysed
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
Bold indicates a detection above the laboratory limit of reporting

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 11
QA/ QC Analytical Results - Dissolved Metals, Anions, and Cations
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte			BTEXN								Anions and Cations
			Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Sum of BTEX	Magnesium
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Sample Name	Sample Date	Sample Type									
TB_180124_18012024	18-Jan-24	Trip Blank	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 1.0
RB_180124_18012024	18-Jan-24	Rinsate	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 5.0	< 1.0	< 1.0

Notes:
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre
mg/L - Milligrams per litre
BTEXN - Benzene, toluene, ethylbenzene, total xylenes, naphthalene

Table 12
QA/QC Analytical Results - PFAS
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte			Metals							
			Arsenic	Barium	Chromium	Copper	Iron	Manganese	Nickel	Zinc
Units			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample Name	Sample Date	Sample Type								
TB_180124_18012024	18-Jan-24	Trip Blank	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.005
RB_180124_18012024	18-Jan-24	Rinsate	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.005

Notes:
< - Less than laboratory limit of reporting
mg/L - Milligrams per litre

Table 13
QA/QC Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Analyte			Perfluoroalkyl Sulfonamides							Perfluoroalkyl Carboxylic Acids		Perfluoroalkyl Carboxylic Acids				
			Perfluorooctane sulfonamide (FOSA)	N-Methyl-perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic aicd (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample Name	Sample Date	Sample Type														
TB_180124_18012024	18-Jan-24	Trip Blank	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02
RB_180124_18012024	18-Jan-24	Rinsate	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02

Notes:
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre

Table 13
QA/QC Analytical Results - Hydrocarbons
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl Sulfonic Acids		Perfluoroalkyl Sulfonic Acids						(n:2) Fluorotelomer Sulfonic Acids	Sum of PFAS		
Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorobutanesulfonic acid (PFBS)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptanesulfonate (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	4:2 Fluorotelomer Sulfonate (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WADER List)	Sum of PFAS
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
< 0.02	< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01
< 0.02	< 0.02	< 0.02	< 0.05	< 0.02	< 0.02	< 0.01	< 0.02	< 0.01	< 0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01

Notes:
< - Less than laboratory limit of reporting
µg/L - Micrograms per litre

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
BH1	27-Jul-22	NM	NM	3.836	8.210	N	--
	12-Aug-22	NM	NM	NC	NM	--	--
BH1A	16-Sep-22	8.98	5.030	3.950	12.400	N	--
	24-Oct-22	8.98	5.034	3.946	12.266	N	--
	18-Nov-22	8.98	4.810	4.170	12.290	N	Gauge only
	14-Dec-22	8.98	4.513	4.467	12.163	N	--
	17-Jan-23	8.98	4.142	4.838	12.181	N	--
	15-Feb-23	8.98	3.885	5.095	12.190	N	Clear
	15-Mar-23	8.98	3.766	5.214	12.160	N	--
	18-Apr-23	8.98	3.764	5.216	12.155	N	Gauge only
	16-May-23	8.98	3.688	5.292	12.160	N	Gauge only
	14-Jun-23	8.98	3.792	5.188	12.160	N	--
	24-Jul-23	8.98	3.522	5.458	12.150	N	--
	14-Aug-23	8.98	3.501	5.479	12.150	N	Clear, no odor, no sheen
	13-Sep-23	8.98	3.451	5.529	12.160	N	--
	23-Oct-23	8.98	3.310	5.670	12.160	N	Gauge only
	22-Nov-23	8.98	3.231	5.749	12.153	N	Gauge only
	19-Dec-23	8.98	3.147	5.833	12.230	N	Clear, no odor, no sheen
	18-Jan-24	8.98	3.015	5.965	12.144	N	Clear
BH2	27-Jul-22	7.79	3.897	3.893	8.940	N	Clear
	12-Aug-22	7.79	3.735	4.055	8.000	N	Clear
	16-Sep-22	7.79	3.671	4.119	8.997	N	Dark brown
	24-Oct-22	7.79	3.608	4.182	9.952	N	Clear
	18-Nov-22	7.79	3.410	4.380	9.450	N	Light brown, NO, NS
	14-Dec-22	7.79	3.203	4.587	8.879	N	Very light brown
	17-Jan-23	7.79	2.917	4.873	8.930	N	Brown
	15-Feb-23	7.79	2.732	5.058	8.871	N	Odor, Light brown
	15-Mar-23	7.79	2.655	5.135	8.842	N	Light brown
	18-Apr-23	7.79	2.703	5.087	8.861	N	Light brown, no odour, no sheen
	16-May-23	7.79	2.654	5.136	8.850	N	Brown, no odour / sheen, well in good condition
	14-Jun-23	7.79	2.706	5.084	8.840	N	Clear
	24-Jul-23	7.79	2.574	5.216	8.840	N	Lt brown
	14-Aug-23	7.79	2.582	5.208	8.825	N	Brown, no odour, no sheen
	14-Sep-23	7.79	2.538	5.252	8.840	N	Lt brown
	23-Oct-23	7.79	2.407	5.383	8.836	N	Light brown, no odour, no sheen
	22-Nov-23	7.79	2.361	5.429	8.803	N	Brown, no odour, no sheen
	19-Dec-23	7.79	2.278	5.512	8.832	N	Brown, organic odour, no sheen
	18-Jan-24	7.79	2.154	5.636	8.810	N	Lightbrown
	27-Jul-22	3.06	2.296	0.764	5.980	N	Clear
	12-Aug-22	3.06	2.261	0.799	5.000	N	Clear
	16-Sep-22	3.06	2.234	0.826	5.990	N	Light brown
	24-Oct-22	3.06	2.239	0.821	6.050	N	Clear
	18-Nov-22	3.06	2.110	0.950	6.010	N	Clear, NO/NS
	14-Dec-22	3.06	1.941	1.119	6.025	N	Clear
	17-Jan-23	3.06	1.761	1.299	6.006	N	Clear
	15-Feb-23	3.06	1.627	1.433	6.015	N	Clear
	15-Mar-23	3.06	1.625	1.435	6.015	N	Clear

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
BH4	18-Apr-23	3.06	1.832	1.228	6.018	N	Clear, no odour, no sheen
	16-May-23	3.06	1.771	1.289	5.992	N	Clear, no odour / sheen, well in good condition
	14-Jun-23	3.06	1.832	1.228	5.990	N	Slightly cloudy/clear
	24-Jul-23	3.06	1.814	1.246	5.995	N	Clear
	14-Aug-23	3.06	1.809	1.251	6.010	N	Clear, low Sulphur odor, no sheen
	14-Sep-23	3.06	1.529	1.531	6.020	N	Clear
	23-Oct-23	3.06	1.475	1.585	6.014	N	Clear, no odour, no sheen
	22-Nov-23	3.06	1.493	1.567	6.010	N	Clear, no odour, no sheen
	19-Dec-23	3.06	1.343	1.717	6.110	N	Light brown, no odor, no sheen
	18-Jan-24	3.06	1.244	1.816	6.000	N	Clear
BH5	12-Aug-22	7.36	2.320	5.040	0.000	N	--
	18-Nov-22	7.36	2.169	5.191	8.820	N	Gauge only
	15-Feb-23	7.36	-1.375	8.735	5.612	N	Odor, Light brown
	14-Aug-23	7.36	2.013	5.347	8.700	N	Gauge only
	19-Dec-23	7.36	1.536	5.824	8.723	N	Gauge only
BH6	27-Jul-22	3.62	2.914	0.706	4.510	N	Odor, Clear
	12-Aug-22	3.62	2.909	0.711	4.000	N	Odor, Clear
	16-Sep-22	3.62	2.904	0.716	4.580	N	Odor, Clear
	24-Oct-22	3.62	2.870	0.750	4.554	N	Odor, Clear
	18-Nov-22	3.62	2.815	0.805	4.540	N	Cloudy, low sulfur odour, NS
	14-Dec-22	3.62	2.596	1.024	4.530	N	Odor, Light yellow
	17-Jan-23	3.62	2.381	1.239	4.520	N	--
	15-Feb-23	3.62	2.267	1.353	4.529	N	Odor, Clear
	15-Mar-23	3.62	2.303	1.317	4.535	N	Odor, Clear
	18-Apr-23	3.62	2.580	1.040	4.535	N	Clear, no odour, no sheen
	16-May-23	3.62	2.480	1.140	4.515	N	Clear, low Sulphur odour, no sheen, well in good condition
	14-Jun-23	3.62	2.542	1.078	4.490	N	Odor, Clear
	24-Jul-23	3.62	2.645	0.975	4.920	N	Odor, Cloudy white
	14-Aug-23	3.62	2.572	1.048	4.525	N	Clear, low Sulphur odor, no sheen
	14-Sep-23	3.62	2.376	1.244	4.530	N	Odor, Clear
	23-Oct-23	3.62	2.097	1.523	4.528	N	Clear, no odour, no sheen
	22-Nov-23	3.62	2.203	1.417	4.537	N	Clear, Sulphur odour, no sheen
	19-Dec-23	3.62	2.964	0.656	4.521	N	Clear, Sulphur odor, no sheen
	18-Jan-24	3.62	1.924	1.696	4.523	N	Odor, Yellow
BH7	27-Jul-22	2.98	2.074	0.906	4.500	N	Weak Odor, Light yellow
	12-Aug-22	2.98	2.035	0.945	4.000	N	Light yellow
	16-Sep-22	2.98	2.027	0.953	4.499	N	Yello
	24-Oct-22	2.98	2.040	0.940	4.530	N	Odor, Brown
	18-Nov-22	2.98	1.890	1.090	5.500	N	Light brown, low sulfur odour, NS
	14-Dec-22	2.98	1.702	1.278	4.520	N	Odor, Light yellow
	17-Jan-23	2.98	1.584	1.396	4.510	N	Odor, Light yellow, almost clear
	15-Feb-23	2.98	1.511	1.469	4.520	N	Odor, Light brown
	15-Mar-23	2.98	1.535	1.445	4.505	N	Odor, Lght yeloow
	18-Apr-23	2.98	1.789	1.191	4.520	N	Light yellow, no odour, no sheen
	16-May-23	2.98	1.715	1.265	4.520	N	Light yellow, low sulphur odour, no sheen, well in good condition
	14-Jun-23	2.98	1.762	1.218	4.520	N	Light yellow
	24-Jul-23	2.98	1.769	1.211	4.520	N	Weak Odor, Lt yellow

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
	14-Aug-23	2.98	1.766	1.214	4.510	N	Light brown, moderate Sulphur odor, no sheen
	14-Sep-23	2.98	1.685	1.295	4.519	N	Odor, Lt yellow
	23-Oct-23	2.98	1.453	1.527	4.526	N	Clear, low sulphur odour, no sheen
	22-Nov-23	2.98	1.467	1.513	4.525	N	Clear, Sulphur odour, no sheen
	19-Dec-23	2.98	1.289	1.691	4.506	N	Light brown, Sulphur odor, no sheen
	18-Jan-24	2.98	1.199	1.781	4.516	N	Odor, Brown
BH8	12-Aug-22	3.88	2.191	1.689	0.000	N	Strong Odor, Milky white
	18-Nov-22	3.88	2.055	1.825	6.040	N	Cloudy, low sulfur odour, NS
	15-Feb-23	3.88	1.540	2.340	6.055	N	Odor, Light brown
	16-May-23	3.88	1.858	2.022	6.025	N	Yellow, strong sulphur odour, no sheen, well in good condition
	14-Aug-23	3.88	1.964	1.916	3.490	N	Yellow, moderate Sulphur odor, no sheen, white suspended sediment
	19-Dec-23	3.88	1.335	2.545	6.200	N	light brown, Sulphur odor, no sheen
	18-Jan-24	3.88	1.266	2.614	6.027	N	Odor, Yellow
BH9	27-Jul-22	17.75	2.709	15.041	16.190	N	--
	12-Aug-22	17.75	2.600	15.150	16.000	N	--
	16-Sep-22	17.75	2.494	15.256	16.145	N	--
	24-Oct-22	17.75	2.471	15.279	16.000	N	--
	18-Nov-22	17.75	2.291	15.459	16.320	N	Gauge only
	14-Dec-22	17.75	2.091	15.659	16.110	N	--
	17-Jan-23	17.75	1.895	15.855	16.240	N	--
	15-Feb-23	17.75	1.747	16.003	16.108	N	--
	15-Mar-23	17.75	1.707	16.043	16.090	N	--
	18-Apr-23	17.75	1.904	15.846	16.095	N	Gauge only
	16-May-23	17.75	1.832	15.918	16.075	N	Gauge only
	14-Jun-23	17.75	1.872	15.878	16.100	N	--
	24-Jul-23	17.75	1.834	15.916	1616.099	N	--
	14-Aug-23	17.75	1.864	15.886	16.090	N	Gauge only
	14-Sep-23	17.75	11.797	5.953	16.070	N	--
	23-Oct-23	17.75	NM	NC	16.070	Y	Gauge only, Dry
	22-Nov-23	17.75	NM	NC	16.085	Y	Gauge only
	19-Dec-23	17.75	NM	NC	16.082	Y	Gauge only
	18-Jan-24	17.75	NM	NC	16.099	Y	Dry
BH9A	27-Jul-22	10.75	2.548	8.202	12.440	N	Weak Odor, Clear
	12-Aug-22	10.75	2.455	8.295	12.000	N	Light yellow
	16-Sep-22	10.75	2.395	8.355	12.283	N	Odor, Light brown
	24-Oct-22	10.75	2.384	8.366	12.420	N	Clear
	18-Nov-22	10.75	2.229	8.521	12.430	N	Brown, NO/NS
	14-Dec-22	10.75	2.053	8.697	12.295	N	Light yellow
	17-Jan-23	10.75	1.881	8.869	12.264	N	Weak Odor, Light brown
	15-Feb-23	10.75	1.744	9.006	12.235	N	Odor, Light bown
	15-Mar-23	10.75	1.727	9.023	12.241	N	Light brown
	18-Apr-23	10.75	1.934	8.816	12.215	N	Light brown, moderate sulfur odour, no sheen
	16-May-23	10.75	1.871	8.879	12.235	N	Light brown, low sulphur odour, no sheen, well in good condition
	14-Jun-23	10.75	1.931	8.819	12.230	N	Weak Odor, Light yellow/clear
	24-Jul-23	10.75	1.891	8.859	12.270	N	Strong Odor, Lt yellow
	14-Aug-23	10.75	1.905	8.845	12.195	N	Brown, strong Sulphur odor, no sheen
	14-Sep-23	10.75	1.828	8.922	12.290	N	Odor, Brown

