

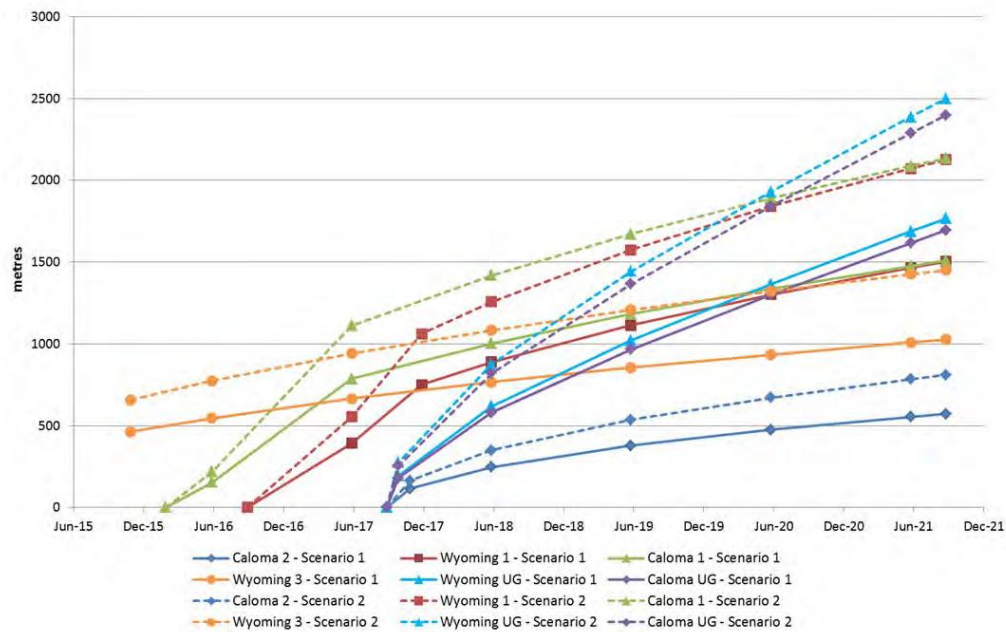


Figure 5-4 Predicted Radius of Drawdown

Table 5-7 Predicted radius of drawdown – modified methodology

Mining Area	The Impax Group (2011)	Modified Assessment
Caloma One	1,700 - 3,900	1,450 – 2,130
Wyoming One	1,700 - 3,900	1,500 – 2,130
Wyoming One Underground	2,300 - 5,600	1,770 – 2,500
Wyoming Three	650 - 1,450	460 - 660
Caloma Two	Not predicted	570 - 810
Caloma Two Underground	Not predicted	1,700 – 2,400

It has been assumed that pits remain fully dewatered until 2021, with the exception of Wyoming Three open cut which is proposed to be filled with waste rock. In reality, it is likely that the voids will be allowed to fill with water, reducing the head gradient over time and therefore the groundwater inflow rates and radius of influence.

The radius of influence of the Caloma Two open cut pit is within the zone of drawdown from the approved workings. The radius of influence of the Caloma Two underground extends slightly beyond the existing zone of drawdown, however since each pit and underground mine has been assessed individually the size of the drawdown zones are conservative and it is likely that the Caloma Two underground mine will not increase the zone of drawdown from the approved workings.

The cumulative zone of drawdown is predicted to extend up to 2,500 m from the Wyoming One and Caloma One pits. This is less than the original calculation of 5,600 m from the Wyoming One open cut, reported by The Impax Group (2011). There are no active registered bores within this area of drawdown. Therefore, predicted groundwater pressure impacts resulting from Modification 3 are less than the Level 1 minimal impact level in the AIP and are considered to be acceptable.

5.2.3 Water Quality

Filling of the Wyoming Three open cut with waste rock has the potential to impact on the local geochemistry of the saline fractured rock water source. Testing of waste rock was undertaken by Graeme Campbell and Associates (2011). The following key findings were reported:

- Low risk of acid rock drainage and saline drainage from waste regolith material.
- Low risk of acid rock drainage from waste bedrock (distal zone).
- Some pyrite present within waste bedrock (proximal zone) and low grade ore, with various enrichment of arsenic and antimony, although ankerite also present providing a buffering capacity. Some potentially acid forming (PAF) samples identified.

These results indicate that rock from waste regolith and waste bedrock (distal zone) can be emplaced into the Wyoming 3 pit without risk of interaction of acidic or arsenic-rich drainage interacting with groundwater. However, prior to rock from waste bedrock (proximal zone) or low grade ore being emplaced into the pit, it is recommended that appropriate geochemical testing be undertaken prior to disposal to confirm the risk of impact.

