

Transitional Environmental Program:

MAN 17560

Periodic Report (1 March 2018)



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1 INTRODUCTION

This report addresses the conditions of transitional environmental program (TEP), Certificate of Approval TEP MAN 17560 issued 7 March 2014 and amendment TEP MAN 17560 issued 24 July 2017.

The initial TEP has eight (8) conditions is largely focused on quality of waters information and a requirement for 6-monthly reporting; the subsequent amendment TEP has three (3) conditions and is more focused on quantity data and has a requirement for quarterly reporting.

This report represents the quantity data for the period August 2017 to January 2018 inclusive (3 months).

2 PROJECT DESCRIPTION

2.1 Location

The Capricorn Copper Mine (CCM) is located approximately 120 kilometres northwest of Mt Isa in Northwest Queensland, in the Shire of Mt Isa near the former township of Gunpowder. The mining operations are located entirely on the Calton Hills pastoral lease, which is owned by the Kalkadoon Aboriginal Council. The residential facilities provided for employees and contractors, along with Lake Waggaboonya are located on a special use lease.

2.2 Environmental Authority

The CCM operates under Environmental Authority (EA) number EPML00911413 issued by the Department of Environment and Science (DES) on 1 November 2017 that authorises the carrying out of Environmentally Relevant Activities as defined in the Environmental Protection Act 1994. During the period of this report. The EA was amended on 19 September and 1 November 2017, however neither of these amendments relate to the requirements of this report.

2.3 Title and Tenements

Capricorn Copper Pty Limited holds 29 mining leases for CCM under the Minerals Resources Act 1989. The total land area covered by the leases is 829 hectares. Mining Lease renewal applications are pending for 2 MLs that expired on 28 February and 30 June 2017.

3 TEP MAN 17560 – CONDITIONS OF APPROVAL

3.1 Part 1 – Issued 7 March 2014

The TEP remains in force until 1 March 2019,

Table 1: Compliance Status of Conditions of Approval

NO.	CONDITION	CAPRICORN COPPER STATUS
1	All conditions of the EA apply during the period of the TEP unless a condition of this certificate of approval specifies otherwise.	CCM - compliant with this requirement.

NO.	CONDITION	CAPRICORN COPPER STATUS
2	BMG (CCM) must ensure that the water quality of receiving waters is maintained or improved during the period of the TEP.	CCM is working to maintain and improve the receiving water quality with several mechanisms on site including the water treatment plant, commissioned in October, to treat water and improve the quality of any discharges.
3	Contaminant releases may occur from the area defined in Figure 1 as "Old TSF", subject to condition 2 of this certificate of approval.	CCM acknowledges contaminant releases have occurred historically from the area defined as "Old TSF" and is actively working to improve the receiving water quality. There have been zero discharges during the period of reporting.
4	BMG (CCM) must ensure there is no exceedance of any EA contaminant limit, except for: a. The sulphate contaminant limit within the Section 1 of Gunpowder Creek, subject to condition 2 of this certificate b. The sulphate contaminant limit within the section of Gunpowder Creek defined in Figure 1 as Section 3 of Gunpowder Creek, which must not exceed 2,000 mg/L during the period of this TEP.	Results are presented in Section 4.2 (Figures 1 to 17) and exceedances are discussed in Section 4.3 of this report.
5	BMG (CCM) must ensure there is no exceedance of any EA contaminant limit within the section of Magazine Creek defined as 'Section 2: Magazine Ck', except for copper and pH, subject to condition 2 of this certificate of approval.	Results are presented in Section 4.2 (Figures 1 to 17) and exceedances are discussed in Section 4.3 of this report. CCM acknowledges that there continues to be exceedances in receiving waters, however Attachment A demonstrates the level of exceedance is diminishing.

NO.	CONDITION	CAPRICORN COPPER STATUS
6	BMG (CCM) must ensure that a review of water quality monitoring data, sufficient to determine compliance and condition 2 of this certificate of approval, is undertaken by an appropriately qualified person at least once per calendar month. At minimum, each review must: - Be in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) produced by the Australian and New Zealand Environment and Conservation Council; - Include consideration of all water quality parameters specified in Schedule C – Table 4 (Receiving Waters Contaminant Trigger Levels and Contaminant Limits) of the EA; - Include all available monitoring data relevant to the review; - Detail the methodology adopted for the review and any assumptions relied upon; - Be documented and kept for a period of not less than three years following the completion of the TEP; and - Be provided to the administering authority within five business days of a request.	CCM has three personnel on staff, all tertiary qualified in biological and/or environmental sciences and as samples are collected and results received, reviews are undertaken to ensure all data is reviewed and maintained in compliance with this condition.
7	BMG (CCM) must notify the administering authority within 24 hours of identifying any non-compliance with a condition of this certificate of approval	CCM has undertaken notifications in accordance with this condition.
8	The progress of the TEP must be monitored by BMG (CCM) and documented in a report completed at a frequency of once every six months.	CCM submits this report in compliance with this condition.

3.2 Part 2 (Amendment) – Issued 24 July 2017

The TEP remains in force until 1 March 2019.

Table 2: Compliance Status of Conditions of Approval

NO.	CONDITION	CAPRICORN COPPER STATUS
1	The preferred rehabilitation strategies for the Old TSF and HELP #2 landforms must be consistent with best practice management in accordance with s21 of the Environmental Protection Act 1994. Reports on the preferred rehabilitation strategies must be provided to the administering authority by close of business on 1 March 2018. The reports must include, but not necessarily be limited to: - Technical feasibility, engineered designs and project implementation plans; - A description of the methodology and principles used to evaluate the preferred strategy; and - A description of how the preferred strategy is determined to be superior to alternative strategies and consistent with best practice management in accordance with s21 of the Environmental Protection Act 1994.	NB –HLEP #2 (Heap Leach Evaporation Pan #2) has been referred to as HELP #2 in previous documentation – HLEP is the correct abbreviation. Not yet applicable - CCM is working towards the due date of submission for this report – which has been revised to 31 March 2018.
2	Reports on site water management must be provided to the administering authority detailing water management activities at the site. The reports must be provided on 1 September 2017 and quarterly thereafter and include: - Volume of water reduction through each method used on site (including evaporation, water treatment and internal use); - Maintenance log for the Minetek evaporators detailing operational use and down time for maintenance/repairs; - Volumes of water treated, and treated water use, associated with the refurbished water treatment plant; - Running totals, by month, including each method of water reduction, of the total volume of water reduced from the site; and - Site water volume inputs.	CCM submits this report in compliance with this condition. Refer to section 4 of this report.

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NO.	CONDITION	CAPRICORN COPPER STATUS
3	The works determined to be carried out in accordance with the report required under condition 1 must be implemented and completed by 1 March 2019.	Not yet applicable - CCM is working towards ensuring compliance with this condition.

4 RECEIVING ENVIRONMENT – WATER QUALITY REPORTS

Since August 2016, CCM has utilised site specific trigger and contaminant limit based on reference site percentiles where sufficient data is available. Prior to this date, both trigger and contaminant limits were based on livestock drinking water guidelines detailed in Schedule C, Table 4 of the EA.

Due to an inadequate amount of continuous data for MGU1, water quality exceedances are assessed in accordance with guideline limit values as noted in the EA for Magazine Creek (Table 4-1). However, site specific contaminant limits have been calculated for Gunpowder Creek and the adopted contaminant limits for used to assess Gunpowder Creek water quality in this report are the site-specific trigger and contaminant limits are based on the adopted contaminant limits of GPU1 values on 1 July 2017 (Table 4-2).

4.1 Trigger and Contaminant Limits

Table 3: Trigger Limits and Contaminant Limits in Magazine Creek AS AT January 2018

PARAMETER	EA TRIGGER LIMIT	EA CONTAMINANT LIMIT
pH (pH units)	6 – 8.5	
EC (µs/cm)	435	1000
Sulphate (mg/L)	250	1000
Dissolved Aluminium (mg/L)	0.64	0.37
Total Aluminium (mg/L)	1.43	0.71
Dissolved Arsenic (mg/L)	0.013	0.002
Total Arsenic (mg/L)	0.013	0.003
Dissolved Boron (mg/L)	0.37	0.05
Total Boron (mg/L)	0.37	0.05
Dissolved Cadmium (mg/L)	0.0002	0.0001
Total Cadmium (mg/L)	0.0002	0.0001
Dissolved Chromium (mg/L)	0.001	0.001
Total Chromium (mg/L)	0.002	0.001
Dissolved Cobalt (mg/L)	0.002	0.012
Total Cobalt (mg/L)	0.004	0.015
Dissolved Copper (mg/L)	0.0132	0.025
Total Copper (mg/L)	0.0196	0.034
Fluoride (mg/L)	0.1	0.1
Dissolved Lead (mg/L)	0.0034	0.001
Total Lead (mg/L)	0.0034	0.001
Dissolved Manganese (mg/L)	1.9	0.432

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PARAMETER	EA TRIGGER LIMIT	EA CONTAMINANT LIMIT
Total Manganese (mg/L)	1.9	0.462
Dissolved Nickel (mg/L)	0.011	0.003
Total Nickel (mg/L)	0.011	0.007
Dissolved Uranium (mg/L)	0.001	0.001
Total Uranium (mg/L)	0.001	0.001
Zinc Dissolved (mg/L)	0.011	0.006
Total Zinc (mg/L)	0.01	0.005

Table 3: Trigger Limits and Contaminant Limits in Gunpowder Creek as at January 2018

PARAMETER	EA TRIGGER LIMIT	EA CONTAMINANT LIMIT
pH (pH units)	6 – 8.5	
EC (µs/cm)	435	1000
Sulphate (mg/L)	250	1000
Dissolved Aluminium (mg/L)	0.074	0.317
Total Aluminium (mg/L)	0.454	1.95
Dissolved Arsenic (mg/L)	0.013	0.013
Total Arsenic (mg/L)	0.013	0.013
Dissolved Boron (mg/L)	0.37	0.37
Total Boron (mg/L)	0.37	0.37
Dissolved Cadmium (mg/L)	0.0002	0.0002
Total Cadmium (mg/L)	0.0002	0.0002
Dissolved Chromium (mg/L)	0.001	0.001
Total Chromium (mg/L)	0.001	0.00275
Dissolved Cobalt (mg/L)	0.001	0.002
Total Cobalt (mg/L)	0.002	0.00375
Dissolved Copper (mg/L)	0.004	0.0085
Total Copper (mg/L)	0.009	0.01375
Fluoride (mg/L)	0.2	2
Dissolved Lead (mg/L)	0.0034	0.0034
Total Lead (mg/L)	0.0034	0.0034
Dissolved Manganese (mg/L)	1.9	1.9
Total Manganese (mg/L)	1.9	1.9
Dissolved Nickel (mg/L)	0.011	0.011
Total Nickel (mg/L)	0.011	0.011
Dissolved Uranium (mg/L)	0.001	0.001
Total Uranium (mg/L)	0.001	0.001
Zinc Dissolved (mg/L)	0.0202	0.02925
Total Zinc (mg/L)	0.008	0.02325

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4.2 Receiving Water Quality Results

All monitoring data from locations referenced in Schedule C – Table 3 (Receiving Waters Monitoring Locations) is shown in Figures 1 - 17. During the period of review – there is no data for MGA1 as it was dry for the period under review; MGU1 which is the reference Point for Magazine Creek only had water for one sample during the period under review.