Williamtown Sand Syndicate
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Monthly Water Monitoring Event

Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
BH10	23-Oct-23	10.75	1.586	9.164	12.225	N	Light brown, Moderate Sulphur odour, no sheen
	22-Nov-23	10.75	1.592	9.158	12.200	N	Brown, moderate sulphur odour, no sheen
	19-Dec-23	NM	NM	9.300	12.186	N	Light brown, no odor, no sheen
	23-Jan-24	NM	NM	9.408	12.225	N	Odor, Yellow
	12-Aug-22	6.69	4.991	1.699	0.000	N	--
	18-Nov-22	6.69	4.600	2.090	3.480	N	Gauge only
	15-Feb-23	6.69	3.771	2.919	3.486	N	--
	14-Aug-23	6.69	3.473	3.217	3.490	N	Gauge only
	19-Dec-23	NM	NM	NC	3.452	Y	Gauge only
BH11	27-Jul-22	6.63	5.837	0.793	5.280	N	Strong Odor, Light yellow
	16-Sep-22	6.63	5.783	0.847	5.304	N	Odor, Yellow
	24-Oct-22	6.63	5.760	0.870	4.315	N	Odor, Yellow
	18-Nov-22	6.63	5.450	1.180	5.290	N	Yellow, moderate sulfur odour, NS
	14-Dec-22	6.63	5.174	1.456	5.302	N	Odor, Light yellow
	17-Jan-23	6.63	4.836	1.794	5.300	N	Odor, Light yellow
	15-Feb-23	6.63	4.577	2.053	5.309	N	Odor, Yellow light
	15-Mar-23	6.63	4.431	2.199	5.300	N	Odor, Yellow
	18-Apr-23	6.63	4.520	2.110	5.300	N	Light yellow, strong sulfur odour, no sheen
	16-May-23	6.63	4.402	2.228	5.295	N	Light yellow, strong sulphur odour, no sheen, well in good condition
	14-Jun-23	6.63	4.410	2.220	5.280	N	Strong Odor, Yellow
	24-Jul-23	6.63	4.209	2.421	5.305	N	Strong Odor, Yellow
	14-Aug-23	6.63	4.174	2.456	5.280	N	Light yellow, strong Sulphur odor, no sheen
	14-Sep-23	6.63	4.120	2.510	5.300	N	Odor, Light yellow
	23-Oct-23	6.63	3.932	2.698	5.313	N	Clear, High Sulphur odour, no sheen
	22-Nov-23	6.63	3.810	2.820	5.230	N	Clear, Sulphur odour, no sheen
	19-Dec-23	6.63	3.715	2.915	5.290	N	Clear, no odor, no sheen
	18-Jan-24	6.63	3.558	3.072	5.302	N	Odor, Slight yellow
BH12A	16-Sep-22	5.62	3.322	2.298	7.337	N	--
	24-Oct-22	5.62	3.329	2.291	7.340	N	Light brown
	18-Nov-22	5.62	3.190	2.430	7.390	N	Gauge only
	14-Dec-22	5.62	3.033	2.587	7.370	N	--
	17-Jan-23	5.62	2.907	2.713	7.327	N	--
	15-Feb-23	5.62	2.717	2.903	7.335	N	Brown
	15-Mar-23	5.62	2.664	2.956	7.310	N	--
	18-Apr-23	5.62	2.746	2.874	7.312	N	Gauge only
	16-May-23	5.62	2.698	2.922	7.300	N	Gauge only
	14-Jun-23	5.62	2.724	2.896	7.300	N	--
	24-Jul-23	5.62	2.640	2.980	7.290	N	--
	14-Aug-23	5.62	2.631	2.989	7.290	N	Light brown, low Sulphur odor, no sheen
	14-Sep-23	5.62	3.584	2.036	7.290	N	--
	23-Oct-23	5.62	2.443	3.177	7.309	N	Gauge only
	22-Nov-23	5.62	2.418	3.202	7.310	N	Gauge only
	19-Dec-23	5.62	2.307	3.313	7.313	N	Light brown, low Sulphur odor, no sheen
	18-Jan-24	5.62	2.195	3.425	7.317	N	Clear
MW239D	18-Nov-22	3.04	2.300	0.740	20.490	N	Gauge only
	15-Feb-23	3.04	1.964	1.076	20.500	N	--
	15-Aug-23	3.04	2.161	0.879	20.275	N	Gauge only

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Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
	19-Dec-23	3.04	2.762	0.278	20.371	N	Gauge only
MW239S	27-Jul-22	3.04	2.510	0.530	3.800	N	Strong Odor, Light yellow
	12-Aug-22	3.04	2.445	0.595	3.000	N	Odor, Cloudy yellow
	16-Sep-22	3.04	2.420	0.620	3.820	N	Odor, Yellow
	24-Oct-22	3.04	2.430	0.610	3.620	N	Odor, Clear
	18-Nov-22	3.04	2.280	0.760	3.820	N	Cloudy, low sulfur odour, NS
	14-Dec-22	3.04	2.129	0.911	3.810	N	Odor, Light brown
	17-Jan-23	3.04	2.008	1.032	3.618	N	Strong Odor, Brown
	15-Feb-23	3.04	1.939	1.101	3.815	N	Odor, Light brown
	15-Mar-23	3.04	1.952	1.088	3.805	N	Odor, Orange brown
	18-Apr-23	3.04	2.155	0.885	3.827	N	Light brown, moderate sulfur odour, no sheen
	16-May-23	3.04	2.102	0.938	3.787	N	Light brown, moderate sulphur odour, no sheen, well in good condition
	14-Jun-23	3.04	2.139	0.901	3.760	N	Odor, Clear
	24-Jul-23	3.04	2.128	0.912	3.790	N	Odor, Light brown
	15-Aug-23	3.04	2.136	0.904	3.790	N	Light yellow, strong Sulphur odor, no sheen
	14-Sep-23	3.04	2.060	0.980	3.786	N	Odor, Brown
	23-Oct-23	3.04	1.870	1.170	3.775	N	Light brown, no odour, no sheen
	22-Nov-23	3.04	1.865	1.175	3.785	N	Brown to clear, Sulphur odour, no sheen
	19-Dec-23	3.04	1.742	1.298	3.780	N	Light brown, Sulphur odor, no sheen
	18-Jan-24	3.04	1.649	1.391	3.783	N	Odor, Yellow
SW1	12-Aug-22	NM	NM	NC	NM	--	Odor, Yellow
	15-Feb-23	NM	NM	NC	NM	--	Odor, Clear
	14-Aug-23	NM	NM	NC	NM	N	Clear, Green algae, no odor, no sheen
	19-Dec-23	NM	NM	NC	NM	N	Light brown, sulpher odor, slight sheen
	23-Jan-24	NM	NM	NC	NM	--	Clear
SW2	12-Aug-22	NM	NM	NC	NM	--	Light yellow
	15-Feb-23	NM	NM	NC	NM	--	Odor, Light brown
	14-Aug-23	NM	NM	NC	NM	N	Clear, low Sulphur odor, no sheen
	19-Dec-23	NM	NM	NC	NM	N	Dy
	23-Jan-24	NM	NM	NC	NM	--	--
SW3	12-Aug-22	NM	NM	NC	NM	--	Clear
	15-Feb-23	NM	NM	NC	NM	--	Odor, Yellow tanins
	14-Aug-23	NM	NM	NC	NM	N	Clear, no odor, no sheen
	19-Dec-23	NM	NM	NC	NM	N	Light brown, biofilm, organic odor
	23-Jan-24	NM	NM	NC	NM	--	Odor, Brown tanins
SW4	12-Aug-22	NM	NM	NC	NM	--	Clear
	15-Feb-23	NM	NM	NC	NM	--	Odor, Yellow tanins
	14-Aug-23	NM	NM	NC	NM	N	Clear, no odor, no sheen
	19-Dec-23	NM	NM	NC	NM	N	Brown, Bio film, organic odour
	23-Jan-24	NM	NM	NC	NM	--	--
WPW	27-Jul-22	NM	NM	NC	NM	--	Dark cloudy brown
	12-Aug-22	NM	NM	NC	NM	--	Light brown
	16-Sep-22	NM	NM	NC	NM	--	Brown
	24-Oct-22	NM	NM	NC	NM	--	Dark brown
	14-Dec-22	NM	NM	NC	NM	--	Brown
	17-Jan-23	NM	NM	NC	NM	--	Weak Odor, Brown
	15-Feb-23	NM	NM	NC	NM	--	Clear

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Table 14
Gauging Data
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

Well ID	Date	TOC (mAHD)	Water Table Elevation (mAHD)	DTW (mBTOC)	Well Depth (m)	Dry Indicator (Y/N)	Remark
	15-Mar-23	NM	NM	NC	NM	--	Odor, Brown
WPW2	18-Apr-23	NM	NM	NC	NM	--	Light brown, low earthy odour, no sheen
	14-Jun-23	NM	NM	NC	NM	--	Turbid muddy brown
	24-Jul-23	NM	NM	NC	NM	--	Odor, Dark brown
	14-Aug-23	NM	NM	NC	NM	N	Light brown, earthy odor, no sheen
	14-Sep-23	NM	NM	NC	NM	--	Odor, Brown
	23-Oct-23	NM	NM	NC	NM	N	Brown, earthy odour, no sheen
	19-Dec-23	NM	NM	NC	NM	N	Brown, earthy odor, no sheen
	18-Jan-24	NM	NM	NC	NM	--	Odor, Brown

Williamtown Sand Syndicate
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Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

Parameters		DO	ORP	PH	SC	TDS	TEMP	TURB
Unit		mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
Sample Name	Measurement Date							
BH11	27-Jul-22	4.74	-39	4.2	158	--	14	9.7
	16-Sep-22	2.46	-63.9	4.54	118.4	89	18	26.3
	24-Oct-22	2.12	-92.9	4.37	120.3	90	18.1	23.72
	18-Nov-22	2.01	-100.5	4.47	120.7	89	18.8	--
	14-Dec-22	3.19	-86	4.48	130.2	85	19.1	73
	17-Jan-23	2.16	-80.5	4.31	133.5	89	23.9	5.8
	15-Feb-23	4	-66.5	4.45	110.1	76	22.1	53.17
	15-Mar-23	3.05	-43.4	4.58	102.9	71	21.6	4.83
	18-Apr-23	3.11	-69.5	4.61	100.1	72	20.1	417.6
	16-May-23	3.13	-60	4.45	111.1	83	18.4	--
	14-Jun-23	2.5	-48.9	4.38	122.9	80	16.6	74.09
	24-Jul-23	5.69	-35.6	4.45	102.2	80	16	133
	14-Aug-23	3	16	4.26	125.2	81	16.5	75
	14-Sep-23	3.34	-83.7	4.77	91	72	15.8	104.53
	23-Oct-23	3.43	4.3	6.07	93.6	66	20.6	47.66
	22-Nov-23	4.19	-94	5.45	79.5	58	19.1	45
	19-Dec-23	3.5	-15.4	4.62	124	83	23.3	4.23
	18-Jan-24	3.51	-62.4	4.87	146.7	95	23.1	17
BH12A	24-Oct-22	2.94	141.5	4.95	120.8	89	18.8	146
	15-Feb-23	2.5	167.5	4.93	138.4	90	24.9	287.01
	14-Aug-23	2.9	166.6	3.82	137.5	89	16.5	21
	19-Dec-23	2.69	168.5	4.5	151	100	24.1	30.65
	18-Jan-24	2.1	115.9	4.54	142.3	91	25.8	9.1
BH1A	15-Feb-23	5.8	192.5	4.33	82.6	55	23.8	--
	14-Aug-23	4.1	252.3	4.05	101.5	66	18.4	72
	19-Dec-23	6.33	214.6	4.28	114.7	75	25	27.8
	18-Jan-24	4.92	197	4.3	91.2	62	22.8	85
BH2	27-Jul-22	5.85	223	4.13	87.6	--	15.6	131
	12-Aug-22	4.34	269.7	4.52	53	--	16.7	15.58
	16-Sep-22	3.28	262.7	4.76	80.7	60	18.1	710.34
	24-Oct-22	4.55	218.8	4.71	73.6	55	18.5	33.87
	18-Nov-22	1.9	213.9	4.7	73.2	54	19	--
	14-Dec-22	4.14	229.7	4.79	78.6	51	19.3	27.86
	17-Jan-23	3.88	211.3	4.69	75.6	228.72	21.7	240.6
	15-Feb-23	4.2	300.5	4.54	70.9	50	21	133.94
	15-Mar-23	3.62	227.7	4.67	69	49	20.8	103
	18-Apr-23	4.84	224.5	4.88	64.6	4.6	20.2	44.8

Williamtown Sand Syndicate
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Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