Regardless of the geochemistry of the waste rock, there is a net hydraulic gradient towards the pit while the pressure head of the water within the pit remains below approximately 215 m AHD. Therefore seepage will remain within the pit or in the near zone of the pit during this time. In the long term after groundwater levels have recovered, drainage from the emplaced waste rock may interact with deeper saline groundwater within the less productive fractured rock water source and move to the north at a rate of up to 0.3 m/year (as discussed in Section 3.5). It is likely that any metal species would move at less than this rate due to dilution and natural attenuation (such as ion exchange and complexation). It is less likely that drainage from the pit would interact with shallow groundwater due to the low permeability of the clayey strata throughout the pit walls in the regolith zone.

Overall it is considered that the risk of impact to groundwater from the emplacement of waste rock into the Wyoming 3 pit is minimal and would be less than the Level 1 impact criterion in the AIP. In particular, the beneficial use of the fractured rock water source is currently limited and it is not considered that the beneficial use category could deteriorate as a result of this emplacement.

5.3 Site Water Balance, Supply and Discharge

TGO have an existing water balance model that is currently under revision. The existing water balance model has been developed in Goldsim (version 11.1) and considers all major surface and groundwater interactions of the Mine Site both for the existing and future conditions. The water balance model utilises a daily time step and has incorporated the typical daily water management procedures for the Mine Site.

The existing site water balance was amended for the future conditions to include the various aspects that have are proposed as part of the modification. The basis for the modelling has been provided in Appendix C.

The results of the water balance modelling have been reported on an annual basis from 2016 to 2020. For each year a mean, minimum and maximum result was predicted. The resultant balance has been summarised in Table 5-8.

As the results provided in Table 5-8 indicate, the balance shows an general trend of increasing outflows over the life of the Mine. This is due to the need to keep the open cuts dry. These dewatering volumes are transferred through to the Wyoming Central Dam – large cell. During periods when the Wyoming Central Dam – large cell is at or near capacity, discharges will occur which is represented as a loss from the storage. It is understood that future works are planned to increase the size of the Wyoming Central Dam – large cell by at least 20 to 120 ML to assist in the management of stored water. Sensitivity testing indicated that an increased capacity of the Wyoming Central Dam – large cell will reduce the predicted outflows from the Mine Site.

The largest input to the water balance continues to be extractions from the Woodlands Borefield. These extractions generally decrease with increasing groundwater inflows into the open cuts over the life of the Mine however the water balance modelling indicates that extractions from the Woodlands Borefield account for approximately 65 to 75 % of water sources.

External trucked water remains an important source of water for the Mine, supplying the raw water dam when water levels are below 50% of capacity. The modelling indicates that annual totals for the external water generally decrease during the life of the Mine as a result of the increased groundwater make predicted after year 2017.

The predicted water cycle values (mean, minimum and maximum annual volumes) for the proposed modifications to the Mine for the year 2020 (the last year of the Mine) are provided in Figure 5-5. The proposed modification water cycle schematics over each future year of the Mine are provided in Appendix C.

Table 5-8 Average Annual Water Balance

	2016 (ML/yr)	2017 (ML/yr)	2018 (ML/yr)	2019 (ML/yr)	2020 (ML/yr)
Inputs					
Catch Runoff	114	109	100	115	110
Direct Rainfall	65	64	63	66	63
Borefield Extractions	830	851	696	667	741
External Water	45	49	24	19	32
Moisture in Ore	66	67	65	65	69
Groundwater Inflow	8	52	209	202	214
Total Inputs	1128	1192	1157	1134	1229
Outputs					
Evaporation	89	87	95	98	94
Discharge	2	1	2	1	2
Potable Water	1	1	1	1	1
Water in Residue	512	566	510	492	598
Active Area Evaporation	148	147	147	147	148
Re-wetting loss	148	150	148	147	154
Dust Suppression	249	249	249	249	250
Total Outputs	1149	1201	1152	1135	1247
Balance					
Change in Storage Volume	-21	-9	5	-1	-18



EXISTING STORAGE
PROPOSED STORAGE

LEGEND

MINIMUM (ML/YR)

MEAN (ML/YR)

MAXIMUM (ML/YR)

MINIMUM, MEAN AND MAXIMUM RESULTS
INDICATING RANGE OF POTENTIAL CLIMATE VARIABILITY
WHERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN, VALUE IS CONSTANT

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5.3.1 Water Sources

Surface water runoff generated within the Mine Site is captured to protect the environment from potential risk to water quality and capture of sediment from disturbance activities. Water captured within sediment basins is dewatered and transferred to the Wyoming Central Dam – large cell. The water balance modelling indicates that total volumes transferred to the Wyoming Central Dam – large cell from the sediment basins over the life of the Mine are on average 50 ML/yr to 70 ML/yr.