Figure 1: pH of Receiving Waters

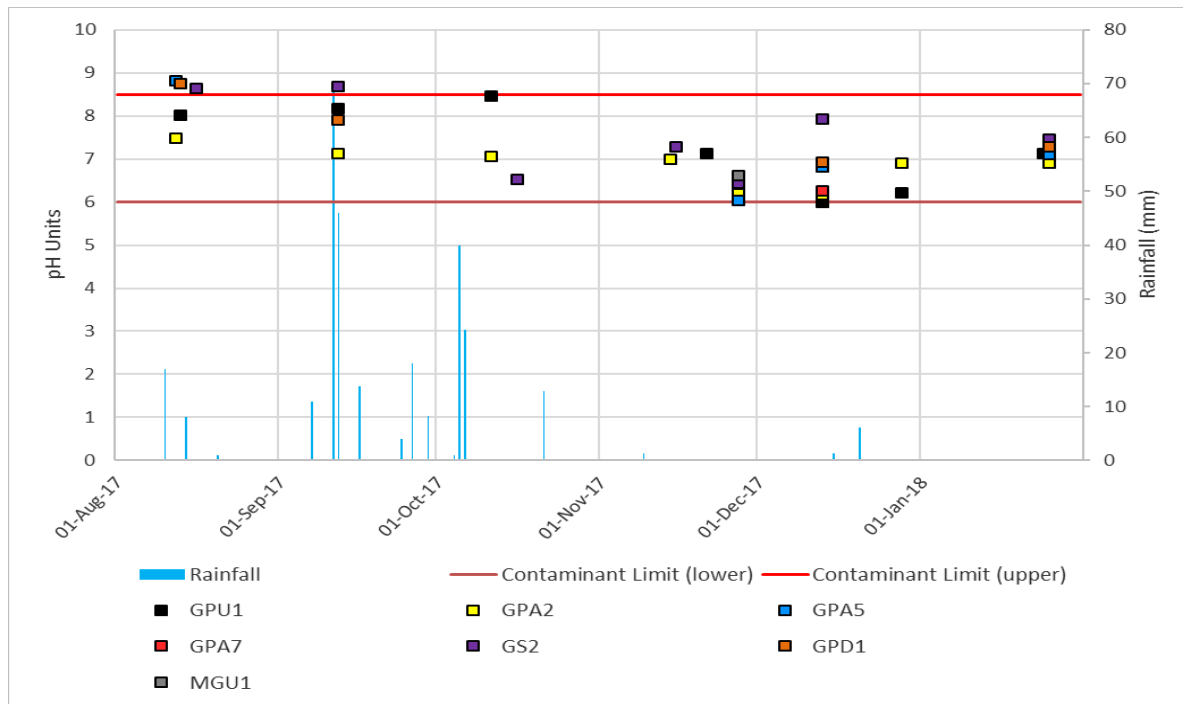
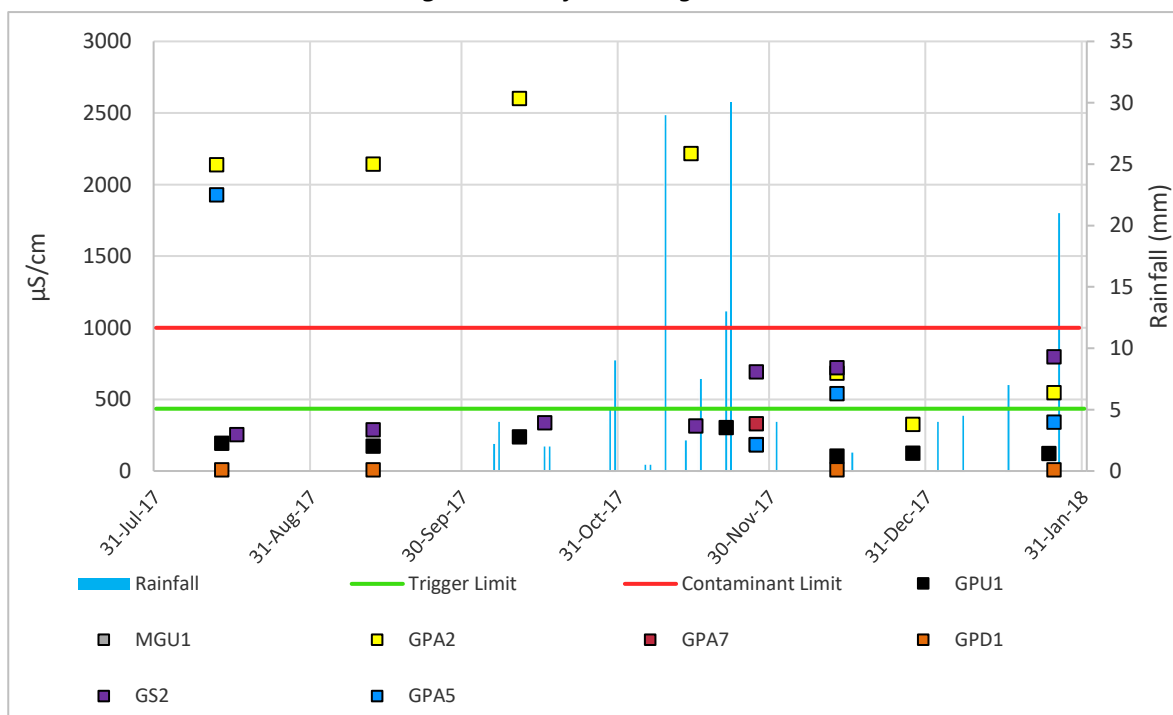


Figure 2: EC of Receiving Waters



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Figure 3: Sulphate Levels of Receiving Waters

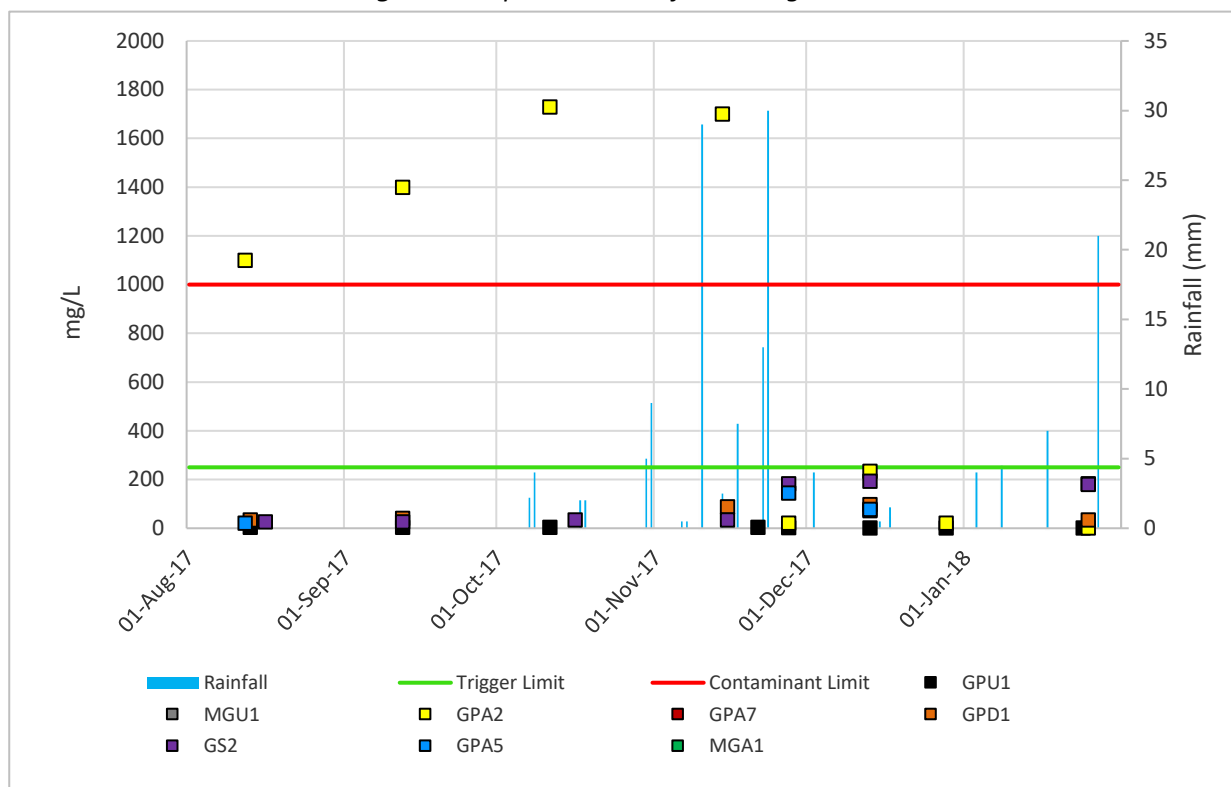
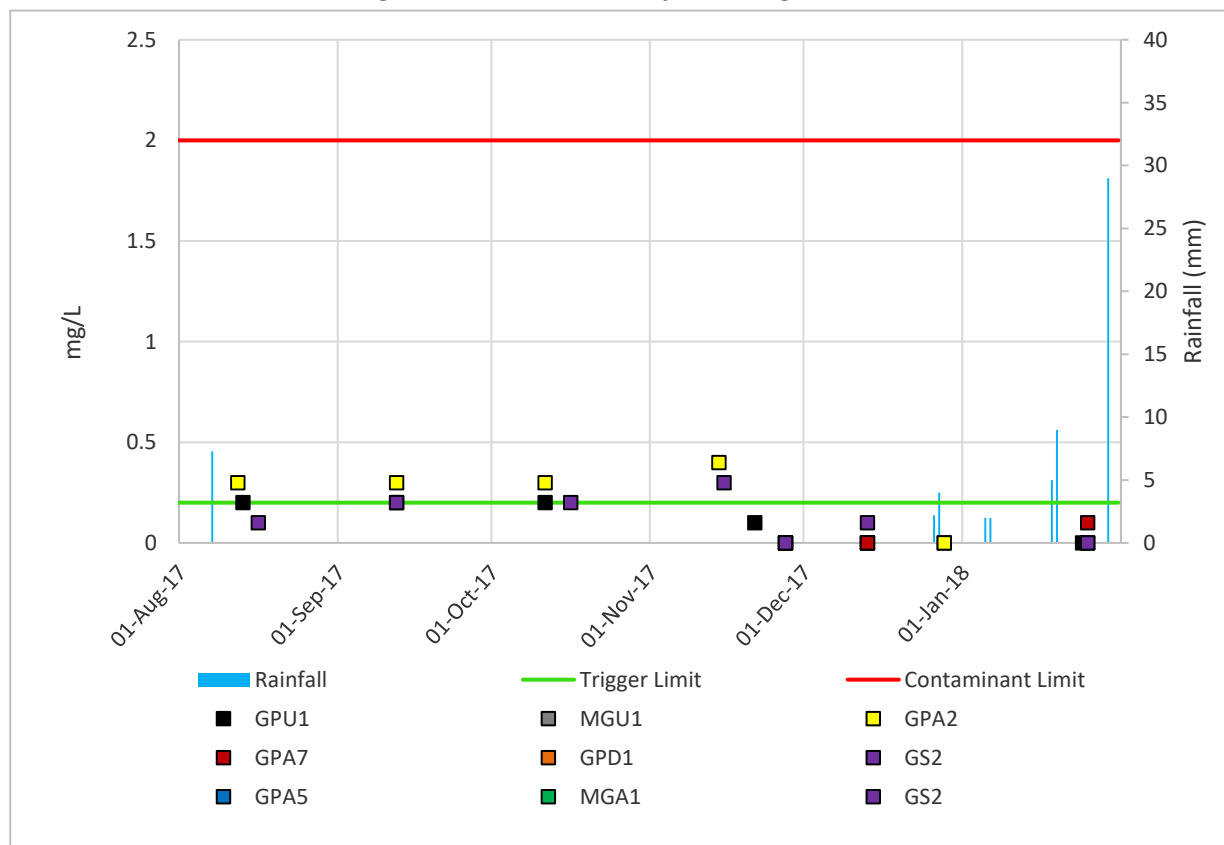


Figure 4: Fluoride Levels of Receiving Waters



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Figure 5: Aluminium Levels of Receiving Waters