	Parameters	DO	ORP	PH	SC	TDS	TEMP	TURB
	Unit	mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
	16-May-23	3.27	234	4.54	64.1	47	18.6	--
	14-Jun-23	3.1	258	4.43	79.2	52	17.9	0.86
	24-Jul-23	4.14	103.7	4.57	84	64	17.4	40
	14-Aug-23	64	187.8	4.38	102.5	67	18.1	164
	14-Sep-23	3.13	209.2	4.72	71.9	55	17	44.01
	23-Oct-23	3.87	177	5.69	79.5	56	21.3	50.58
	22-Nov-23	5.32	183.4	5.34	55.6	43	19.3	85
	19-Dec-23	7.11	173.9	4.64	299.6	68	22.4	398
	18-Jan-24	4.01	168.8	4.75	70.9	49	22.1	87
	27-Jul-22	3	190.7	4.6	90.2	--	14.1	121
	12-Aug-22	3.25	236	4.86	77	--	15.5	10.2
	16-Sep-22	5.35	163.8	5.29	75.2	60	15.4	34.07
	24-Oct-22	3.52	162.3	5.45	--	57	17.8	45.42
	18-Nov-22	3.57	170.6	5.32	80.2	62	16.8	--
	14-Dec-22	3.95	119.8	5.59	92.5	60	18.1	16.36
	17-Jan-23	1.89	159.5	5.31	128.8	91	20.9	8
	15-Feb-23	2.6	166	5.47	115.5	82	20.8	29.64
	15-Mar-23	4.46	179	5.22	92.5	65	21	8.26
BH4	18-Apr-23	4.84	196.7	5.27	70.3	52	18.7	8.45
	16-May-23	3.96	217.9	4.84	65.5	56	16.8	--
	14-Jun-23	2.7	157.9	4.97	92.8	60	16.4	3.33
	24-Jul-23	3.41	215.7	5.18	66	53	15.3	7.71
	14-Aug-23	4.9	143.9	5.11	87.7	57	15.6	18.06
	14-Sep-23	4.53	213	5.06	70.8	56	15.2	27.65
	23-Oct-23	3.58	155.7	6.16	126.4	95	18.1	29.4
	22-Nov-23	3.35	200	5.93	69.2	50	20	24
	19-Dec-23	2.38	196.4	4.76	99.9	69	21.9	35
	18-Jan-24	3.92	182.4	5.35	85.1	60	21	12.43
BH5	15-Feb-23	3	15.6	4.64	132.9	88	23.9	75.75
	27-Jul-22	4.75	-104	4.76	225	--	14.2	16.8
	12-Aug-22	3.94	-80	5.1	217	--	14.2	156
	16-Sep-22	2.64	-112.5	5.18	229.4	71	18.1	101.53
	24-Oct-22	1.75	-66.8	4.01	84.3	171	18.3	65.7
	18-Nov-22	2.29	-85.2	4.14	224.4	156	21.7	--
	14-Dec-22	1.72	-45.6	4.11	232.3	151	21.1	35
	17-Jan-23	2.46	-7	3.82	245.5	162	24.5	34.06
	15-Feb-23	3	-57.2	4.55	233.8	148	26.4	88.41
	15-Mar-23	4.29	150.2	4.09	233.2	155	23.9	32.96

Williamtown Sand Syndicate
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Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

	Parameters	DO	ORP	PH	SC	TDS	TEMP	TURB
	Unit	mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
BH6	18-Apr-23	2.64	-60.1	4.85	195.4	137	21	19.48
	16-May-23	3.45	-39.9	4.8	195.1	140	20.2	--
	14-Jun-23	2.9	-49.9	4.59	242.1	157	15.7	82.08
	24-Jul-23	8.84	97	4.91	230.2	174	17.7	230
	14-Aug-23	1.9	38.3	4.36	275.9	179	14.6	39
	14-Sep-23	3.6	-11	4.79	207.7	164	15.6	30.2
	23-Oct-23	3.9	2.8	7.68	2.8	150	20.7	107.4
	22-Nov-23	3.24	-90.4	5.38	202.2	142	20.9	31
	19-Dec-23	2.44	-55.5	4.46	319.8	206	25.5	25.7
	18-Jan-24	2.62	-100	4.86	243.7	154	26.6	12
BH7	27-Jul-22	4.21	26	4.43	117	--	14.3	489
	12-Aug-22	3.98	11	4.84	110	--	14.9	110.4
	16-Sep-22	2.92	65.6	4.78	94.1	71	17.6	101.6
	24-Oct-22	3.52	-93.2	4.72	81.9	62	17.7	68.09
	18-Nov-22	3.35	-92.5	4.75	78.4	54	22.1	--
	14-Dec-22	3.82	-72.2	4.74	70.1	46	21.6	35.8
	17-Jan-23	2.98	38	4.49	74.1	51	22	15.49
	15-Feb-23	3.4	-50.1	4.68	70.4	45	25.4	70.91
	15-Mar-23	4.06	4	4.62	75.9	51	23.2	28.4
	18-Apr-23	4.02	174.3	4.8	82.9	58	21	51.83
	16-May-23	1.84	161.2	4.18	75.2	54	20	--
	14-Jun-23	2.9	99.5	4.66	87.2	57	16.1	184
	24-Jul-23	5.6	159.2	4.83	90.6	71	16.3	58
	14-Aug-23	3.5	123.5	4.45	102.8	67	15.3	55
	14-Sep-23	3.26	26.6	4.87	81.5	64	15.8	49
	23-Oct-23	5.91	5.3	6.88	5.3	71	21.1	110
	22-Nov-23	2.19	-78	5.3	86.6	62	20.5	66
	19-Dec-23	2.97	-0.6	4.38	145.7	96	24.9	38.22
	18-Jan-24	2.49	-64.6	4.5	105.4	69	25	17
BH8	12-Aug-22	4.2	-67.9	4.81	135	--	14.7	782
	18-Nov-22	3.4	-97.2	4.66	98.5	69	20.7	--
	15-Feb-23	1.7	-108.51	4.81	129.9	82	26.7	45.25
	16-May-23	2.72	-85.5	4.81	113.1	84	18.6	--
	14-Aug-23	3.4	-19.2	4.26	163.3	106	15.3	271
	19-Dec-23	2.39	-12.9	4.27	221.4	140	26.2	238.93
	18-Jan-24	2.56	-98.5	4.36	166	112	23	65
	27-Jul-22	4.93	208.5	4.11	182.8	--	16.6	52
	12-Aug-22	3.96	249	4.46	186	--	17.6	41.5

Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

	Parameters	DO	ORP	PH	SC	TDS	TEMP	TURB
	Unit	mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
BH9A	16-Sep-22	3.65	241.4	4.69	132	99	18	45.22
	24-Oct-22	2.84	196.2	4.76	118	87	19	36.09
	18-Nov-22	2.04	86.3	4.79	112	84	18.1	--
	14-Dec-22	2.32	166	4.75	107.7	70	18.7	61
	17-Jan-23	1.94	111.5	4.73	107.4	75	21.4	32.2
	15-Feb-23	3.2	29.5	3.83	171.6	119	21.6	87.9
	15-Mar-23	4.24	171.7	4.83	103.3	72	21.9	51.32
	18-Apr-23	3.5	9.5	4.83	123.5	90	19.5	69.85
	16-May-23	6.01	44.1	4.6	103.9	80	17.1	--
	14-Jun-23	3.6	168.9	4.45	107.6	70	18.2	66.18
	24-Jul-23	4.13	195.5	4.69	125.6	95	17.8	55.5
	14-Aug-23	2.6	77.5	4.33	164.1	107	17.9	121.51
	14-Sep-23	3.85	37.3	4.7	96.2	73	17.6	55.55
	23-Oct-23	4.18	32.5	5.63	32.5	51	20.2	94
	22-Nov-23	2.3	1	5.3	162.9	117	19.9	85
	19-Dec-23	3.52	167.4	4.78	167.4	113	23.1	51.52
	23-Jan-24	2.97	96.1	4.76	162.9	114	21.2	85
MW239S	27-Jul-22	4	-71	4.32	125	--	14.2	175
	12-Aug-22	2.73	-69	4.6	115	--	15.2	310
	16-Sep-22	3.65	-79.71	4.83	102.4	77	17.9	129.37
	24-Oct-22	2.33	-117.7	4.72	86.5	65	18	83.71
	18-Nov-22	1.93	-113	4.74	97.3	67	22	--
	14-Dec-22	3.05	-62	4.62	115.4	75	21.5	239
	17-Jan-23	2.61	-9.4	4.52	100.2	67	23.6	105.4
	15-Feb-23	3.1	-62.6	4.51	114.2	72	26.6	145
	15-Mar-23	3.02	-4.1	4.61	102.4	70	22.5	206.44
	18-Apr-23	3.29	-85	4.78	87.2	63	20.1	84.02
	16-May-23	2.75	-50.4	4.52	84.7	63	18.6	--
	14-Jun-23	2.4	-77.3	4.58	100.8	66	17.4	88.4
	24-Jul-23	4.37	-57	4.53	84.6	67	15.6	217
	15-Aug-23	3.3	-34	4.77	105.9	69	15.1	223
	14-Sep-23	3.22	-68.1	4.69	93.1	72	17	339
	23-Oct-23	3.29	2.9	7.72	87.6	59	22.9	132
	22-Nov-23	3.07	-78.8	5.26	79.6	56	20.9	180
	19-Dec-23	3.07	-60.7	4.41	212	138	25	120
	18-Jan-24	2.52	-89.4	4.37	144.9	129	25.3	83
	12-Aug-22	2.97	182	5.18	140	--	12.6	4.3
	18-Nov-22	0.89	154.6	5.45	99.5	78	15.9	--

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

	Parameters	DO	ORP	PH	SC	TDS	TEMP	TURB
	Unit	mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
SW1	15-Feb-23	4	117.8	6.37	138.5	97	21.1	20.69
	16-May-23	3.58	75.7	6.34	82.4	69	13.3	--
	14-Aug-23	2.8	0.8	6.31	114.5	74	12.5	5.67
	19-Dec-23	6.88	103.3	6.7	112.2	73	25.2	28.17
	23-Jan-24	1.02	121.8	6.17	105.9	71	23.1	22.6
SW2	12-Aug-22	1.11	-40	4.95	88.2	--	12.9	23
	18-Nov-22	2.49	122	4.62	82.5	61	18.4	--
	15-Feb-23	2.5	-27.9	4.39	137.7	90	23.9	80.7
	16-May-23	3.62	206.2	4.02	147.8	116	15.8	--
	14-Aug-23	1.7	52.7	4.15	203.9	133	14	0.5
SW3	12-Aug-22	1.4	41.1	3.99	259.8	--	11.9	2.8
	18-Nov-22	3.09	80.4	5.62	227.1	164	19.5	--
	15-Feb-23	3	-72	4.72	215.5	138	25.6	43.33
	16-May-23	0.98	-24	4.36	176	143	14.7	--
	14-Aug-23	2.8	0.8	6.31	114.5	74	12.5	5.67
	19-Dec-23	0.7	-120	5.54	316.5	225	20.4	20
	23-Jan-24	2.57	-5.5	5.14	278.8	178	25.8	6.36
SW4	12-Aug-22	3.75	224	4.57	214	--	11.3	1.34
	18-Nov-22	3.5	130.2	4.43	217.9	149	22.4	--
	15-Feb-23	0.7	-74	5.75	253.3	172	22.7	4.1
	16-May-23	3.74	292.9	3.96	209.7	172	14	--
	14-Aug-23	4.3	281.1	3.84	258.6	168	10.9	1.4
	19-Dec-23	0.18	-147	6.57	506	340	23.4	70.1
WPW	12-Aug-22	10.09	210	5.06	255	--	14.7	205
	16-Sep-22	9.42	174.5	4.7	208.2	149	20	1000.34
	24-Oct-22	9.11	145.4	4.73	199.4	143	20.2	4120.3
	18-Nov-22	8.57	209.5	4.77	253.6	167	24.3	--
	14-Dec-22	8.64	189.5	4.97	267.8	174	22.1	3055.6
	17-Jan-23	8.24	195.3	4.69	264.1	167	26.5	415
	15-Mar-23	8.29	171.9	4.83	297.2	195	24.7	468.5
WPW2	15-Feb-23	8.2	470.7	6.1	272	164	29	4.88
	18-Apr-23	8.61	203.3	5	226.3	163	20	56.08
	16-May-23	9.61	249.7	4.71	230.1	173	17.8	--
	14-Jun-23	10.7	168.3	4.46	263.5	171	14.6	1037
	24-Jul-23	11.79	448	2.65	1207	980	14.5	1300
	14-Aug-23	10.2	205.6	4.41	242.8	158	15.9	42
	14-Sep-23	9.94	156.3	4.8	208.8	162	16.6	483
	23-Oct-23	8.52	130.2	6.35	116.7	78	23.9	498

Williamtown Sand Syndicate
January 2024
Monthly Water Monitoring Event

Table 15
Field Parameters
WSS Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamstown, NSW

	Parameters	DO	ORP	PH	SC	TDS	TEMP	TURB
	Unit	mg/L	mV	pH units	uS/cm	mg/L	deg C	NTU
	22-Nov-23	8.4	151.3	5.06	200	136	22.8	360
	19-Dec-23	7.87	174	4.69	372.2	219	30.4	180
	18-Jan-24	7.53	76.7	4.47	236.1	146	27.6	360

ATTACHMENT 3: LABORATORY DOCUMENTATION AND COCS

KLEINFELDER AUSTRALIA PTY LTD

Page 1 of 1

COC number:

KLEINFELDER
Bright People. Right Solutions.