The Mine sources water for ore processing and dust suppression from on-site water stored in basins and dams, external trucked water and water from the Woodlands Borefield.

The main risk to Mine water supply security is associated with the water sourced from the Woodlands Borefield, which is limited to 1000 ML/yr. While the modelling indicates that transfers from the Woodlands Borefield are not expected to exceed the 1000 ML/yr extraction limit, the predicted maximum water sourced from the Woodlands Borefield was approximately 940 ML/year. The predictions from the model are shown in Figure 5-6.

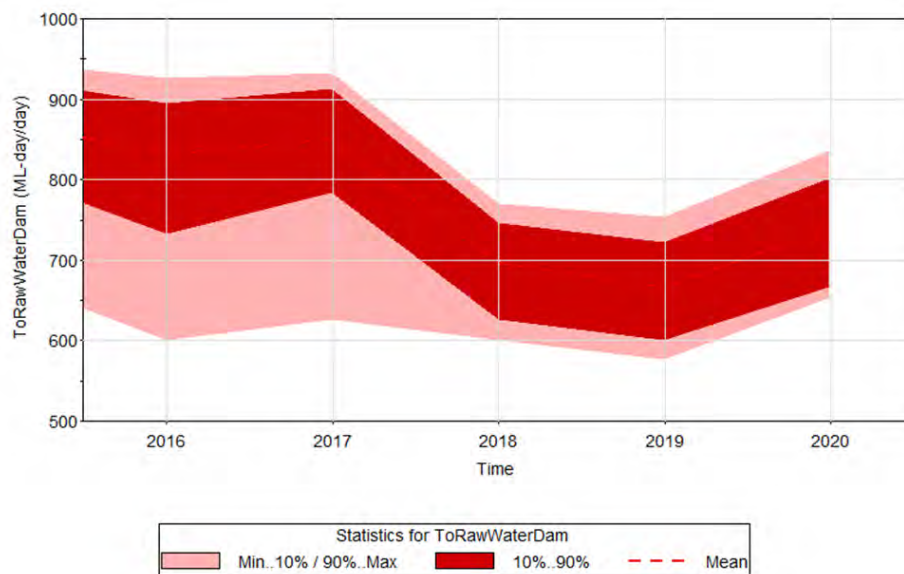


Figure 5-6 Predicted Water volume Sourced from the Woodlands Borefield

As Figure 5-6 indicates the reliance risk associated with the Woodlands Borefield decreases as groundwater inflows to the open cuts increases.

The predicted water sourced from external trucked sources is provided in Figure 5-7.

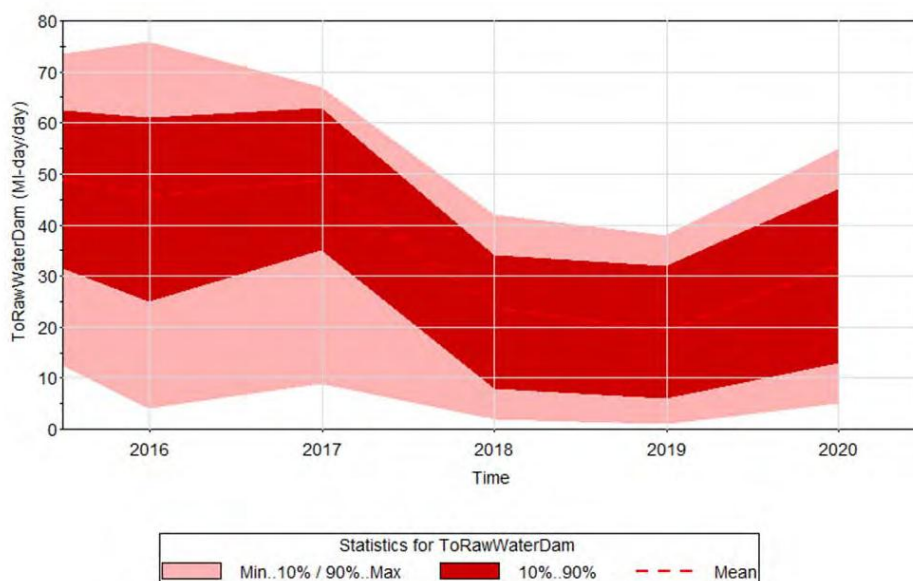


Figure 5-7 Predicted Water volume sourced from external sources

As Figure 5-7 indicates, the water sourced from external trucked sources follows a similar relationship to that of the water sourced from the Woodlands Borefield with a general reduction in external trucked water sources as groundwater inflows increase.