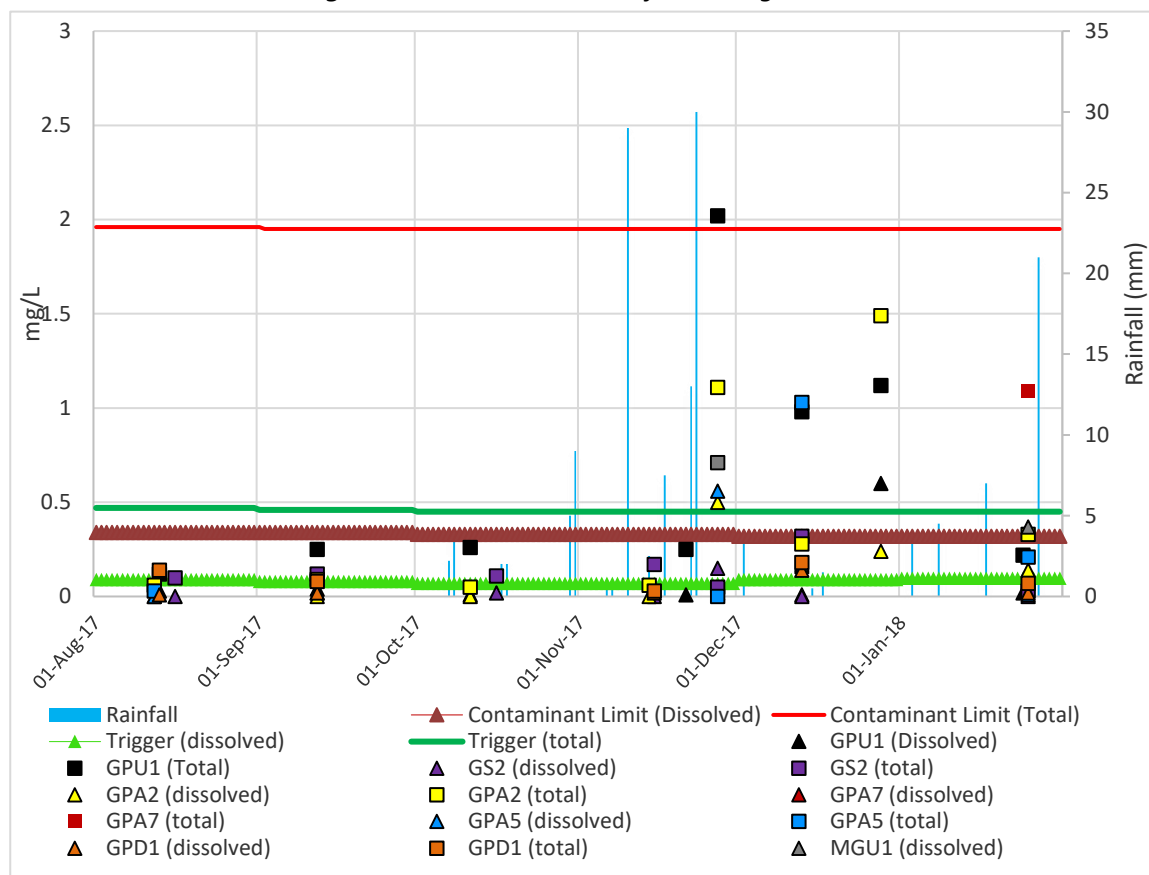
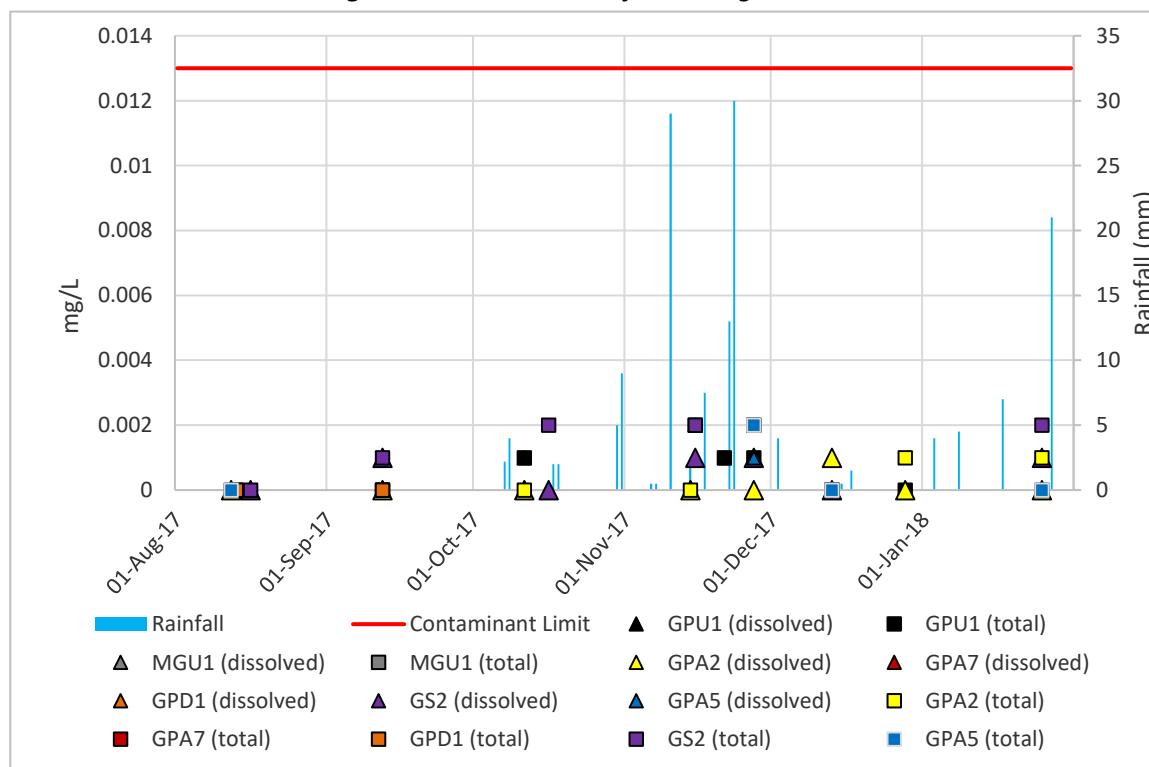
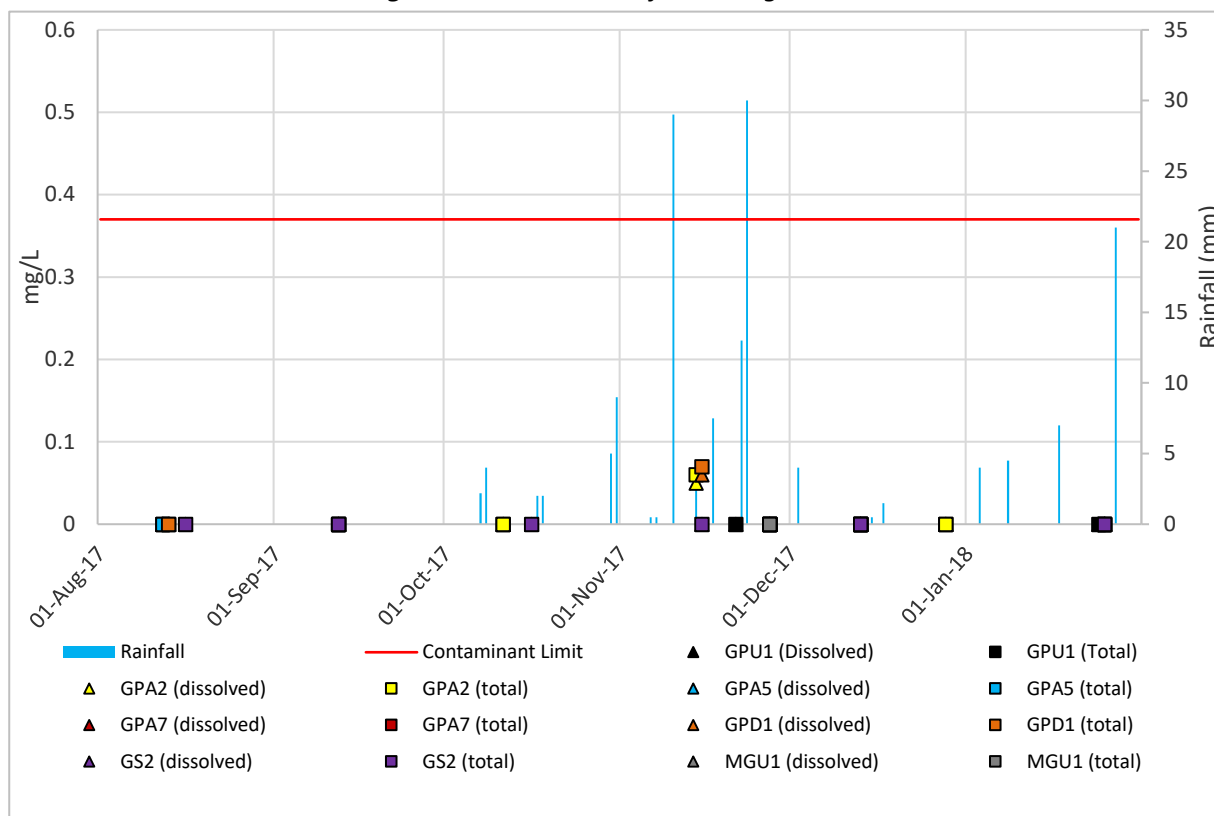


Figure 6: Arsenic Levels of Receiving Waters



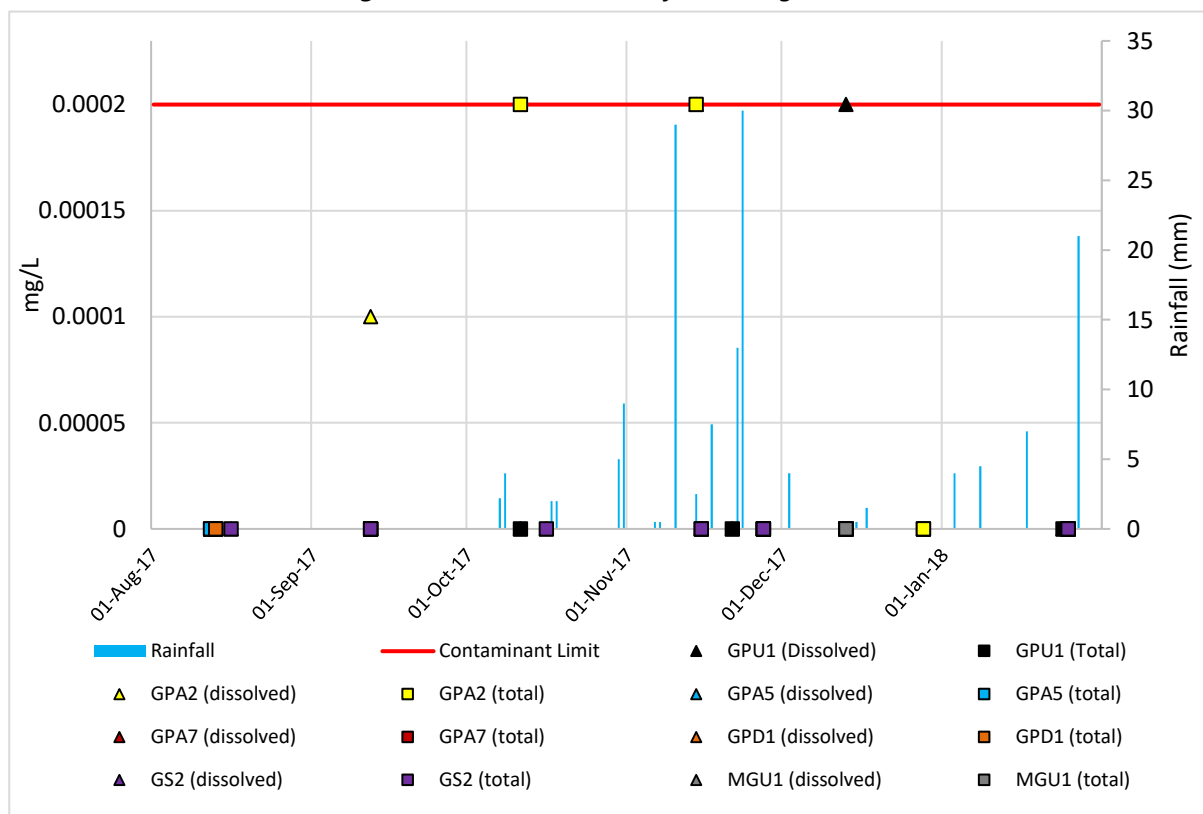
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Figure 7: Boron Levels of Receiving Waters



NB: contaminant and trigger limits are the same for dissolved and total boron

Figure 8: Cadmium Levels of Receiving Waters



NB: contaminant and trigger limits are the same for dissolved and total cadmium

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Figure 9: Cadmium Levels of Receiving Waters