Client:	SITE, COC AND CONTACT DATA				Laboratory:
Kleinfelder Australia Pty Ltd Suite 3, 240 - 244 Pacific Highway Charlestown NSW 2290 Phone: 02 4949 5200	Site Name:	WSS Cabbage Tree Road	Sampler Name:	Tom Jeffery	ALS 5/585 Maitland Rd Mayfield West, Newcastle NSW 2304 Phone: 02 4014 2500
	QUOTE NUMBER		Contact Number:	421887830	
	Job No.:	24001956	Contact e-mail:	tjeffery@kleinfelder.com	
	Required TAT:	48 hrs 3 days 5 days 7 days	PM e-mail:	Dkousbroek@kleinfelder.com	
	Data QA level:	LAB minimum unless specified:	EDD Format	KLF_EFWEDD	

CHAIN OF CUSTODY							Send Results to:
Relinquished by (print): / (sign)	T.Jeffery	Received by (print): / (sign)	BM BM	Relinquished: / (sign)	WS [illegible]	Received by: / (sign)	dkousbroek@kleinfelder.com, tjeffery@kleinfelder.com
Date / Time:	18/1 1:37pm	Date / Time:	18/1 1:40	Date / Time:	18/1/24 1445	Date / Time:	18/1/24 1935
Notes:		Temp. (°C) 1.0 Notes: Ice	1.0C ice present / no ice seals intact / no seal	Notes:		Temp. (°C) Notes:	ice present / no ice seals intact / no seal

Suite 3, 240-244 Pacific Highway
Charlestown, NSW 2290
Phone: 02 4949 5200

Sample ID	Lab ID	Sample Point	Sample Type	Date	Start Depth	End Depth	Units	# Containers	Organic Analytes: TRH, TPH, BTEXN (Silica Gel, Clean up)	Organic Analytes: BTEXN	Metals: Dissolved Metals - As, Fe, Mn	Metals: Dissolved Metals - See below*	Other Analytes: PFAS (23 analytes standard Level)	Other Analytes: Extended Water Quality Suite B	Other Analytes:	Other Analytes:	Other Analytes: HOLD	Comments
BH1A	1		W	18/1						X		X						
BH2	2									X		X						
BH4	3									X		X						
BH6	4									X		X						
BH7	5									X		X						
BH8	6									X		X						
BH9A	7									X		X						
BH11	8									X		X						
BH12A	9									X		X						
MW2395	10									X		X						
WPW2	11											X	X					
SW1	12									X		X						
SW3	13									X		X						
RB_180124	14									X		X	X					
TB_180124	15									X		X	X					

LAB COPY FOR NEWCASTLE

TAT

* Metals: As, Ba, Cr, Cu, Fe. Mg, Mn, Ni and Zn. Additional metals for SW (B & CO)

Environmental Division
Sydney
Work Order Reference
ES2401688

Telephone : + 61-2-8784 8555

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2401688**	Page	: 1 of 5
Client	: **KLEINFELDER AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: DANIEL KOUSBROEK	Telephone	: +61-2-8784 8555
Project	: 24001956	Date Samples Received	: 18-Jan-2024
Site	: WSS Cabbage Tree Road	Issue Date	: 25-Jan-2024
Sampler	: Tom Jeffery	No. of samples received	: 15
Order number	: ----	No. of samples analysed	: 15

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	ES2401709--002	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)								
BH2,	BH4,	**18-Jan-2024**	**----**	----	----	**22-Jan-2024**	15-Feb-2024	✓
BH6,	BH7,							
BH9A,	BH11,							
MW2395,	WPW2,							
RB_180124,	TB_180124							
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)								
BH2,	BH4,	**18-Jan-2024**	**----**	----	----	**22-Jan-2024**	16-Jul-2024	✓
BH6,	BH7,							
BH9A,	BH11,							
MW2395,	WPW2,							
RB_180124,	TB_180124							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) BH1A, BH2, BH4, BH6, BH7, BH8, BH9A	**18-Jan-2024**	**24-Jan-2024**	01-Feb-2024	✓	**24-Jan-2024**	01-Feb-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH11, BH12A, MW2395, SW1, SW3, RB_180124, TB_180124	**18-Jan-2024**	**24-Jan-2024**	01-Feb-2024	✓	**25-Jan-2024**	01-Feb-2024	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) WPW2, RB_180124, TB_180124	**18-Jan-2024**	**22-Jan-2024**	16-Jul-2024	✓	**24-Jan-2024**	16-Jul-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) WPW2, RB_180124, TB_180124	**18-Jan-2024**	**22-Jan-2024**	16-Jul-2024	✓	**24-Jan-2024**	16-Jul-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) WPW2, RB_180124, TB_180124	**18-Jan-2024**	**22-Jan-2024**	16-Jul-2024	✓	**24-Jan-2024**	16-Jul-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) WPW2, RB_180124, TB_180124	**18-Jan-2024**	**22-Jan-2024**	16-Jul-2024	✓	**24-Jan-2024**	16-Jul-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) WPW2, RB_180124, TB_180124	**18-Jan-2024**	**22-Jan-2024**	16-Jul-2024	✓	**24-Jan-2024**	16-Jul-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: **ES2401688**	Page	: 1 of 9
Client	: **KLEINFELDER AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: DANIEL KOUSBROEK	Contact	: Jason Dighton
Address	: Suite 3, 240 - 244 Pacific Highway Charlestown NSW 2290	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 24001956	Date Samples Received	: 18-Jan-2024
Order number	: ----	Date Analysis Commenced	: 19-Jan-2024
C-O-C number	: ----	Issue Date	: 25-Jan-2024
Sampler	: Tom Jeffery		
Site	: WSS Cabbage Tree Road		
Quote number	: EN/222		
No. of samples received	: 15		
No. of samples analysed	: 15		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED093F: Dissolved Major Cations (QC Lot: 5553857)									
ES2401089-002	Anonymous	ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.0	No Limit
ES2401688-015	TB_180124	ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5553858)									
ES2401089-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.106	0.104	1.7	0% - 20%
		EG020A-F: Barium	7440-39-3	0.001	mg/L	2.14	2.14	0.1	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.102	0.104	2.6	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.194	0.195	0.8	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.160	0.164	2.7	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	2.96	2.96	0.0	0% - 20%
ES2401688-015	TB_180124	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EP080: BTEXN (QC Lot: 5555020)									
ES2401688-001	BH1A	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 5555020) - continued									
ES2401688-001	BH1A	EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2401688-012	SW1	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5551904)									
ES2401709-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.05	2.11	2.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.04	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.66	2.86	7.1	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.77	1.76	0.0	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2401709-008	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.26	2.19	3.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.95	0.89	7.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	3.63	3.54	2.4	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.87	1.82	3.0	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.20	0.18	8.3	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5551904)									
ES2401709-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.11	3.28	5.5	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.55	1.62	4.4	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	3.21	3.46	7.5	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	3.25	3.42	5.1	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.9	0.9	0.0	No Limit
ES2401709-008	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	5.71	5.26	8.3	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5551904) - continued									
ES2401709-008	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.79	2.63	6.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	4.82	4.84	0.3	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	3.21	3.13	2.4	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.08	0.07	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.9	1.9	0.0	0% - 50%
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5551904)									
ES2401709-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2401709-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5551904)									
ES2401709-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5551904) - continued									
ES2401709-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2401709-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5551904)									
ES2401709-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	18.6	19.5	4.9	0% - 20%
ES2401709-008	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	27.4	26.4	3.6	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED093F: Dissolved Major Cations (QCLot: 5553857)								
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	110	90.0	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 5553858)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	85.0	114
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	94.6	82.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.2	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.3	81.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	100	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.2	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	81.0	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.4	82.0	112
EP080: BTEXN (QCLot: 5555020)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.9	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	108	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.7	75.5	124
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5551904)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	117	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5551904)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	107	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	122	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	112	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5551904) - continued								
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	116	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	114	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5551904)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	123	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	113	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	112	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	120	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5551904)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	117	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	114	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	99.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5553858)							
ES2401568-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	105	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	94.8	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	102	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	107	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	102	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5553858) - continued							
ES2401568-001	Anonymous	EG020A-F: Nickel	7440-02-0	1 mg/L	106	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	106	70.0	130
EP080: BTEXN (QCLot: 5555020)							
ES2401688-001	BH1A	EP080: Benzene	71-43-2	25 µg/L	111	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	108	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	112	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	119	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	118	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	126	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5551904)							
ES2401709-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	92.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	107	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	110	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	121	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5551904)							
ES2401709-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	108	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	110	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	117	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	110	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	112	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	114	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	108	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	116	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	112	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5551904)							
ES2401709-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	121	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	105	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	109	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5551904) - continued							
ES2401709-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	114	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	107	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5551904)							
ES2401709-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	97.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	80.3	71.4	144

CERTIFICATE OF ANALYSIS

Work Order	: **ES2401688**	Page	: 1 of 8
Client	: **KLEINFELDER AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: DANIEL KOUSBROEK	Contact	: Jason Dighton
Address	: Suite 3, 240 - 244 Pacific Highway Charlestown NSW 2290	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 24001956	Date Samples Received	: 18-Jan-2024 13:39
Order number	: ----	Date Analysis Commenced	: 19-Jan-2024
C-O-C number	: ----	Issue Date	: 25-Jan-2024 10:35
Sampler	: Tom Jeffery		
Site	: WSS Cabbage Tree Road		
Quote number	: EN/222		
No. of samples received	: 15		
No. of samples analysed	: 15		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW

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.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH1A	BH2	BH4	BH6	BH7
				Sampling date / time	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401688-001	ES2401688-002	ES2401688-003	ES2401688-004	ES2401688-005
					Result	Result	Result	Result	Result
ED093F: Dissolved Major Cations									
Magnesium	7439-95-4	1	mg/L		**----**	<1	**1**	**8**	**2**
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**----**	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L		**----**	<0.001	**0.011**	**0.014**	**0.002**
Chromium	7440-47-3	0.001	mg/L		**----**	<0.001	<0.001	<0.001	**0.002**
Copper	7440-50-8	0.001	mg/L		**----**	<0.001	**0.014**	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**----**	<0.001	**0.010**	**0.002**	**0.001**
Nickel	7440-02-0	0.001	mg/L		**----**	**0.001**	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		**----**	**0.009**	**0.012**	**0.020**	**0.005**
Iron	7439-89-6	0.05	mg/L		**----**	<0.05	<0.05	**1.48**	**0.34**
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**95.0**	**113**	**107**	**109**	**114**
Toluene-D8	2037-26-5	2	%		**98.8**	**113**	**110**	**118**	**118**
4-Bromofluorobenzene	460-00-4	2	%		**115**	**135**	**126**	**133**	**136**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BH8	BH9A	BH11	BH12A	MW2395
				Sampling date / time	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401688-006	ES2401688-007	ES2401688-008	ES2401688-009	ES2401688-010
					Result	Result	Result	Result	Result
ED093F: Dissolved Major Cations									
Magnesium	7439-95-4	1	mg/L		----	**2**	**4**	----	**3**
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	<0.001
Barium	7440-39-3	0.001	mg/L		----	**0.006**	**0.003**	----	**0.006**
Chromium	7440-47-3	0.001	mg/L		----	<0.001	**0.002**	----	**0.002**
Copper	7440-50-8	0.001	mg/L		----	**0.003**	<0.001	----	<0.001
Manganese	7439-96-5	0.001	mg/L		----	**0.029**	**0.004**	----	**0.001**
Nickel	7440-02-0	0.001	mg/L		----	**0.003**	<0.001	----	**0.002**
Zinc	7440-66-6	0.005	mg/L		----	**0.012**	**0.006**	----	**0.009**
Iron	7439-89-6	0.05	mg/L		----	**0.38**	**0.79**	----	**1.49**
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**116**	**80.7**	**103**	**106**	**118**
Toluene-D8	2037-26-5	2	%		**121**	**84.2**	**108**	**109**	**122**
4-Bromofluorobenzene	460-00-4	2	%		**121**	**97.0**	**124**	**129**	**118**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WPW2	SW1	SW3	RB_180124	TB_180124
				Sampling date / time	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401688-011	ES2401688-012	ES2401688-013	ES2401688-014	ES2401688-015
					Result	Result	Result	Result	Result
ED093F: Dissolved Major Cations									
Magnesium	7439-95-4	1	mg/L		**3**	----	----	<1	<1
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L		**0.007**	----	----	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.006**	----	----	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		**0.031**	----	----	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.002**	----	----	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		**0.023**	----	----	<0.005	<0.005
Iron	7439-89-6	0.05	mg/L		**0.16**	----	----	<0.05	<0.05
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		----	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		----	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		----	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		----	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		----	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		----	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	----	----	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WPW2	SW1	SW3	RB_180124	TB_180124
				Sampling date / time	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401688-011	ES2401688-012	ES2401688-013	ES2401688-014	ES2401688-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	<0.02	<0.02