The reduced dependence on the Woodlands Borefield and other external water sources (refer to Figure 5-6 and Figure 5-7 respectively) is reflected in the increased reuse of water from the Wyoming Central Dam – large cell (refer to Figure 5-8).

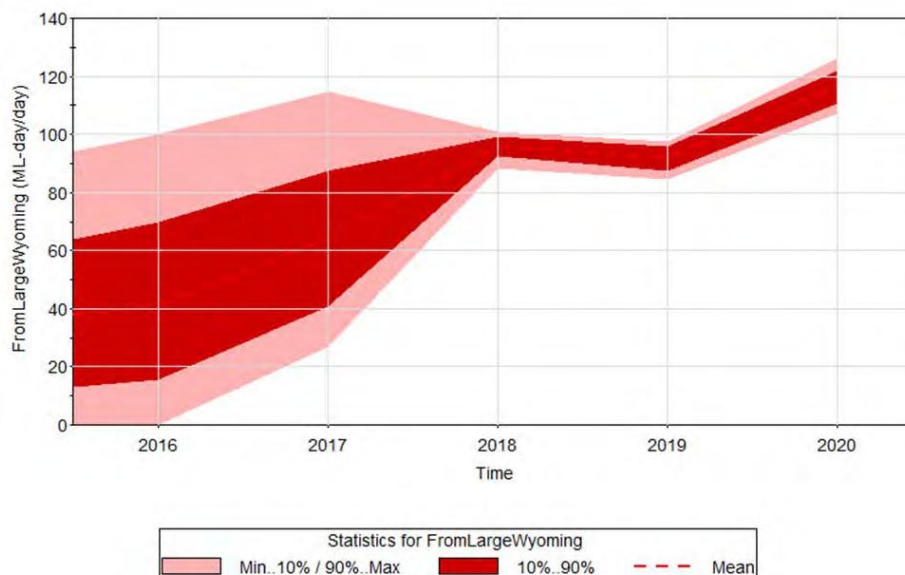


Figure 5-8 Predicted Water Reuse from Wyoming Central Dam - Large Cell

5.3.2 Discharges

Daily site discharges from the water balance model were evaluated for the approved and proposed surface water features.

Additional sediment basins (6 and 7) and increases to sediment basins 4 and 5 have been incorporated into the water balance model for this assessment. Water intercepted within each of these sediment basins is transferred to the Wyoming Central Dam – large cell at controlled rates. Sediment Basin 7 provides sediment control for an additional area of disturbed catchment.

The modelling indicates that discharges from sediment basins 4, 5, 6 and 7 are expected to occur only during extended rainfall periods that exceed the design standard of the Sediment Basins (i.e. the 90th percentile 10 day design rainfall depth).

Considering the increased water transfer load placed on the Wyoming Central Dam – large cell, the potential for overflows to occur (from Wyoming Central Dam – large cell) is increased. However, the storage volume within Wyoming Central Dam – large cell is to be actively managed, utilising the available storage capacity within the Wyoming One open cut under emergency conditions. In this way, the risks associated with uncontrolled discharges from the Mine will be minimised. The modelled storage within Wyoming One open cut over the life of the Mine is shown in Figure 5-9. From Figure 5-9 it can be seen that as groundwater inflows into the mining operations (underground and open cut) increase, the volume of water stored within Wyoming One open cut increases, with average predicted storages up to approximately 50 ML.