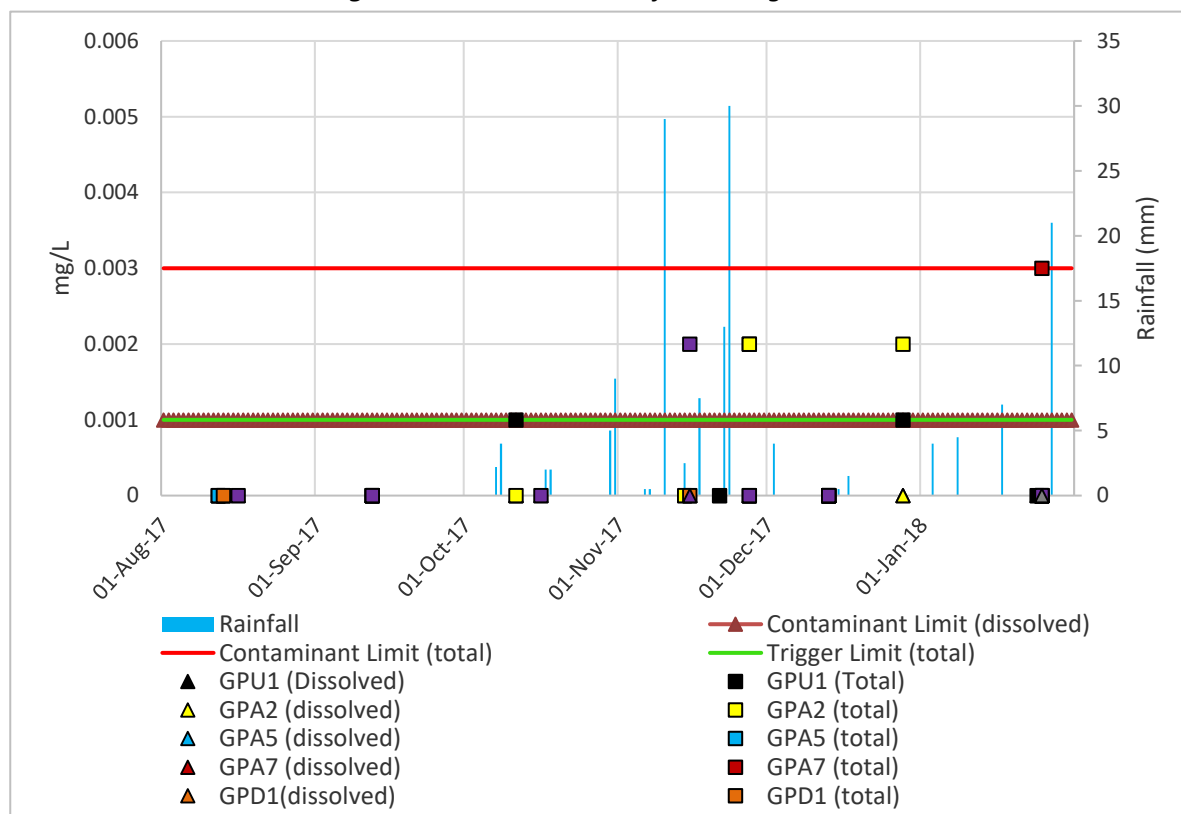
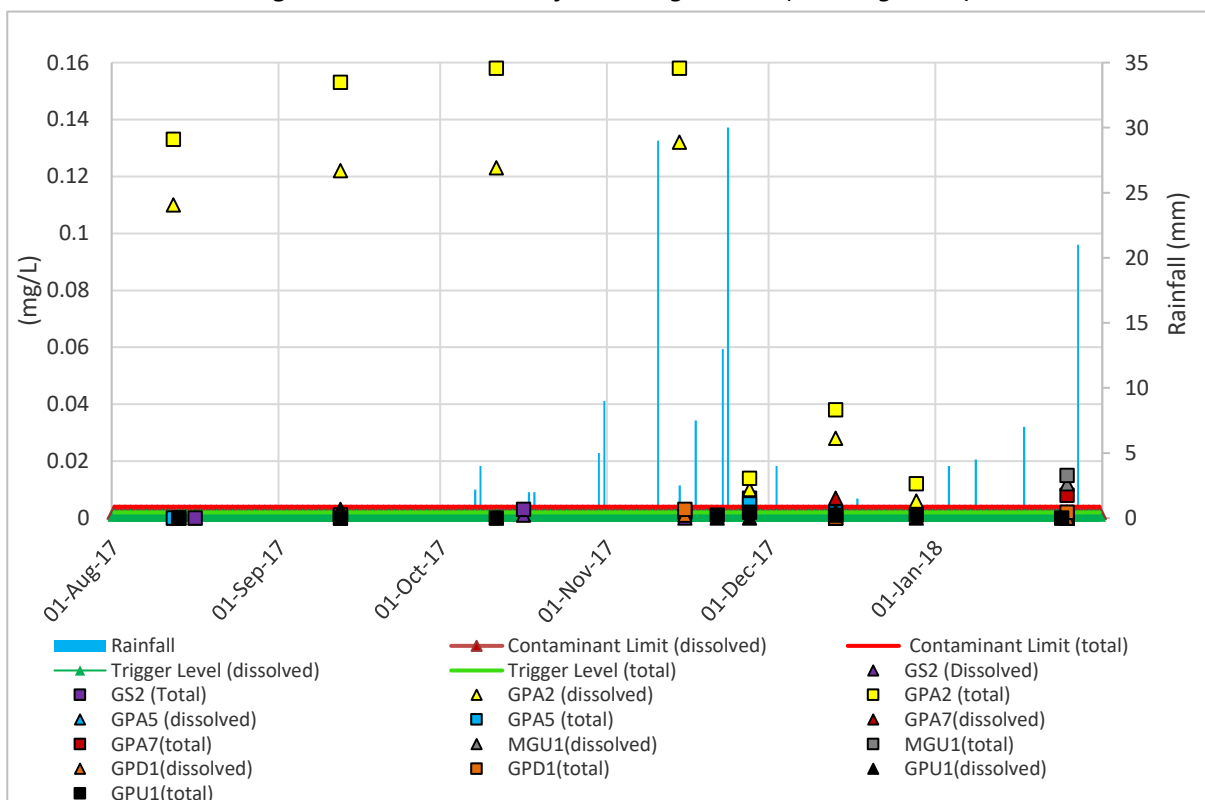


Figure 10: Cobalt Levels of Receiving Waters (showing GPA2)



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Figure 11: Cobalt Levels of Receiving Waters (without GPA2)

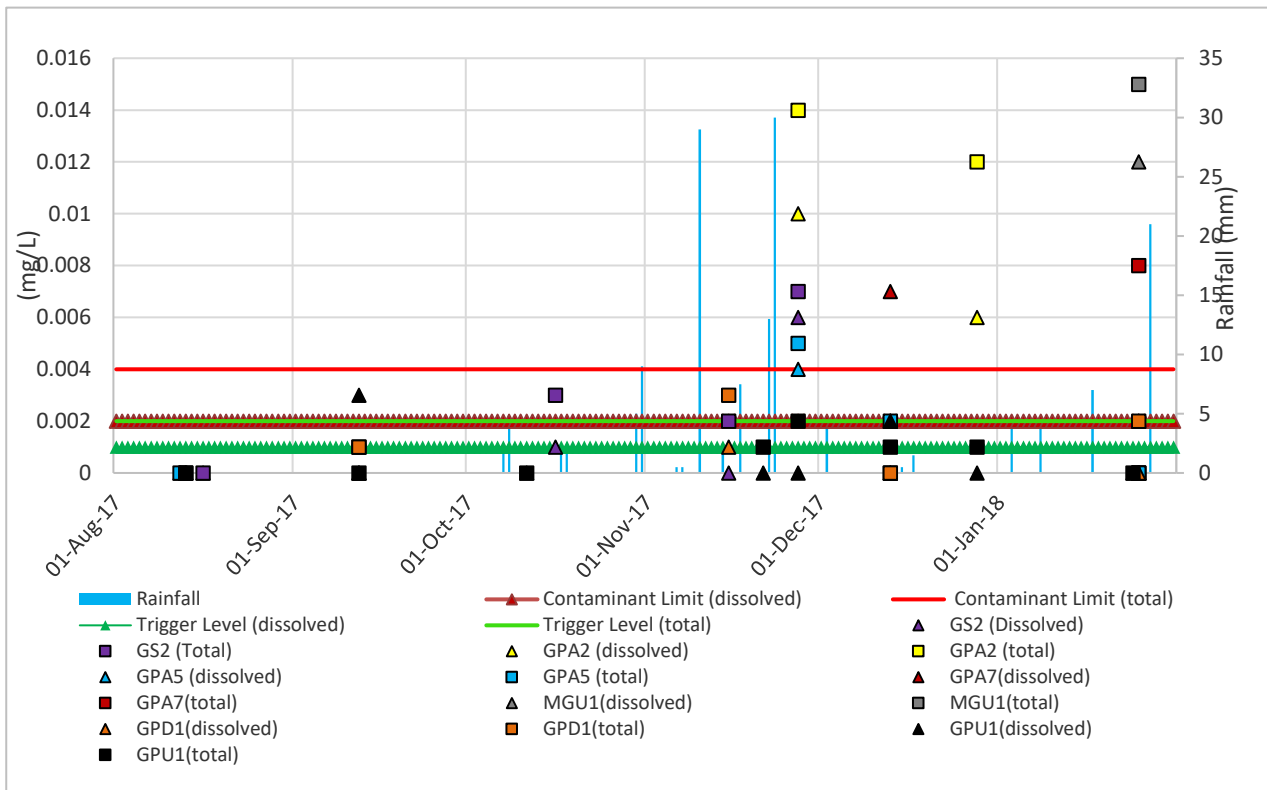
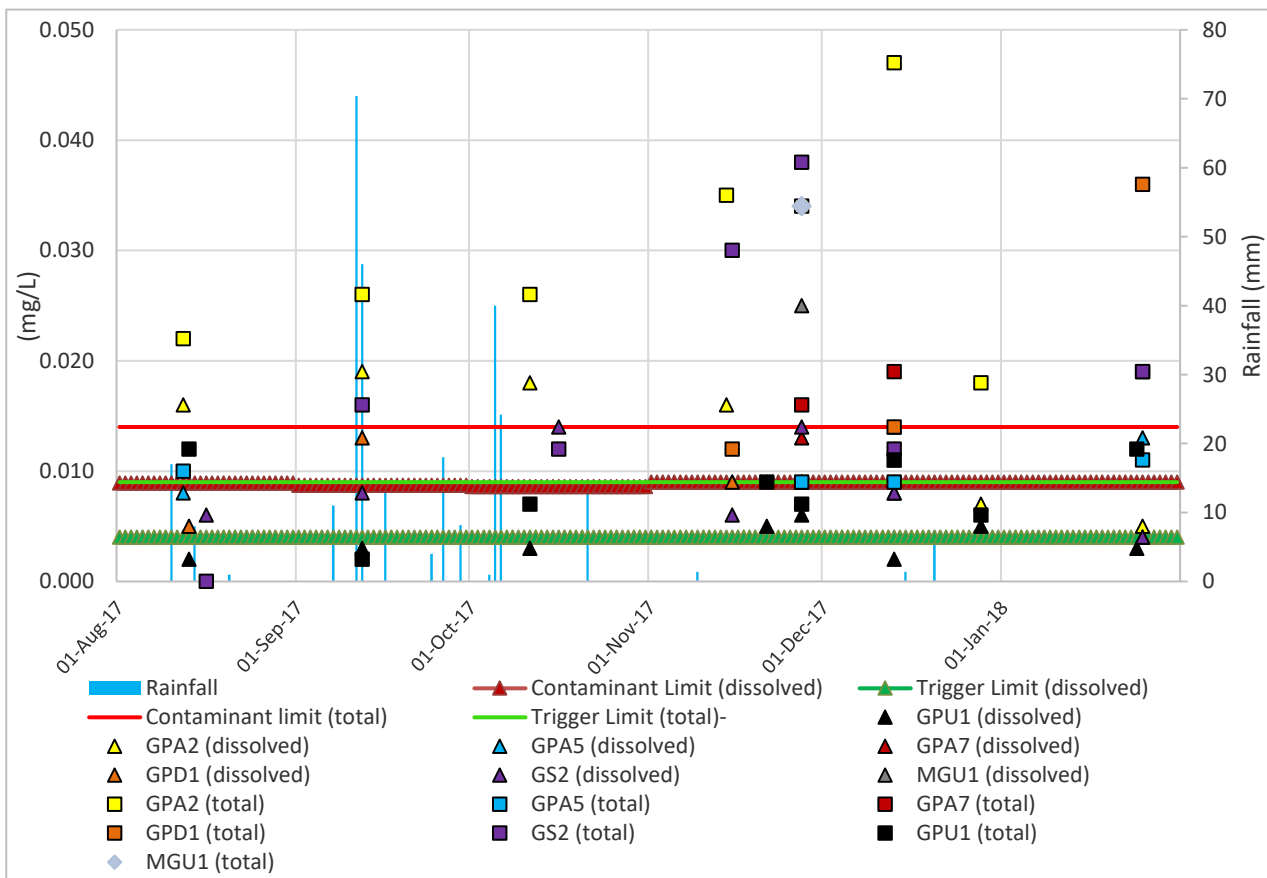
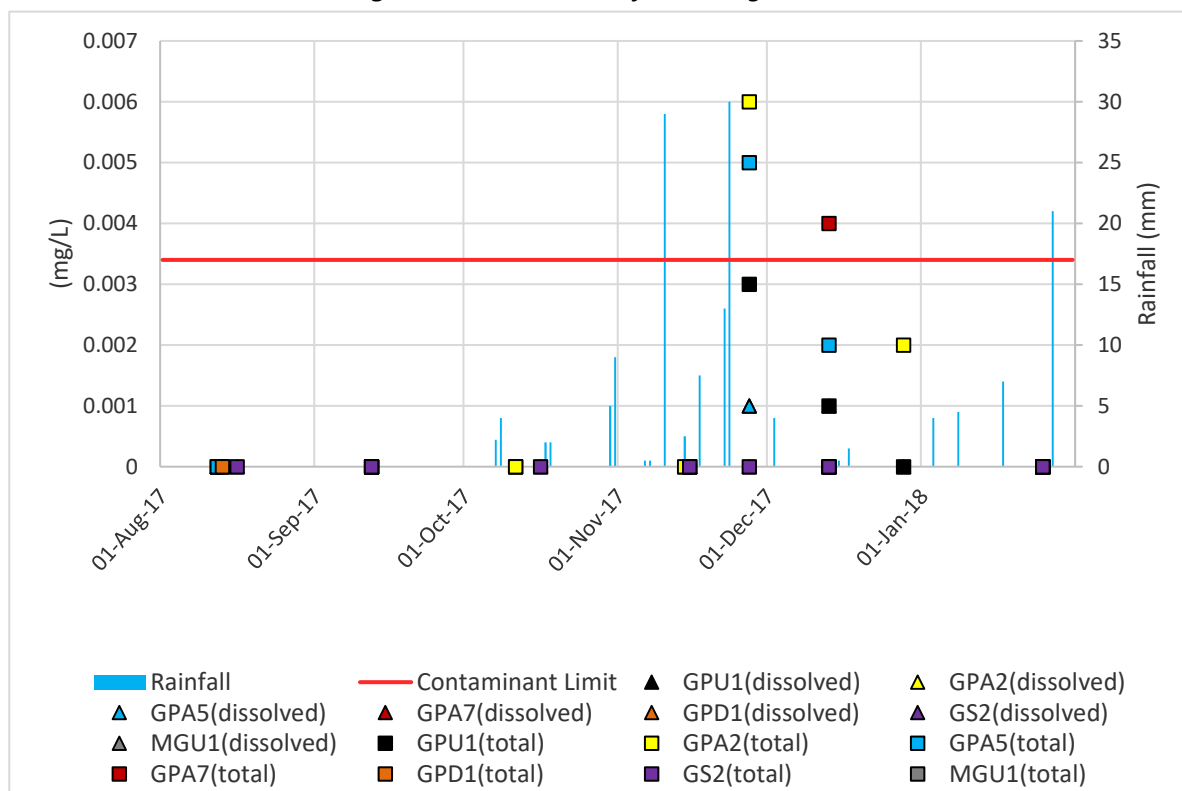