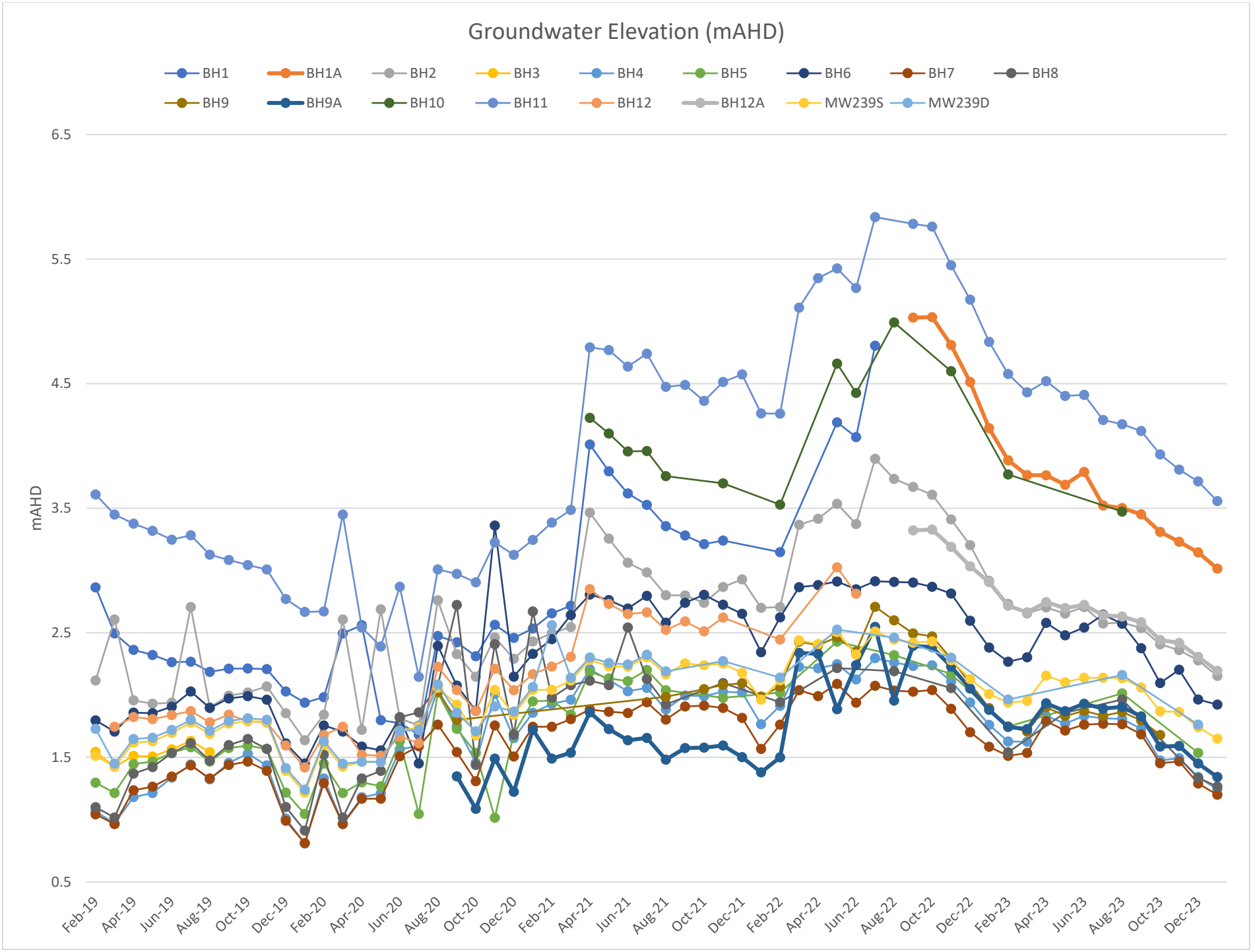
Analytical Results

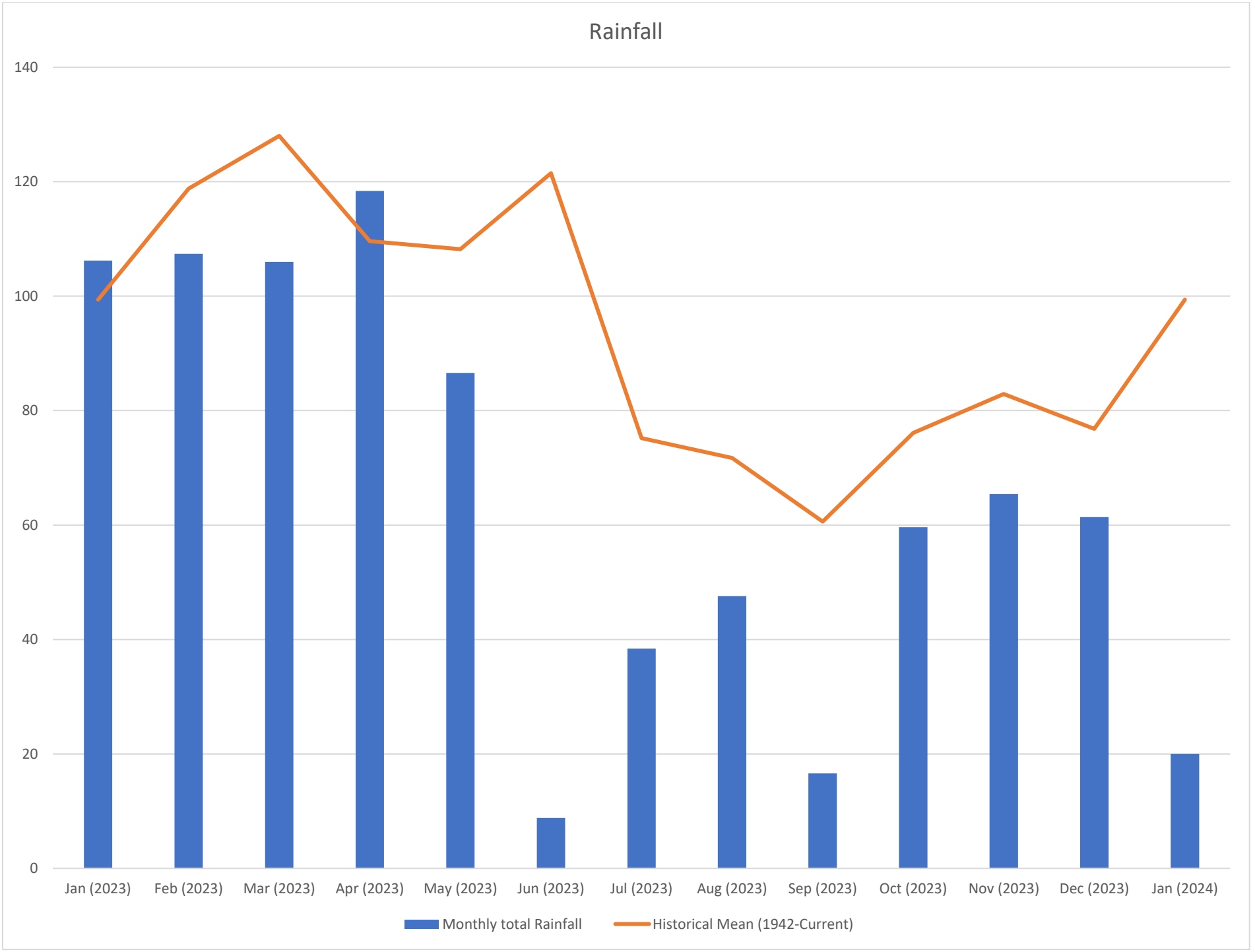
Sub-Matrix: WATER (Matrix: WATER)				Sample ID	WPW2	SW1	SW3	RB_180124	TB_180124
				Sampling date / time	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00	18-Jan-2024 00:00
Compound	CAS Number	LOR	Unit		ES2401688-011	ES2401688-012	ES2401688-013	ES2401688-014	ES2401688-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.01**	----	----	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.01**	----	----	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.01**	----	----	<0.01	<0.01
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	**115**	**87.1**	**102**	**99.4**
Toluene-D8	2037-26-5	2	%		----	**122**	**89.7**	**102**	**99.9**
4-Bromofluorobenzene	460-00-4	2	%		----	**114**	**102**	**123**	**119**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**103**	----	----	**102**	**103**
13C8-PFOA	----	0.02	%		**99.1**	----	----	**102**	**101**

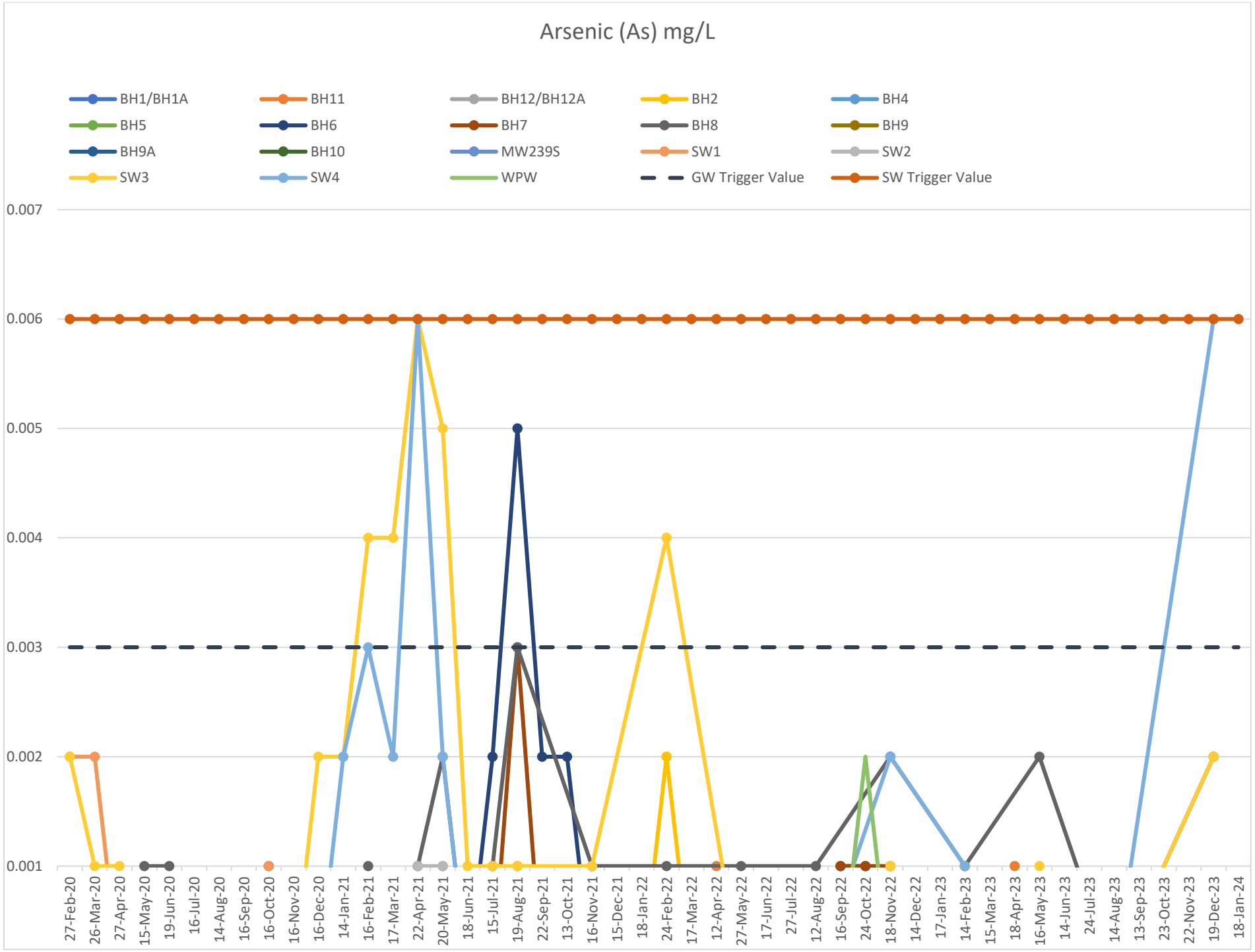
Surrogate Control Limits

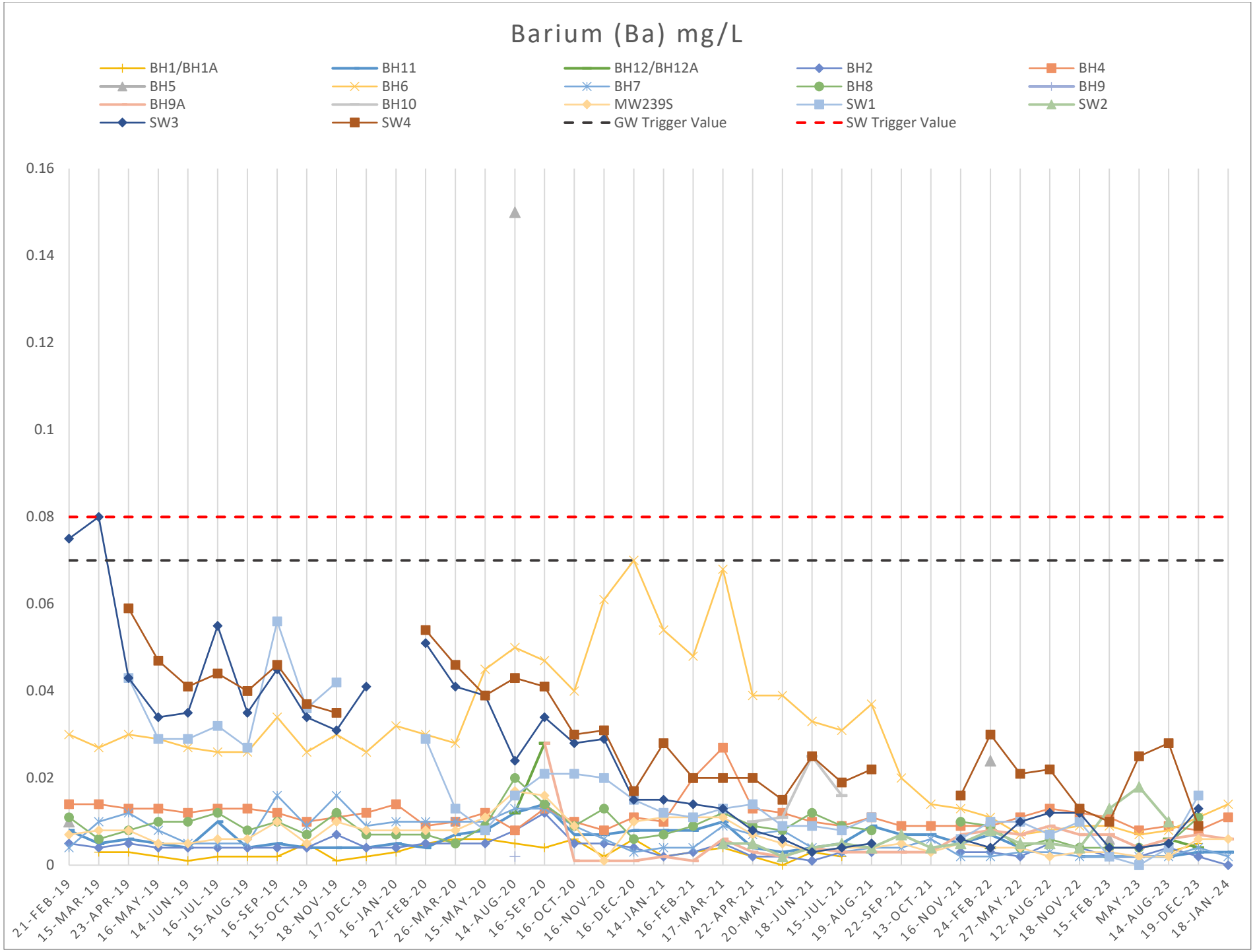
Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

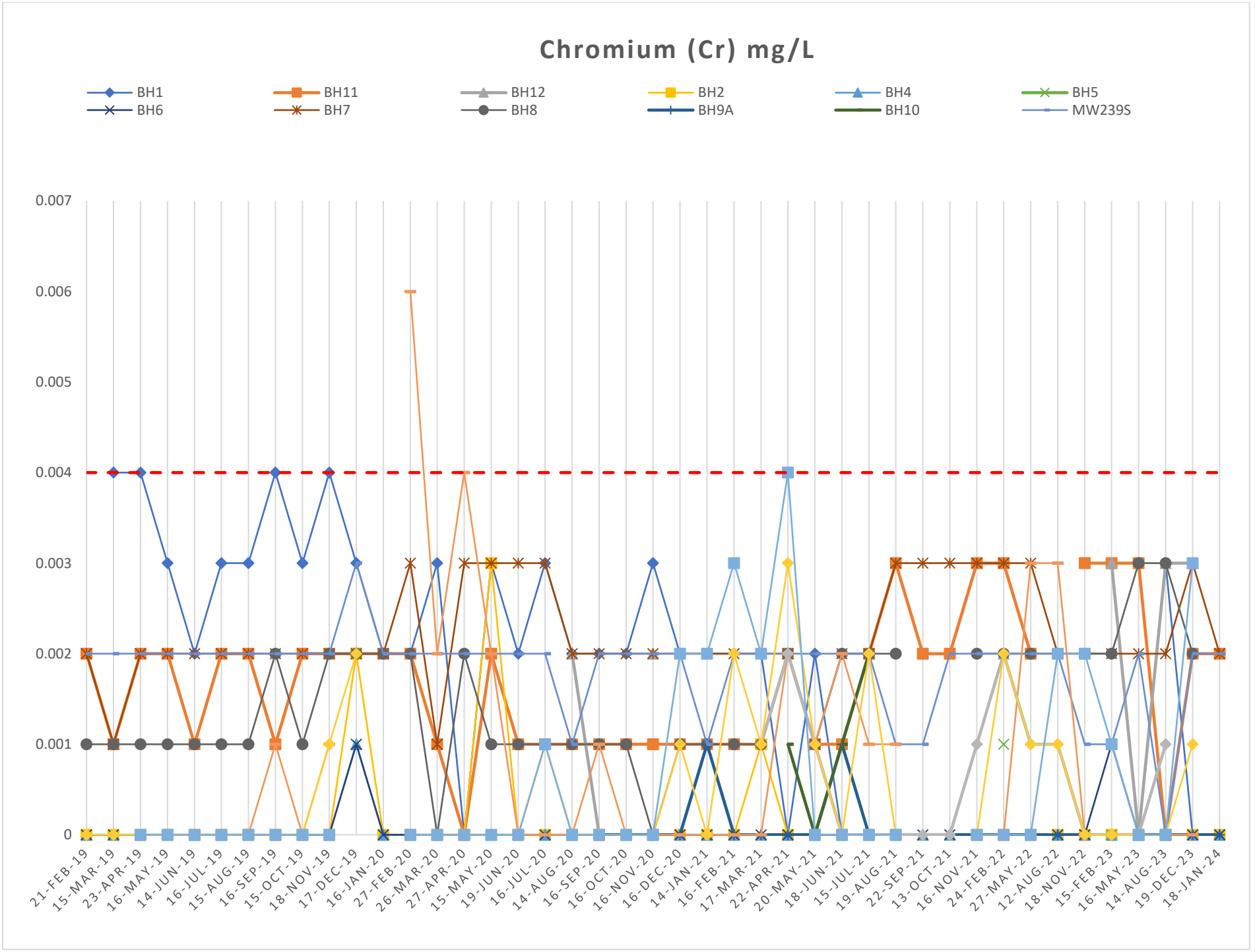
ATTACHMENT 4: DATA TRENDS

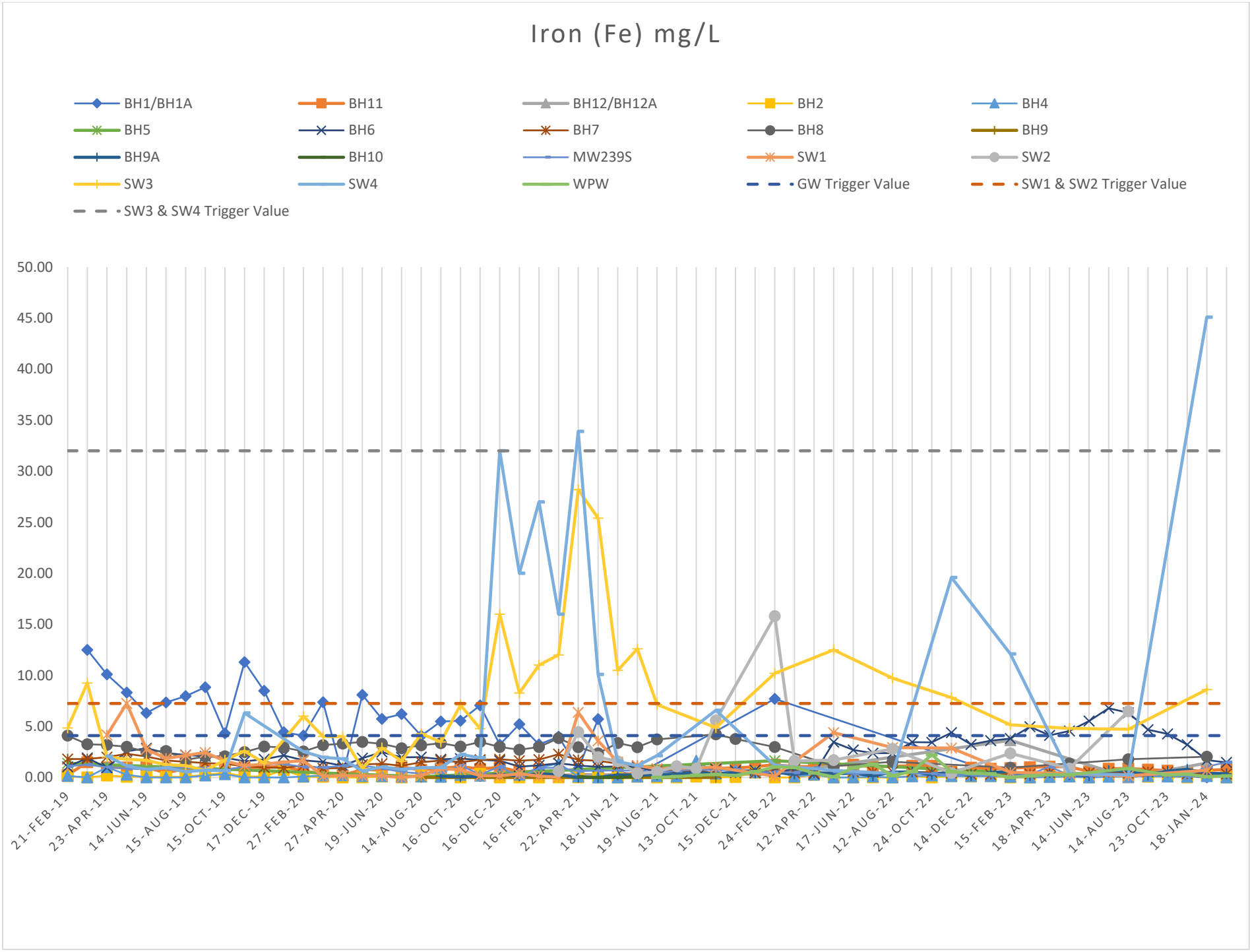

Groundwater Elevation (mAHD)
BH1
BH1A
BH2
BH3
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
BH11
BH12
BH12A
MW239S
MW239D
mAHD
6.5
5.5
4.5
3.5
2.5
1.5
0.5
Feb-19
Apr-19
Jun-19
Aug-19
Oct-19
Dec-19
Feb-20
Apr-20
Jun-20
Aug-20
Oct-20
Dec-20
Feb-21
Apr-21
Jun-21
Aug-21
Oct-21
Dec-21
Feb-22
Apr-22
Jun-22
Aug-22
Oct-22
Dec-22
Feb-23
Apr-23
Jun-23
Aug-23
Oct-23
Dec-23


Rainfall
140
120
100
80
60
40
20
0
Jan (2023)
Feb (2023)
Mar (2023)
Apr (2023)
May (2023)
Jun (2023)
Jul (2023)
Aug (2023)
Sep (2023)
Oct (2023)
Nov (2023)
Dec (2023)
Jan (2024)
Monthly total Rainfall
Historical Mean (1942-Current)

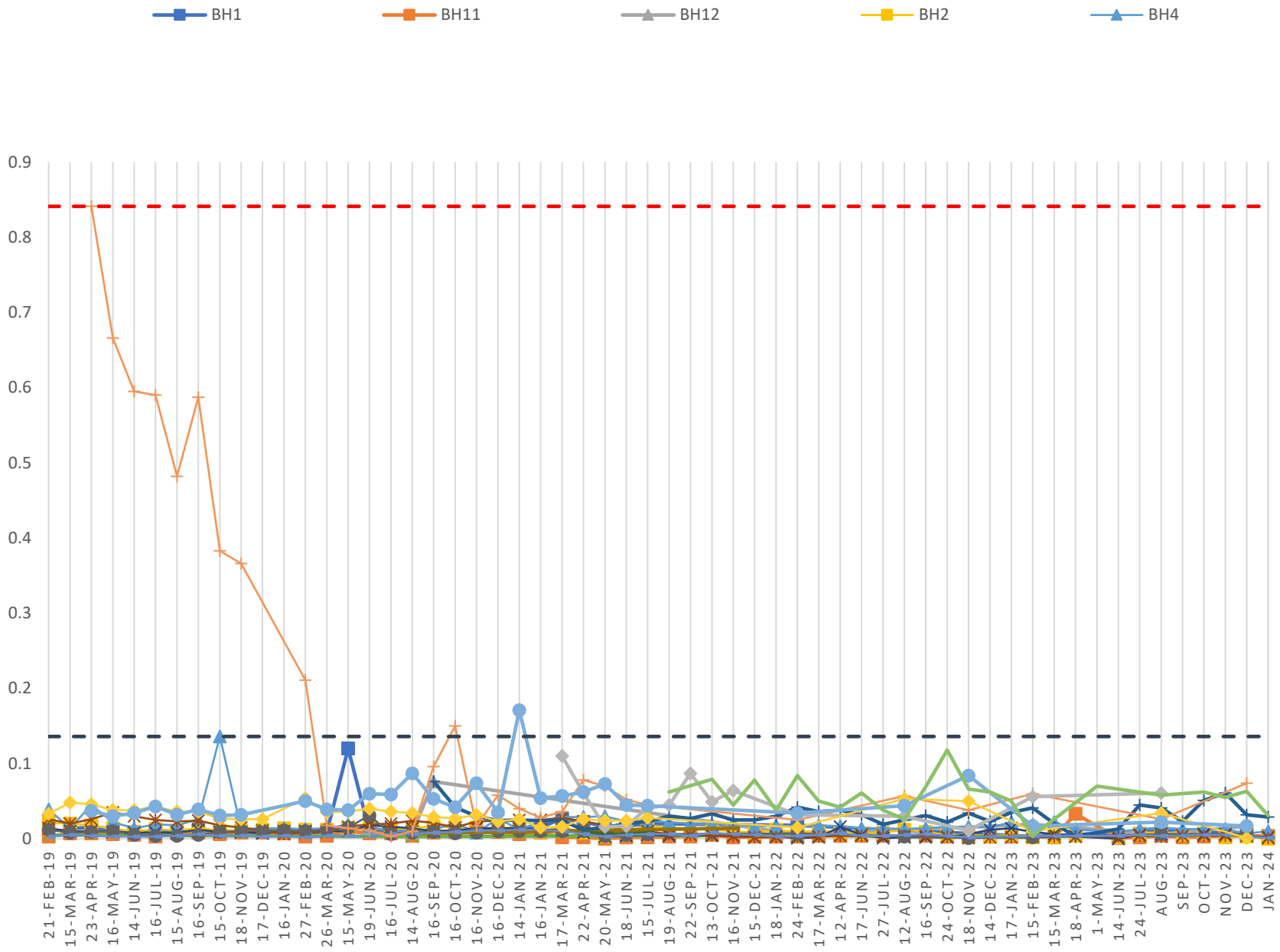

Arsenic (As) mg/L
BH1/BH1A
BH11
BH12/BH12A
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
WPW
GW Trigger Value
SW Trigger Value
0.007
0.006
0.005
0.004
0.003
0.002
0.001
27-Feb-20
26-Mar-20
27-Apr-20
15-May-20
19-Jun-20
16-Jul-20
14-Aug-20
16-Sep-20
16-Oct-20
16-Nov-20
16-Dec-20
14-Jan-21
16-Feb-21
17-Mar-21
22-Apr-21
20-May-21
18-Jun-21
15-Jul-21
19-Aug-21
22-Sep-21
13-Oct-21
16-Nov-21
15-Dec-21
18-Jan-22
24-Feb-22
17-Mar-22
12-Apr-22
27-May-22
17-Jun-22
27-Jul-22
12-Aug-22
16-Sep-22
24-Oct-22
18-Nov-22
14-Dec-22
17-Jan-23
14-Feb-23
15-Mar-23
18-Apr-23
16-May-23
14-Jun-23
24-Jul-23
14-Aug-23
13-Sep-23
23-Oct-23
22-Nov-23
19-Dec-23
18-Jan-24