Figure 12: Copper Levels of Receiving Waters



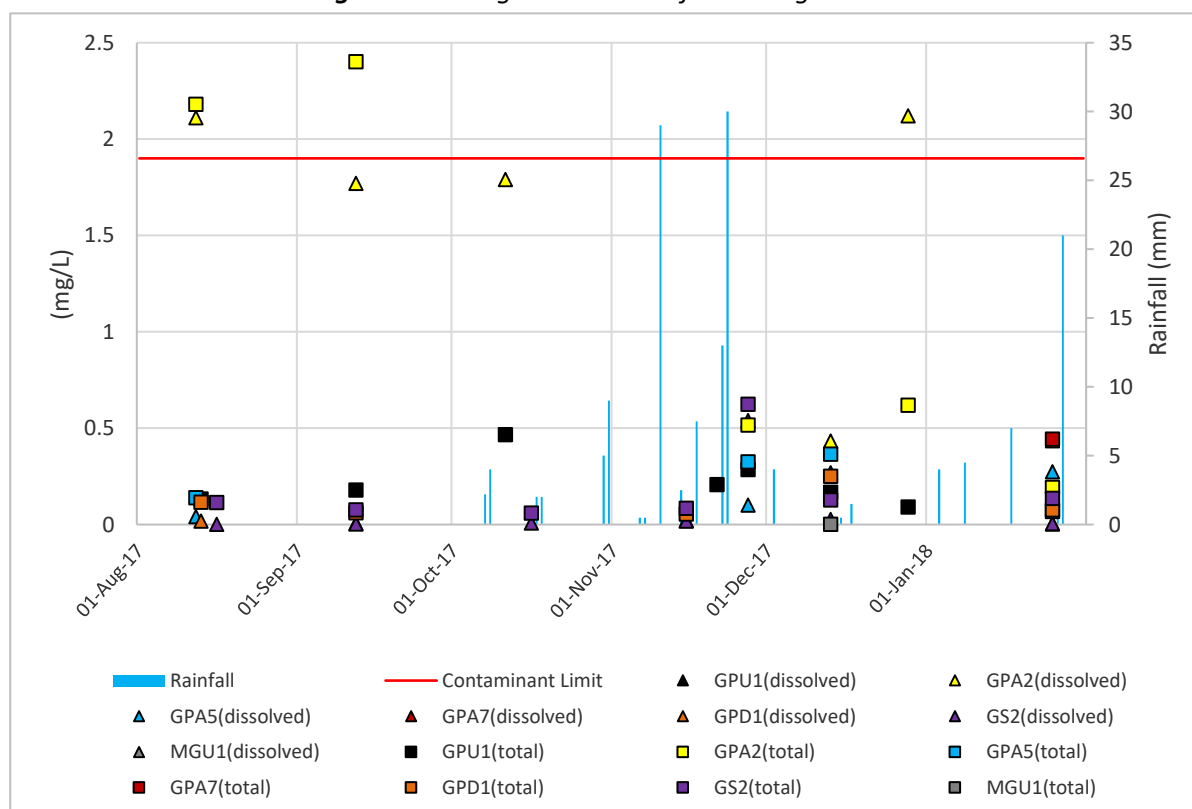
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Figure 13: Lead Levels of Receiving Waters



NB: contaminant and trigger limits are the same for dissolved and total lead

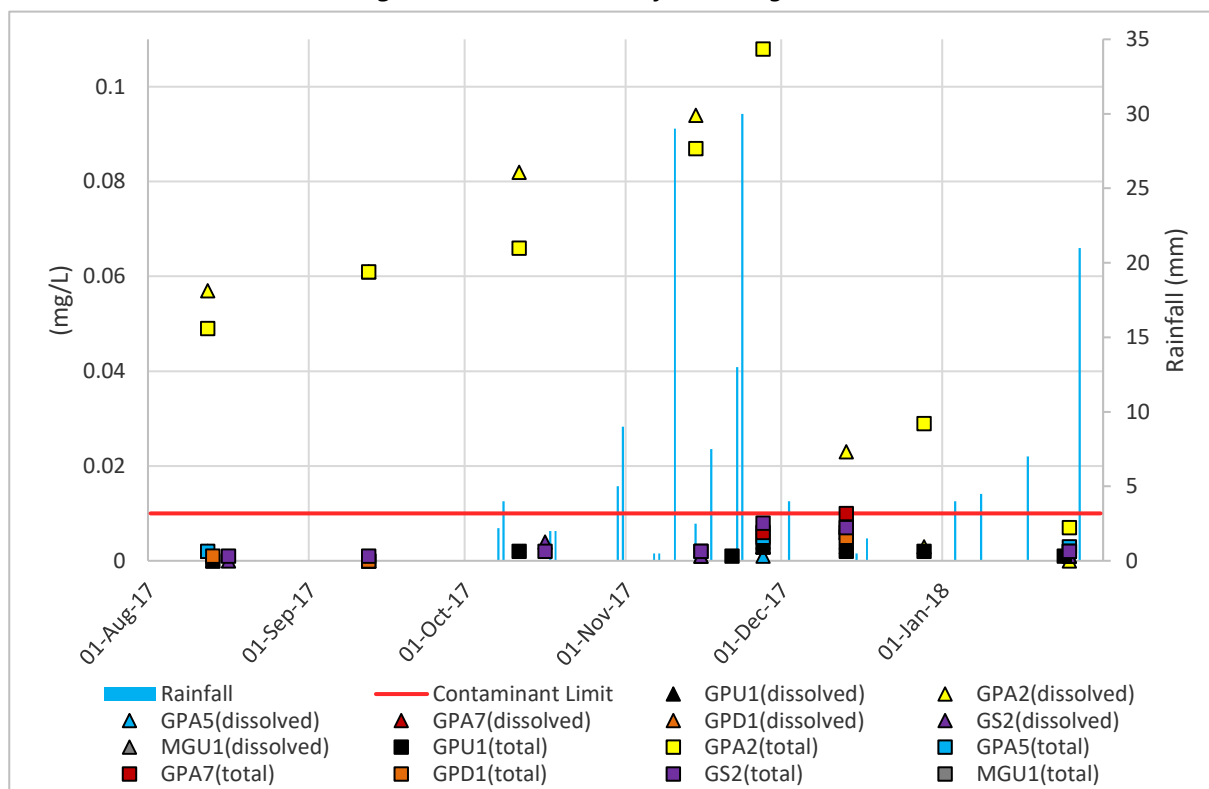
Figure 14: Manganese Levels of Receiving Waters



NB: contaminant and trigger limits are the same for dissolved and total manganese

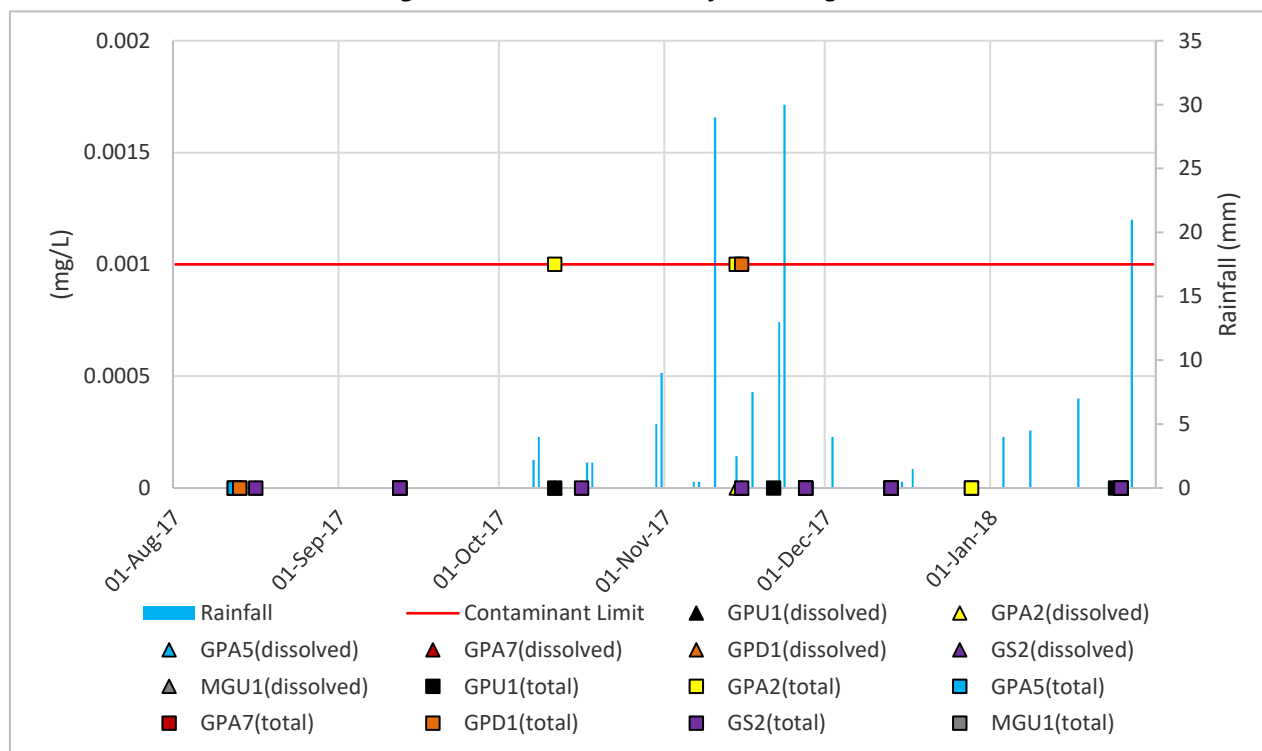
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Figure 15: Nickel Levels of Receiving Waters



NB: contaminant and trigger limits are the same for dissolved and total nickel

Figure 16: Uranium Levels of Receiving Waters

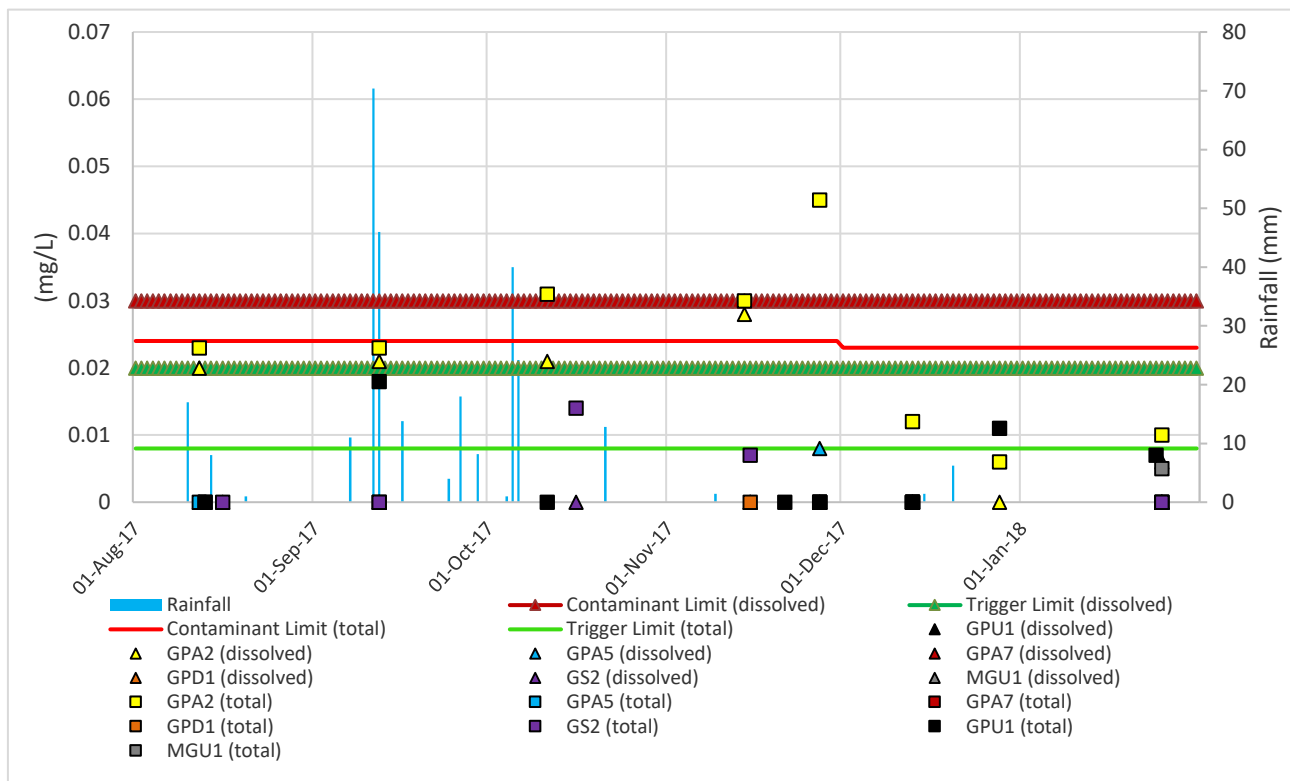


NB: contaminant and trigger limits are the same for dissolved and total uranium

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Figure 17: Zinc Levels of Receiving Waters



4.3 Exceedances

All exceedances are reported to DES as is required under condition 7 of the TEP dated 07 March 2014.