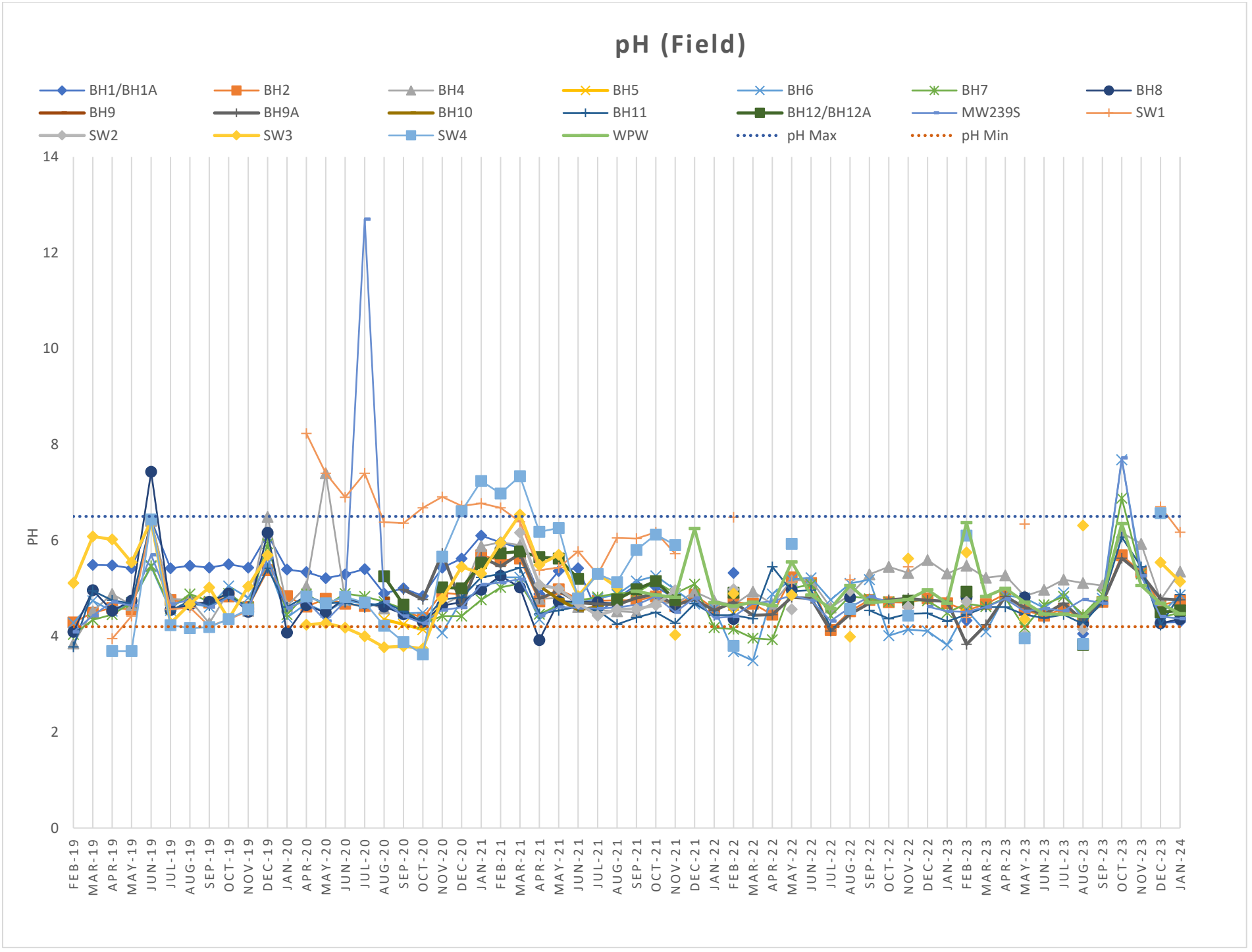

Barium (Ba) mg/L
BH1/BH1A
BH11
BH12/BH12A
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
GW Trigger Value
SW Trigger Value
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
21-FEB-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
15-MAY-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-FEB-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
27-MAY-22
12-AUG-22
18-NOV-22
15-FEB-23
MAY-23
14-AUG-23
19-DEC-23
18-JAN-24

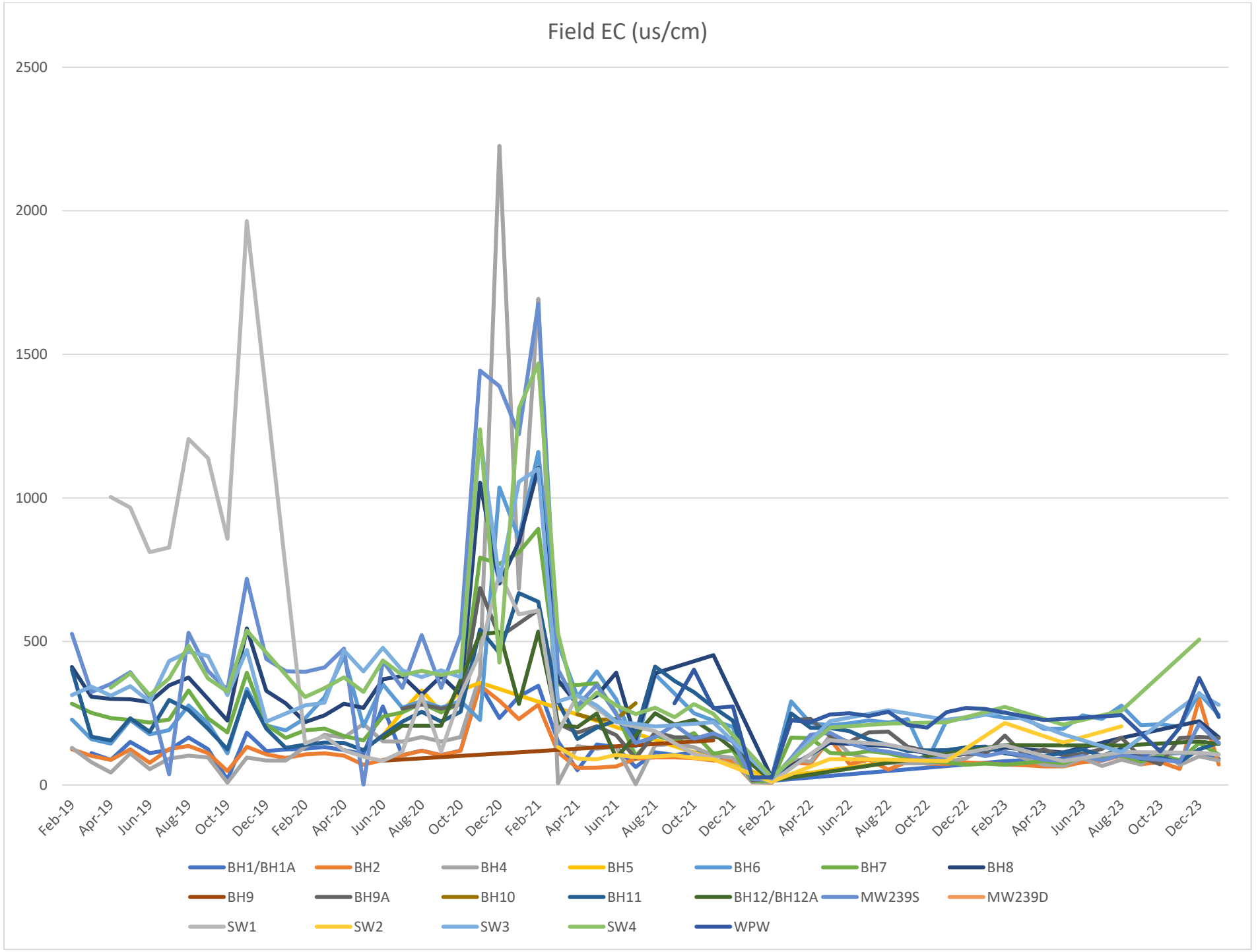

Chromium (Cr) mg/L
BH1
BH11
BH12
BH2
BH4
BH5
BH6
BH7
BH8
BH9A
BH10
MW239S
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
21-FEB-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
27-APR-20
15-MAY-20
19-JUN-20
16-JUL-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-FEB-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
27-MAY-22
12-AUG-22
18-NOV-22
15-FEB-23
16-MAY-23
14-AUG-23
19-DEC-23
18-JAN-24

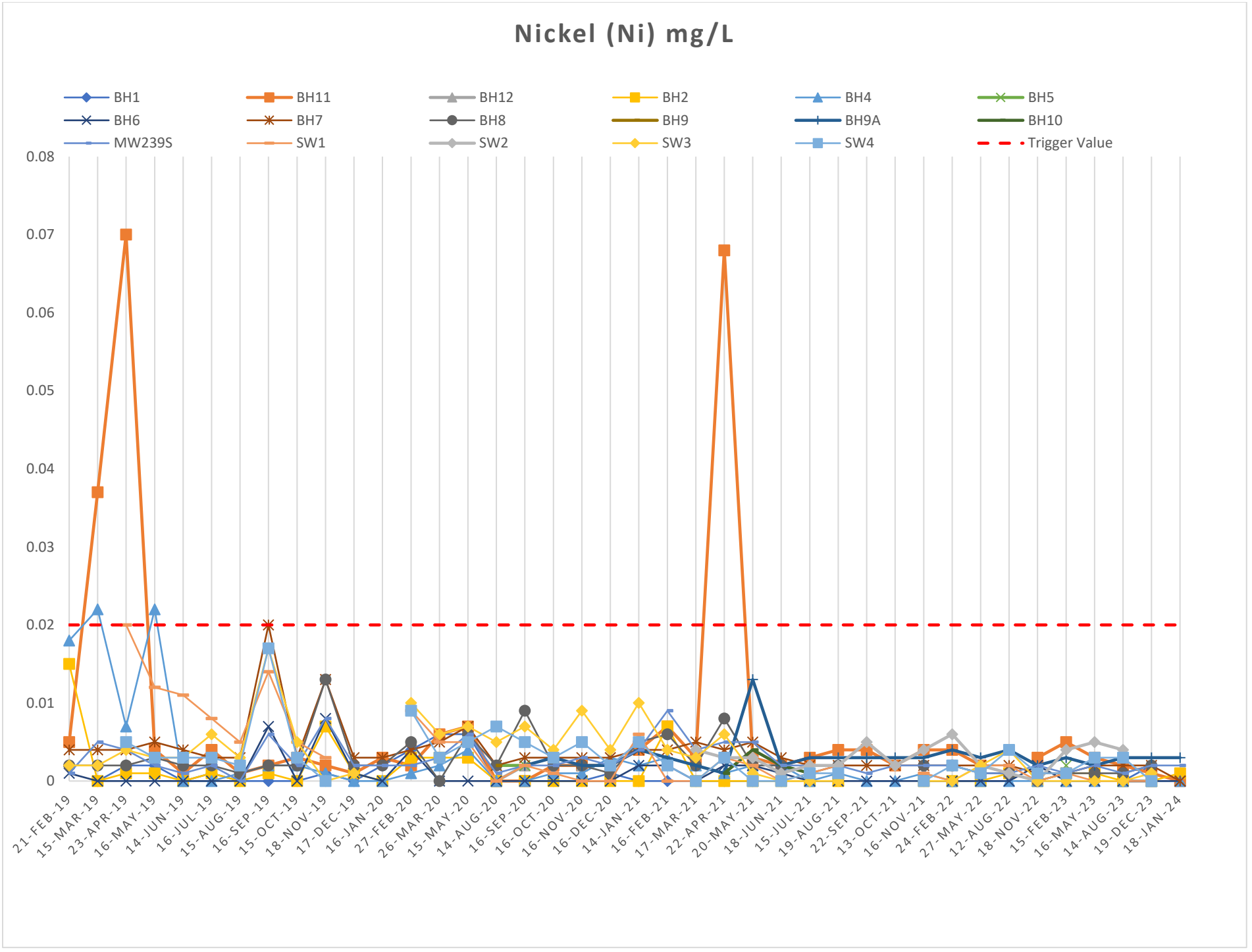

Iron (Fe) mg/L
BH1/BH1A
BH11
BH12/BH12A
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
WPW
GW Trigger Value
SW1 & SW2 Trigger Value
SW3 & SW4 Trigger Value
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
21-FEB-19
23-APR-19
14-JUN-19
15-AUG-19
15-OCT-19
17-DEC-19
27-FEB-20
27-APR-20
19-JUN-20
14-AUG-20
16-OCT-20
16-DEC-20
16-FEB-21
22-APR-21
18-JUN-21
19-AUG-21
13-OCT-21
15-DEC-21
24-FEB-22
12-APR-22
17-JUN-22
12-AUG-22
24-OCT-22
14-DEC-22
15-FEB-23
18-APR-23
14-JUN-23
14-AUG-23
23-OCT-23
18-JAN-24

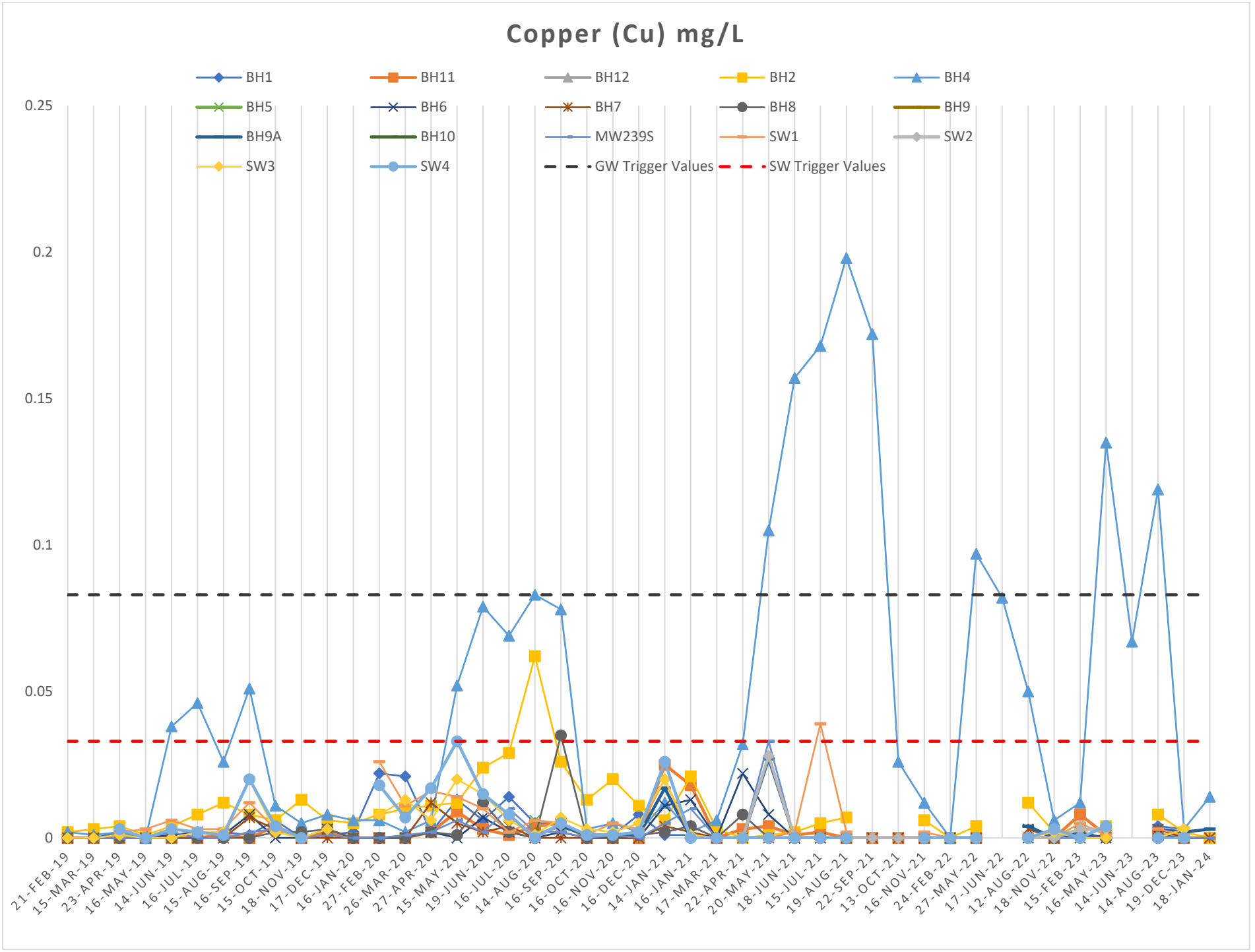
Manganese (Mn) mg/L

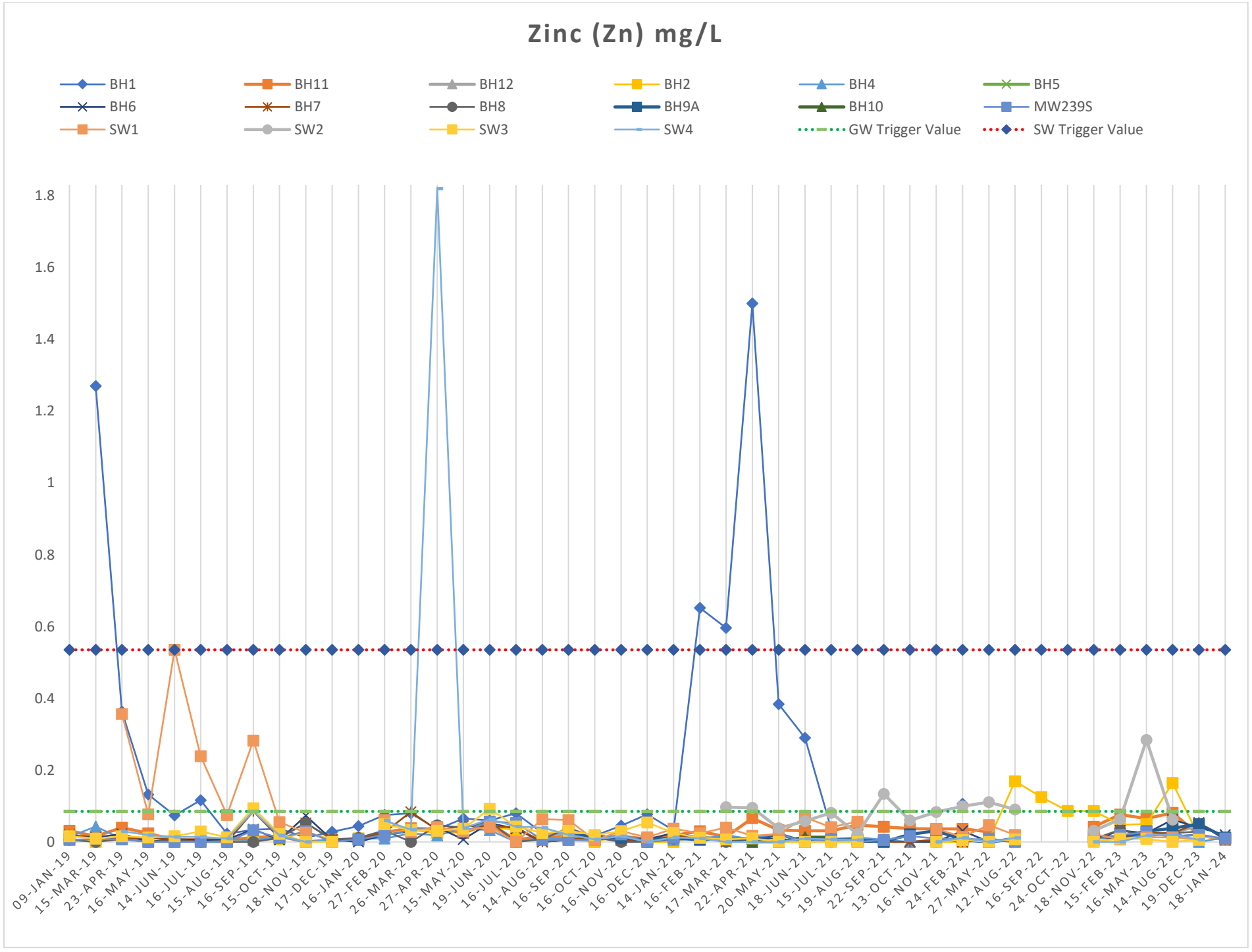


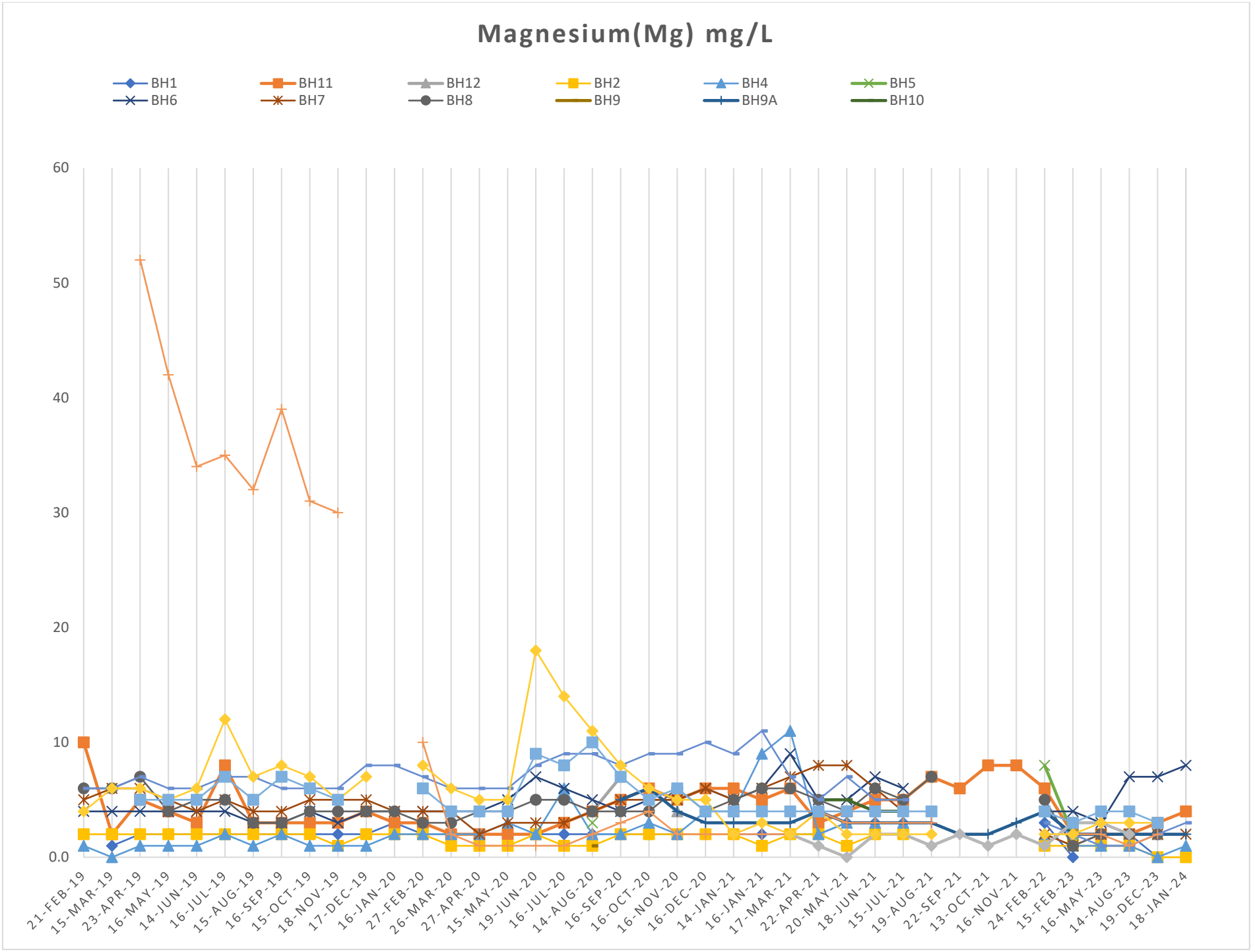

pH (Field)
BH1/BH1A
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
BH11
BH12/BH12A
MW239S
SW1
SW2
SW3
SW4
WPW
pH Max
pH Min
PH
14
12
10
8
6
4
2
0
FEB-19
MAR-19
APR-19
MAY-19
JUN-19
JUL-19
AUG-19
SEP-19
OCT-19
NOV-19
DEC-19
JAN-20
APR-20
MAY-20
JUN-20
JUL-20
AUG-20
SEP-20
OCT-20
NOV-20
DEC-20
JAN-21
FEB-21
MAR-21
APR-21
MAY-21
JUN-21
JUL-21
AUG-21
SEP-21
OCT-21
NOV-21
DEC-21
JAN-22
FEB-22
MAR-22
APR-22
MAY-22
JUN-22
JUL-22
AUG-22
SEP-22
OCT-22
NOV-22
DEC-22
JAN-23
FEB-23
MAR-23
APR-23
MAY-23
JUN-23
JUL-23
AUG-23
SEP-23
OCT-23
NOV-23
DEC-23
JAN-24


Field EC (us/cm)
2500
2000
1500
1000
500
0
Feb-19
Apr-19
Jun-19
Aug-19
Oct-19
Dec-19
Feb-20
Apr-20
Jun-20
Aug-20
Oct-20
Dec-20
Feb-21
Apr-21
Jun-21
Aug-21
Oct-21
Dec-21
Feb-22
Apr-22
Jun-22
Aug-22
Oct-22
Dec-22
Feb-23
Apr-23
Jun-23
Aug-23
Oct-23
Dec-23
BH1/BH1A
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
BH11
BH12/BH12A
MW239S
MW239D
SW1
SW2
SW3
SW4
WPW


Nickel (Ni) mg/L
BH1
BH11
BH12
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
Trigger Value
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
21-FEB-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
15-MAY-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-FEB-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
27-MAY-22
12-AUG-22
18-NOV-22
15-FEB-23
16-MAY-23
14-AUG-23
19-DEC-23
18-JAN-24


Copper (Cu) mg/L
BH1
BH11
BH12
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
GW Trigger Values
SW Trigger Values
0.25
0.2
0.15
0.1
0.05
0
21-FEB-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
27-APR-20
15-MAY-20
19-JUN-20
16-JUL-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-JAN-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
27-MAY-22
17-JUN-22
12-AUG-22
18-NOV-22
15-FEB-23
16-MAY-23
14-JUN-23
14-AUG-23
19-DEC-23
18-JAN-24


Zinc (Zn) mg/L
BH1
BH11
BH12
BH2
BH4
BH5
BH6
BH7
BH8
BH9A
BH10
MW239S
SW1
SW2
SW3
SW4
GW Trigger Value
SW Trigger Value
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
09-JAN-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
27-APR-20
15-MAY-20
19-JUN-20
16-JUL-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-FEB-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
27-MAY-22
12-AUG-22
16-SEP-22
24-OCT-22
18-NOV-22
15-FEB-23
16-MAY-23
14-AUG-23
19-DEC-23
18-JAN-24


Magnesium(Mg) mg/L
BH1
BH11
BH12
BH2
BH4
BH5
BH6
BH7
BH8
BH9
BH9A
BH10
60
50
40
30
20
10
0.0
21-FEB-19
15-MAR-19
23-APR-19
16-MAY-19
14-JUN-19
16-JUL-19
15-AUG-19
16-SEP-19
15-OCT-19
18-NOV-19
17-DEC-19
16-JAN-20
27-FEB-20
26-MAR-20
27-APR-20
15-MAY-20
19-JUN-20
16-JUL-20
14-AUG-20
16-SEP-20
16-OCT-20
16-NOV-20
16-DEC-20
14-JAN-21
16-JAN-21
17-MAR-21
22-APR-21
20-MAY-21
18-JUN-21
15-JUL-21
19-AUG-21
22-SEP-21
13-OCT-21
16-NOV-21
24-FEB-22
15-FEB-23
16-MAY-23
14-AUG-23
19-DEC-23
18-JAN-24