Exceedances with respect to receiving waters reported during the period (and as represented in Figures 1 to 17) are as follows in Table 4-3. All analysis is undertaken off site by an accredited laboratory, generally results are received on site with 21 days of sampling. Whilst it may appear there is a greater number of exceedances since the last report this can be explained by:

- Exceedance reporting is subject to seasonal variation with waterbodies being sampled significantly contracting during this period and therefore concentrating analytes. The variation observed during the period are consistent with previous years.
- Operations commenced in November 2017 and discharge of tailings has not resulted in elevation outside of previous known levels
- The exceedances are consistent with previous reporting periods and the exceedance levels are declining. GPA2 is the closest receiving water site and therefore has sustained the most historical impact over time. A greater number of exceedances during this reporting period have also been recorded at this site. Looking at the longer-term trends of key analytes (as shown in Attachment A) there is a clear demonstration of improvement in the water quality since 2013.
- The EA (Environmental Authority) and the language in relation to exceedances and trigger limits is inconsistent with industry standards and is currently the subject of review. If this was to be amended, consistent with these standards, then CCM also believes that exceedances would be greatly reduced, if not eliminated altogether. This is currently being discussed with DES and will be updated in future progress reports.

Table 4: Receiving Water Exceedances Reported to DES

DATE OF ANALYSIS	DATE OF NOTIFICATION	LOCATION AND NATURE OF EXCEEDANCE
17/8/17	01/09/17	- Elevated pH in GPA5, GPA6, GPD5, GPD1, GPD3, GS4 and GS2 - Elevated conductivity in GPA2, GPA5 and GPA4 - Elevated Dissolved Cobalt in GPA2, GPA4 - Elevated Cobalt in GPA2 - Elevated Dissolved Copper in GPA2 and GPD2 - Elevated Copper in GPA2 - Elevated Manganese in GPA2 - Elevated Dissolved Nickle in GPA2 - Elevated Nickle in GPA2 - Elevated Sulphate in GPA2
12/09/17	26/09/17	- Elevated pH in GS2 - Elevated conductivity in GPA4 and GPS2 - Elevated Dissolved Copper in GPD1 and GPA2 - Elevated Copper in GPD1, GPA2 and GS2 - Elevated Manganese in GPA2 - Elevated Sulphate in GPA2 - Elevated Zinc in GPA2
11/10/17	29/10/17	- Elevated conductivity in GPA4 and GPA2 - Elevated Dissolved Cadmium in GPA2 - Elevated Cadmium in GPA2 - Elevated Dissolved Cobalt in GPA2 - Elevated Cobalt in GPA2 - Elevated Dissolved Copper in GPA2 and GS2 - Elevated Copper in GPA2 and GS2 - Elevated Fluoride in GPA4 - Elevated Dissolved Manganese in GPA4 and GPA2 - Elevated Manganese in GPA2 - Elevated Dissolved Nickel in GPA4, GPA2 and GS2 - Elevated Nickel in GPA4 and GPA2 - Elevated Zinc in GPA2
14/11/17	03/12/17	- Elevated conductivity in GPA2 and GPA4 - Elevated Dissolved Cobalt in GPA2 and GPA4 - Elevated Cobalt in GPA2 and GPA4 - Elevated Dissolved Copper in GPA2 - Elevated Copper in GPA2 - Elevated Dissolved Manganese in GPA2 - Elevated Manganese in GPA2 - Elevated Dissolved Nickel in GPA2 - Elevated Nickel in GPA2 - Elevated Uranium in GPA4 - Elevated Zinc in GPA2

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DATE OF ANALYSIS	DATE OF NOTIFICATION	LOCATION AND NATURE OF EXCEEDANCE
27/11/17	12/12/17	- Elevated Chromium in GPA7 - Elevated Dissolved Cobalt in GPA5, GPA2 and GPA7 - Elevated Cobalt in GPA5, GPA2 and GPA7 - Elevated Dissolved Copper in GPA2 and GPA7 - Elevated Copper in GPA2 and GPA7 - Elevated Lead in GPA5, GPA2 and GPA7
28/12/17	14/01/17	- Elevated Dissolved Aluminum in GPA5 - Elevated Dissolved Cobalt in GPA2 - Elevated Cobalt in GPA2 - Elevated Copper in GPA2 and GPA5

5 ON SITE WATER MANAGEMENT

The water management strategy on site is focussed on minimising the volume of water that can make contact with potential contaminants through improved pumping systems and strategies, upgraded earth works and the controlled separation and capture of contaminated water.

Core to the current refurbishment and restart programs currently being undertaken on site is the redesign and upgrade of the water treatment plant to facilitate a new water treatment process. The intent is to treat the acidic mine water from the Esperanza Pit prior to pumping into the head of the copper concentrator.

The water treatment plant was commissioned on 25 October 2017. The Process Plant recommenced full operations in the latter half of November 2017. There have been no discharges during the period.

5.1 Water Reduction

The water reduction methods undertaken site, and the volumes for the period of this report are shown in Table 5. Whilst the water treatment plant was commissioned in October, there has been no measurable impact on water reduction as the use and consumption of the water in operations has been limited during sitewide commissioning activities. There has also been a delay in construction and commissioning of the paste plant to May 2018 which will divert up to 20% of tailings to the underground areas. The forced evaporators continue to provide for the majority of water reduction. Table 5 describes key water reduction metrics for site.

Table 5: Site Water Metrics

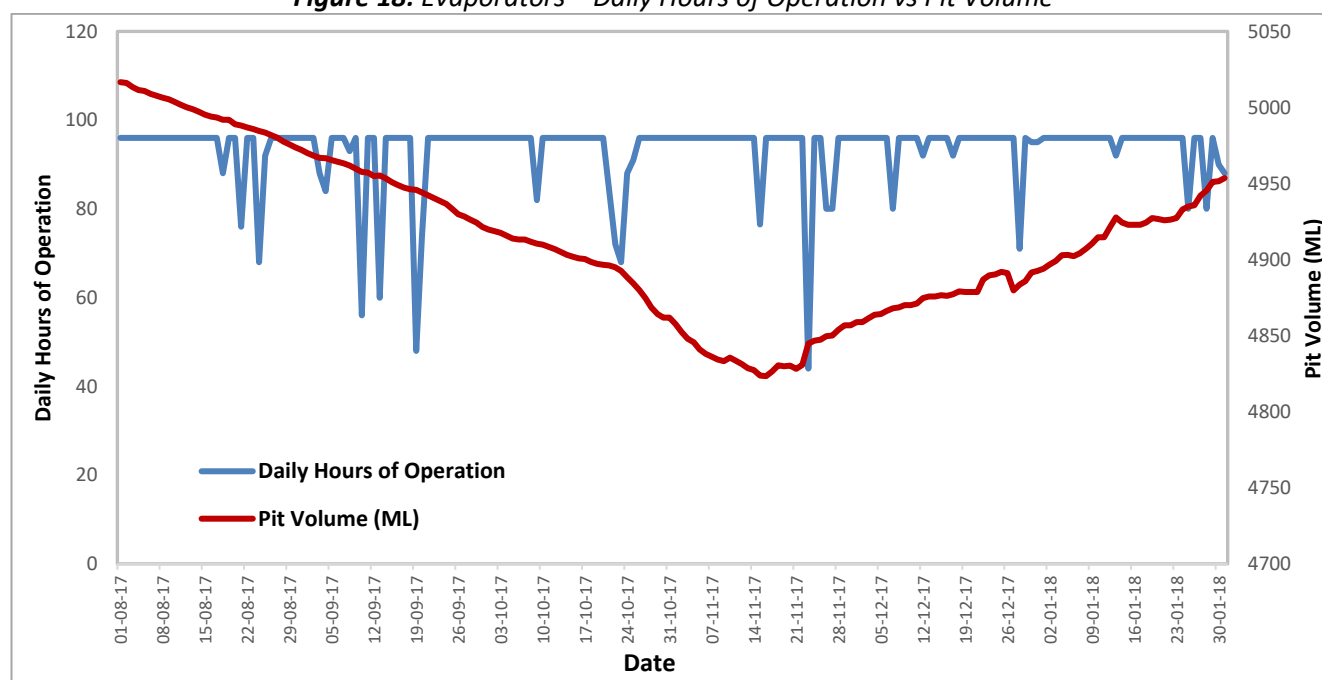
		2017												2018
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
Rainfall	mm	24.90	86.90	0.00	7.27	0.00	0.00	0.00	0.00	24.20	83.00	6.00	37.00	
Calculated impact of rainfall (based on area)	ML	6.29	22.52	0.00	1.83	0.00	0.00	0.00	0.00	6.29	21.74	1.57	9.69	
Seepage and drainage to pit	ML	19.53	25.24	23.28	18.97	25.06	24.64	25.52	26.33	31.71	28.95	33.40	30.06	
Tailings	ML	-	-	-	-	-	-	-	-	-	30.12	109.62	133.18	
TOTAL INFLOWS	ML	25.81	47.76	23.28	20.80	25.06	24.64	25.52	26.33	38.00	80.80	144.59	172.93	
Discharge to the environment	ML	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Evaporation (calculated - Pit and MCD)	ML	31.75	34.31	29.56	23.02	18.63	20.09	24.69	31.18	38.50	40.90	42.69	37.67	
Forced Evaporation (mechanical evaporators)	ML	9.54	44.70	21.87	0.00	56.07	102.48	91.82	74.21	77.03	69.16	82.24	77.72	
TOTAL LOSS (Inflows - Reductions)	ML	-15.48	-31.25	-28.16	-2.21	-49.64	-97.93	-90.99	-79.06	-77.53	-29.26	19.67	57.55	
Pit level at end of month	m	213.25	213.41	213.35	213.333	213.12	212.68	212.20	211.68	211.05	210.99	211.37	212.06	

5.2 Evaporator Operations

As stated in section 5.1, the key method of water reduction on site during the period was evaporators at Esperanza Pit. Two evaporators were installed and commissioned in Q4, 2016 with an additional two evaporators installed and commissioned in June 2017. A total of four evaporators are in operation at the Esperanza Pit. Daily hours of operation versus pit volume (reductions) is shown in Figure 1.

Maintenance on the evaporators is undertaken through the preventative maintenance system on site and key tasks and activities and the schedule are shown in Table 6. During the period, all regular planned maintenance was undertaken in accordance with this schedule.

Figure 18: Evaporators – Daily Hours of Operation vs Pit Volume



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Table 6: Evaporator Preventative Maintenance Strategy

EQUIPMENT	ITEM	ACTIVITY	FREQUENCY
Evaporator	Ring	Clean	Fortnight
		Replace	Fortnight
		Repair	As Required
	Nozzle(s)	Clean	Fortnight
		Replace	As Required
	Body	Clean	Fortnight
	Motor	Clean	Fortnight
	Starter Panel	Clean	Fortnight
Main Pumps	Wet End	Repair	As Required
		Replace	As Required
	Motor	Repair	As Required
		Replace	As Required
Booster Pump	Wet End	Repair	As Required
		Replace	As Required
	Motor	Repair	As Required
Pipework	Valves	Repair	As Required
	Flange	Repair	As Required
	Suction	Move, relocate	Monthly
MCC	PLC/Control System	Reprogram/Optimise	As Required

6 TEP ACTION PLAN

In accordance with Section 331(b) of the Environmental Protection Act (1994), the action plan for the TEP MAN 17560 is presented in Table 4.

Table 7: TEP Action Plan

TEP OBJECTIVE	ACTION	DESCRIPTION	STATUS	DUE DATE
1. Prevent unauthorised contaminant release from Old TSF area to GP Creek	1-6, 16	Management of Old TSF from a final closure perspective to cease seepage through the facility.		
1a. Cease surface seepage expression downstream of Old TSF	1	Removal of equipment hardstand (including old gen-set), which may have induced consolidation.	Complete (May 2014)	Complete
	2	Associated earthworks to ensure surface of Mammoth TSF cannot pool water.	Complete (September 2015)	Complete
	3	Improve drainage to shed water and no external catchment. Including interception of any surface run-off from the Concentrate Shed.	Replaced with Condition 1 and 3 of TEP amendment issued 24/07/2017.	Complete
1b. Define and implement an appropriate final	4	Develop "Old TSF Final Landform and Cover Design" including engineering drawing to construction specifications for cover.	Replaced with Condition 1 of TEP amendment issued 24/07/2017.	Complete

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TEP OBJECTIVE	ACTION	DESCRIPTION	STATUS	DUE DATE
landform and cover design for Old TSF	5	Physical earthworks required to execute Old TSF - Final Landform and Cover Design report, including construction of a cover if so recommended.	Due date deferred to 1 March 2019 pursuant to TEP amendment MAN17560	Deferred
1c. Interim management of Old TSF seepage	6	Continuation of the sump 6 seepage interception & monitoring system.	Sep-15 TEP Report: <i>Sump 6 seepage recover system was upgraded to include a secondary contingency pump and alarm. Continue to operate the system for seepage recovery.</i> Ongoing.	Ongoing - Term of the TEP
1d. Investigate and define the preferred rehabilitation management strategy for the old TSF	16	Evaluation of Preferred Rehabilitation Strategy for the Old TSF Landform report (prior to commencement Item 5). This includes completion and delivery of the technical feasibility, engineered designs and project implementation plans for the chosen rehabilitation strategy.	In progress – extended to 31/03/2018 (email to CCM from DES-Jacob Toe 11/01/2018)	01/03/2018 31/03/2018
2. Return to compliance with water quality contaminant limits of Table C-4 for Magazine Creek.	7-11, 17	Remediate known point sources for contaminant inflows, resulting in a return to compliance of surface flows.		
2a. Remediate all known point sources of contaminant generation impacting Magazine and Greenstone Cr.	7	Decommission the Heap Leach Evaporation Pan #2 (HLEP), by undertaking associated earthworks to ensure surface of HLEP#2 cannot pool water.	Due date deferred to 1 March 2019 pursuant to TEP amendment MAN17560	Deferred
	8	Develop "HLEP #2 Final Landform and Cover Design" including engineering drawings to construction specifications for cover.	Replaced with Condition 1 of TEP amendment issued 24/07/2017.	Complete
	9	Physical earthworks required to execute HLEP#2 - Final Landform and Cover Design report, including construction of a cover if so recommended.	Due date deferred to 1 March 2019 pursuant to TEP amendment MAN17560	Deferred
	9a	If as an outcome of item 17, an alternative strategy to item 9 is adopted, or if the mechanism by which item 9 construction of a final landform differs to options previously described by item 4 – complete all capital programs or plant upgrades required to implement the recommended rehabilitation strategy	Addressed upon completion of Action #17	01/03/2018 31/03/2018
	9b	If as an outcome of item 17, an alternative rehabilitation strategy to landform cover is recommended for the HLEP #2 – execute final engineered designs and project implementation plans for the adopted rehabilitation strategy (or strategies)	Addressed upon completion of Action #17. In progress – extended to 31/03/2018 (email from DES from Jacob Toe sent 11/01/2018)	01/03/2018 31/03/2018
	17	Evaluation of the Preferred Rehabilitation strategy for the HLEP #2 Landform report (prior to commencing Action #9). This includes completion and delivery of the technical feasibility, engineered designs and project implementation plans for the chosen rehabilitation strategy.	In progress – extended to 31/03/2018 (email from DES from Jacob Toe sent 11/01/2018)	01/03/2018 31/03/2018

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TEP OBJECTIVE	ACTION	DESCRIPTION	STATUS	DUE DATE
2b. Investigate if any additional point sources of contamination.	10	Continue the monitoring program Stage 1 - existing monitoring program (water quality at Mammoth Portal, HLEP#2, WC03, sediment transect along Magazine Cr) and monitoring of accumulated contaminated soil in Magazine Creek by annual sediment sampling (before end of July each year - 1st qtr. of dry season). Stage 2 - additional investigation sampling if required.	Noted in Sep-15 TEP Report: <i>Sediment monitoring: completed as per EA</i> <i>Surface waters: completed as per EA</i> <i>Ground waters: completed as per EA</i> Monitoring programs ongoing as per TEP and EA.	Term of the TEP
2c. Minimise risk of contaminated flows occurring past Mammoth Portal Sump	11	Capture contaminated water before it reports to Greenstone Creek (prior to completion of actions 7-9).	Additional sump installed at junction of east and west Magazine Creeks. COMPLETE	Complete
3. Return to compliance with water quality contaminant limits of Table C-4 for Gunpowder Creek.	12-15 and 18-21	Reduction of the sulphate and metal contamination load entering Gunpowder Creek to a point whereby no exceedances of receiving water contamination limits occurs (EA Table C4).		
3a. Improved Esperanza TSF seepage management	12	Operation of the Esperanza TSF in accordance with the EA condition G9-1 "Esperanza TSF Master Seepage Report"	Esperanza TSF not in operation	-
	13	Continuous operation of North Waste Rock Dump, Saddle Dam #2 & Saddle Dam #3 seepage pump systems	Noted in Sep-15 TEP Report: <i>In compliance and operating the seepage system at SD2 and SD3 as and when seepage occurs.</i> <i>General trend of decreasing seepage rates has been observed.</i> Ongoing.	Term of the TEP
3b. Ensure that discharge does not unnecessarily increase sulphate load in Gunpowder Creek at beginning of dry season.	14	Discharge in accordance with Court Order #3267 of 2013 (i.e. when creek flowing >1.1m ³ /s for sufficient dilution and movement)	Not applicable during the period of this report – no discharges	Term of the TEP or Court Order
3c. Reduce groundwater and soils contamination (from Sump 6), to reduce the contamination load entering Gunpowder Creek.	15	Annual scalping of visually evident seepage induced efflorescence in the area known as Sump 6 (immediately downstream of Old TSF)	Completed (for current year) in September 2017 and advised in periodic report submitted 1 December 2017.	31 October each year if required
3d. Improve the water management, treatment and reduction for contaminated water retained on site.	18	Install and commission 4 Minetex high capacity evaporators with the capability of evaporating 450 ML of water per year per unit	Completed 30/06/2017	Complete
	19	Refurbish and commission the water treatment plant with a capacity to treat 1.6GL of water per annum (requires 1.1GL of water to be fed to meet operational consumption)	Commissioned 25 October 2017	Complete

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TEP OBJECTIVE	ACTION	DESCRIPTION	STATUS	DUE DATE
	20	Reduce volume of existing contaminated water retained on site through: a. Evaporation (4 units at 80% utilisation and 50% of design capacity and efficiency = 60ML per month for 19 months) b. Water treatment and consumption (80% pf 40ML per month excess capacity = 34ML per month for 19 months). Total reduction for water by 1 March = 1.8GL.	In progress.	01/03/2019
	21	Develop a rehabilitation plan for Mill Creek Dam and incorporate it into the Plan of Operations and Post Mine Land Use Plan.	In progress.	01/03/2019

ATTACHMENT A: HISTORICAL EXCEEDANCES AT GPA2

CCM acknowledges the exceedances that are presently ongoing in the receiving waters. However, based on the following figures CCM believe that the magnitude of the exceedance is diminishing (whilst only GPA2 is included in this report, GPA2 reflects the closest and historically most impacted off-site location to the mine).

There are several issues surrounding the ongoing matter of exceedances. Most significantly is the fact that the reference site is outside the mineralised zone and is excellent quality water making it highly unlikely that receiving waters downstream of the site (in a known mineralised zone) will ever achieve a similar quality.

Further work is being undertaken in this regard including a review to determine if it can be demonstrated that the threshold level for contaminant limits should be increased potentially based on direct toxicity assessments as recommended by DES.

This and other reviews will be reported in subsequent periodic TEP reports.

Figure A-1: pH at GPA2 (2013-2018)

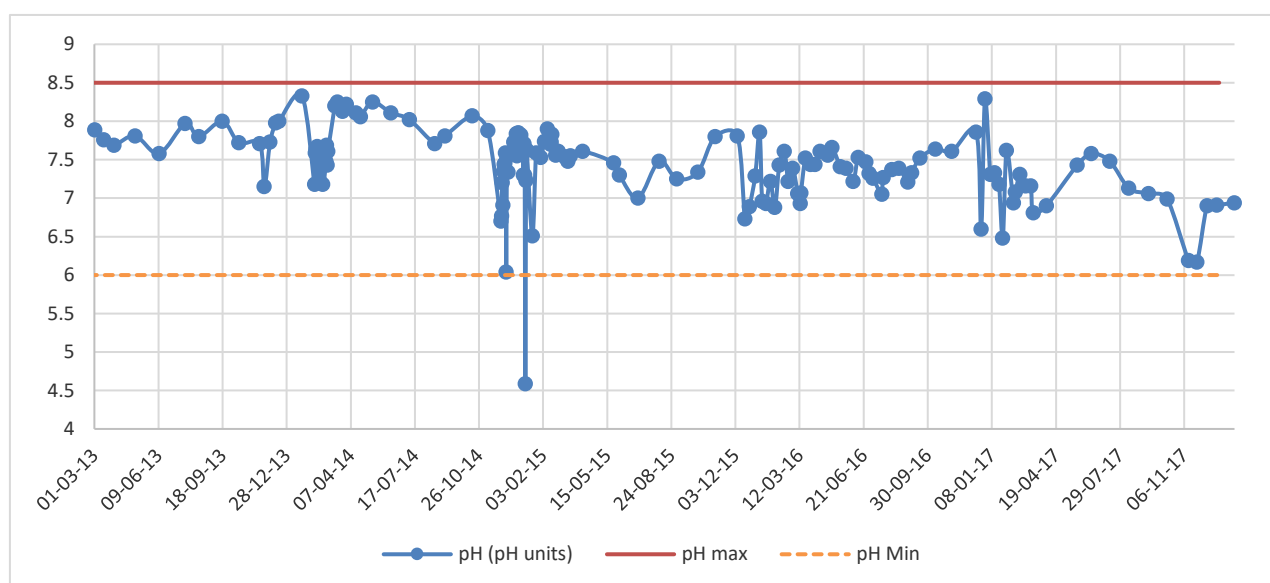
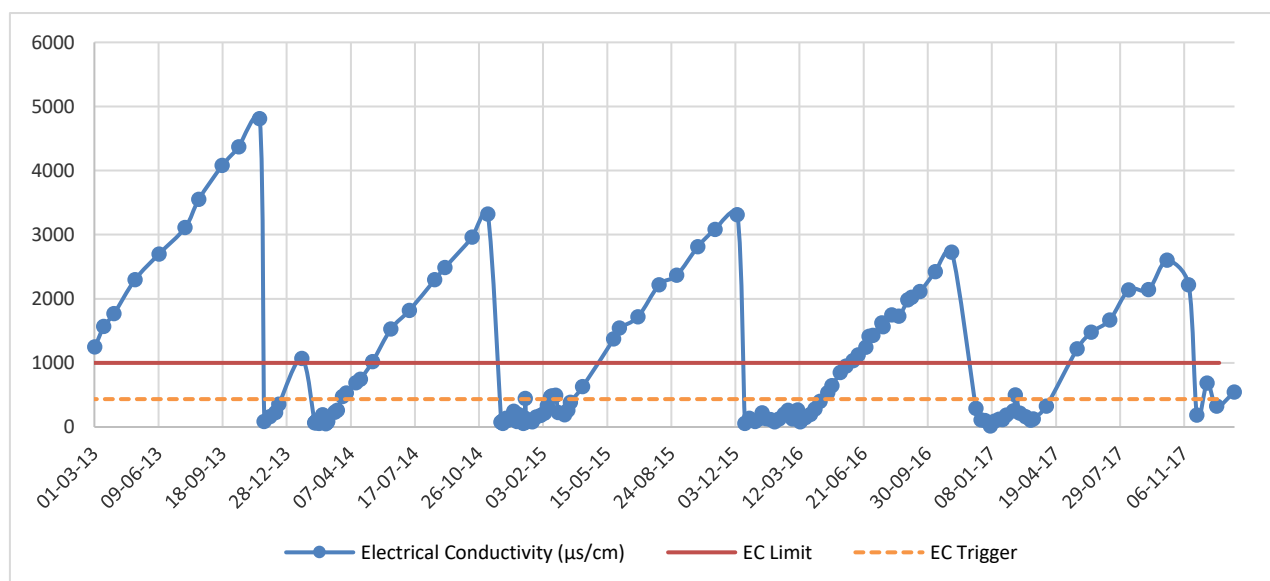


Figure A-2: EC at GPA2 (2013-2018)



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Figure A-3: Sulphates at GPA2 (2013-2018)

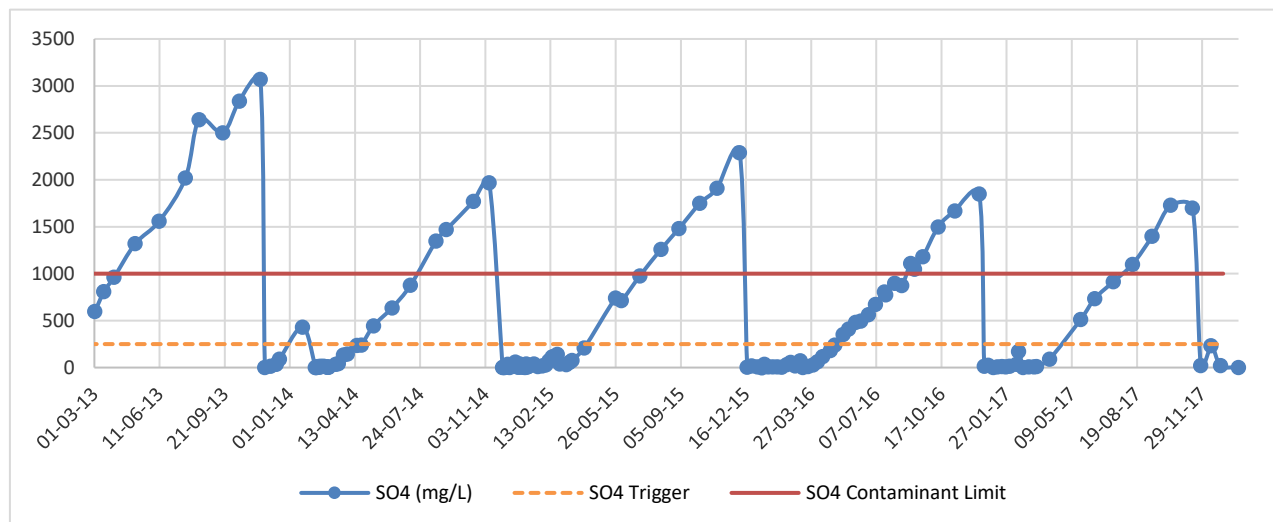


Figure A-4: Total Aluminium at GPA2 (2013-2018)

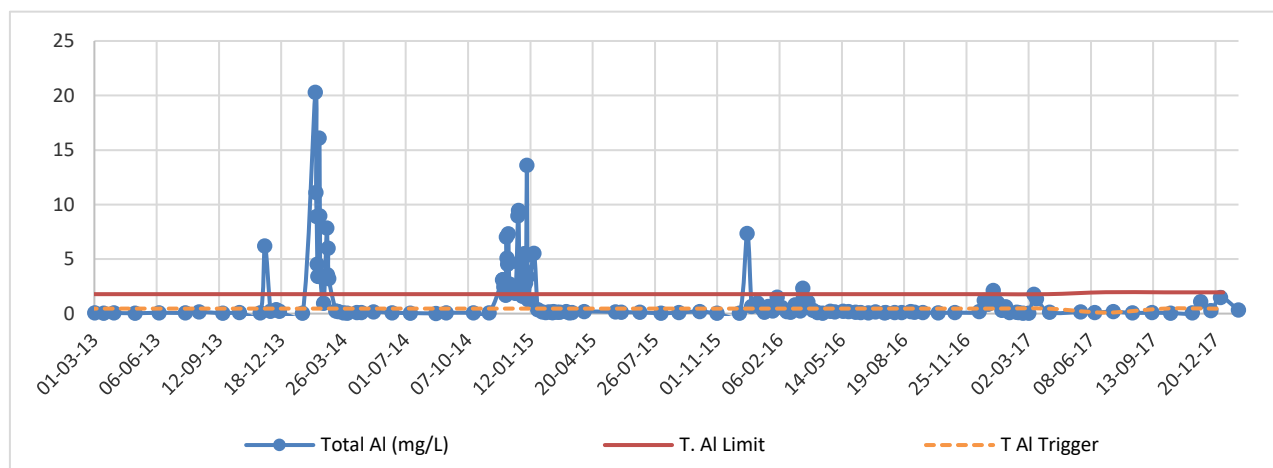
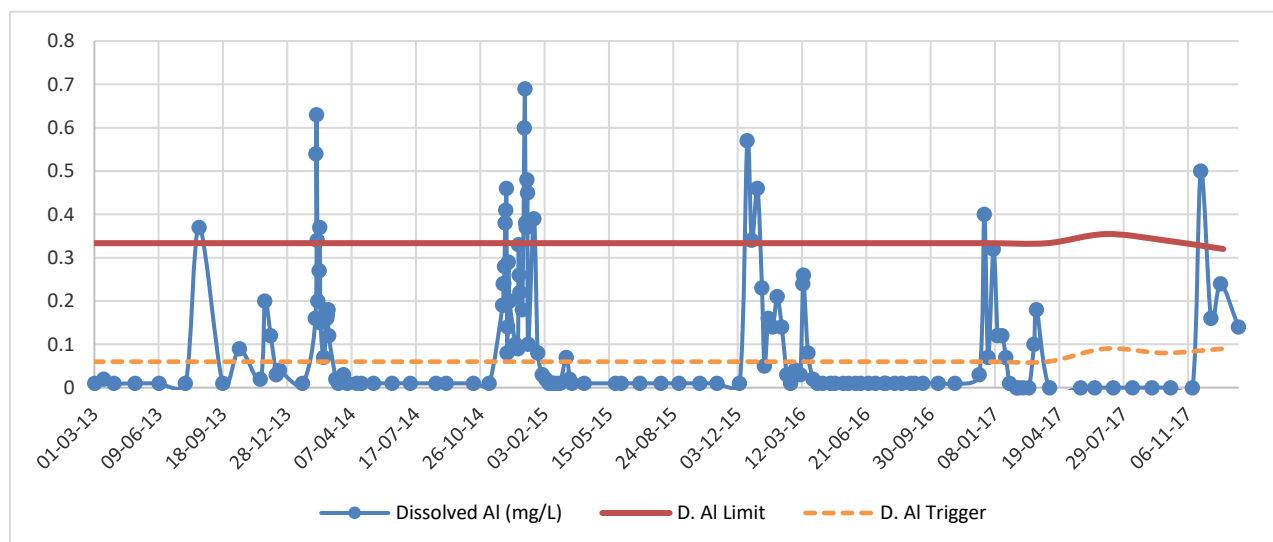


Figure A-5: Dissolved Aluminium at GPA2 (2013-2018)



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Figure A-6: Dissolved Cobalt at GPA2 (2013-2018)

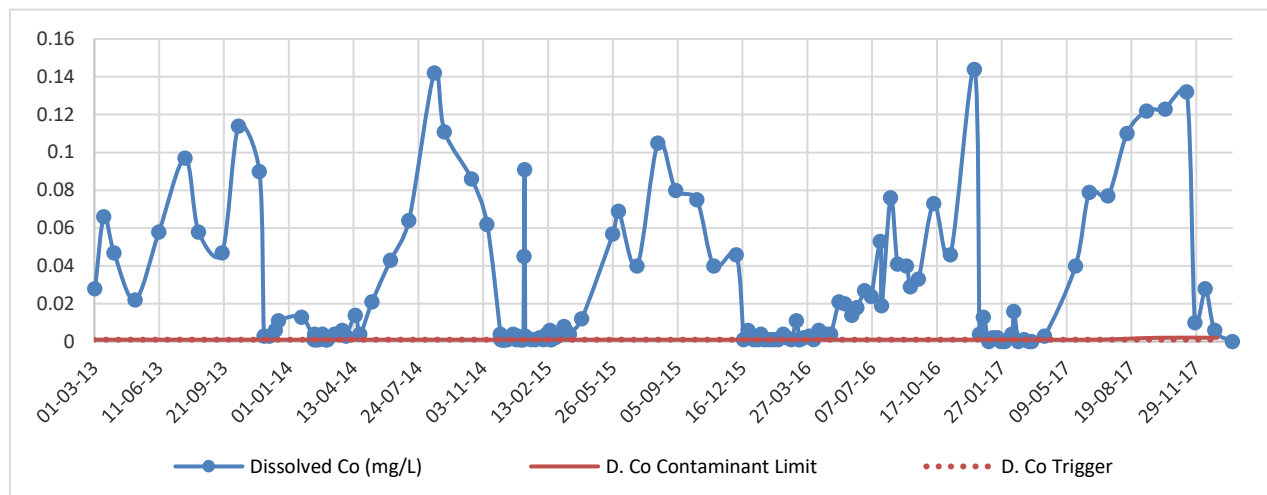


Figure A-7: Total Cobalt at GPA2 (2013-2018)

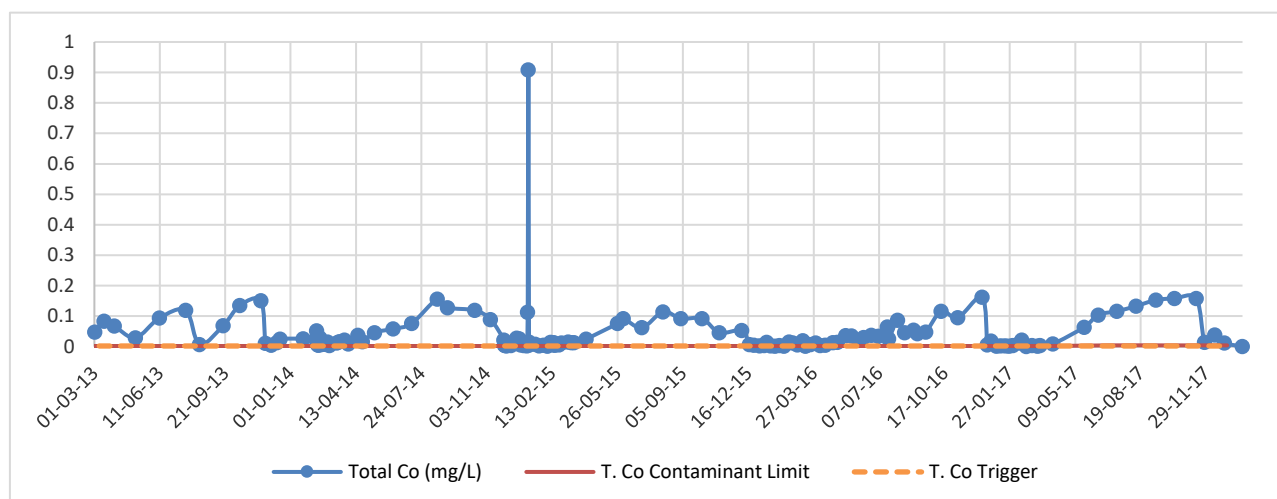
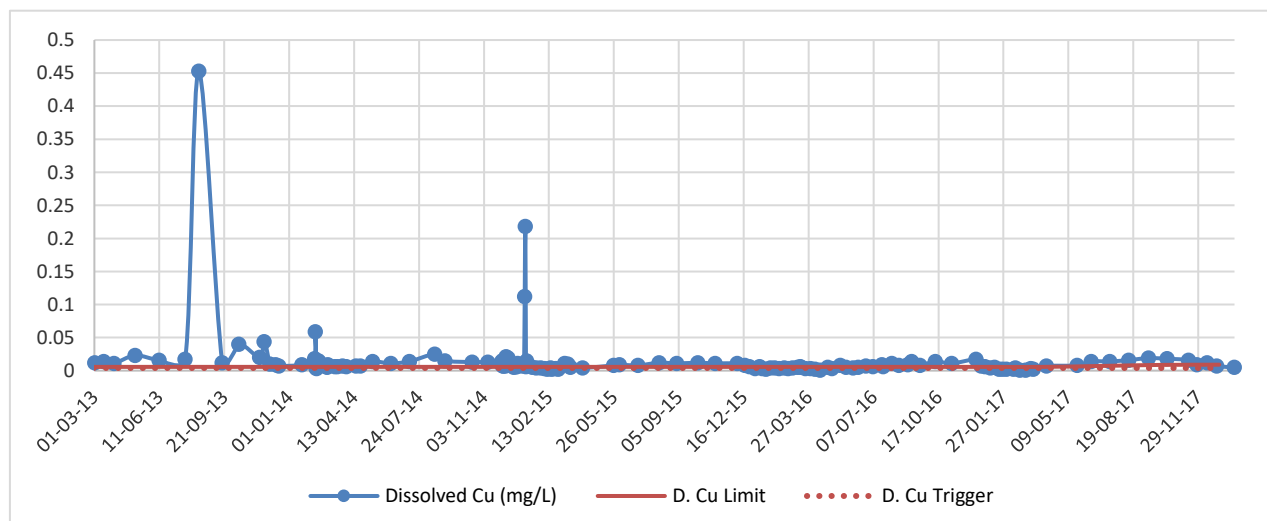


Figure A-8: Dissolved Copper at GPA2 (2013-2018)



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Figure A-9: Total Copper at GPA2 (2013-2018)