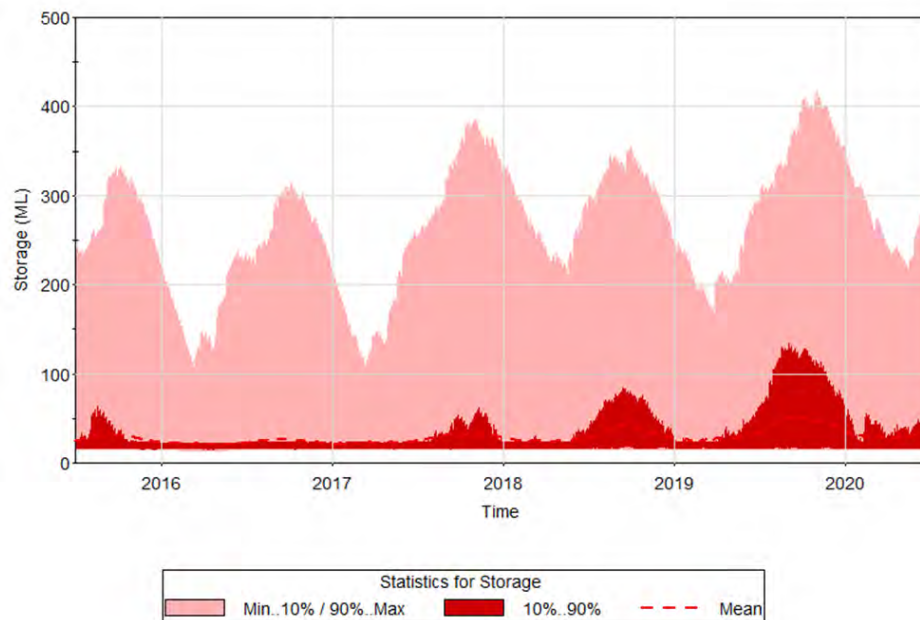


Figure 5-9 Wyoming One Open Cut Predicted Storages

The Mine will seek to minimise discharges by utilising internal water transfers. This will be achieved through the dewatering of sediment basins as soon as practicable following rainfall events, and transferring water from other storage dams when storages are above 90 % capacity. Water transferred from sediment basins and storage dam will first be to the Wyoming Central Dam – large cell and then to open cuts under extreme conditions. These emergency measures have not been considered within the water balance modelling however they have been considered as part of the current draft water management plan developed for the Mine.

The modelling indicates that the key water losses are water entrained in the RSF, dust suppression and evaporation. Discharge volumes make up approximately 1% to 2% of overall water losses, with a general increase in discharge volume over the life of the Mine.

Monitoring

The water balance model will be revised annually to incorporate an increasing set of observed data to validate and refine model predictions. The revised water balance completed as part of this modification will be incorporated within the existing draft water management plan which includes all relevant standards, guidelines and management approaches.

Water quality monitoring of surface water storages will be expanded to include Sediment Basins 6 and 7, and the sump located within proposed Caloma 2 Open Cut. Otherwise, no changes to the existing surface water and groundwater monitoring locations and analytes are proposed (refer to Section 4.1.5 and Section 4.2.1 respectively).

The site's existing EPL will require an amendment to include the Sediment Basins 6 and 7 as points of licensed discharge. This will therefore maintain a consistent regulatory approach for these proposed features, however consultation with the EPA will be undertaken to determine the most appropriate path forward.

5.3.3 Potable and Wastewater Systems

No changes proposed to the existing potable water supply and wastewater (effluent) management system outlined in Section 4.1.4).

6. Summary of Impacts

6.1 Surface Water Impacts

This impact assessment indicates that the proposed modification is unlikely to have an appreciable impact on the water quality within the surrounding environment, as runoff generated within the dirty and process water system will continue to be managed within the approved water management system.

The proposed modification does result in a reduction in clean water catchment draining directly downstream (via the Central Clean Water Diversion Channel), potentially reducing the annual flow volume within Gundong Creek downstream of the Mine Site. The analysis indicates that the proposed modification results in a decrease in the clean water catchment area reporting to the central clean water diversion channel from approximately 511.2 ha to approximately 493.4 ha. This equates to a reduction in annual flow volumes from approximately 306 ML/yr to 296 ML/yr (based on an annual runoff rate of 0.6 ML/yr/ha, derived from the NSW DPIW harvestable rights calculator). Given the ephemeral nature of Gundong Creek, and the larger catchment area that does not pass through the Mine's Central Clean Water Diversion Channel, the estimated reduction to the annual flows within Gundong Creek are considered to be negligible.

6.2 Groundwater Impacts

Potential groundwater impacts resulting from the development of the Caloma Two open cut pit, the Caloma underground mine and the Wyoming Three waste rock emplacement have been assessed. Groundwater inflows and radius of drawdown has been calculated using a modified methodology to better represent site observations.

It is considered that the proposed modification will not result in impacts on groundwater sources that exceed the Level 1 minimal impact criteria from the AIP and are therefore considered to be acceptable.

6.3 Monitoring and Mitigation Measures

As outlined in Section 5.1, the approved surface water management system will be modified as necessary. In addition, upgrades to components of the dirty water management system are proposed where previous operational issues have been identified (notably the capacity of Sediment Basin 5). These measures will result in a reduced risk of uncontrolled discharges occurring from the Mine during periods of high rainfall. It is recommended that additional water quality monitoring points and points of licensed discharge be established at Sediment Basins 6 and 7, based on the current management regime for Sediment Basins 1 to 5.

In order to monitor for impacts from the disposal of waste rock in Wyoming Three open cut, it is recommended that the Water Management Plan (WMP) (GHD, 2015) be updated to include groundwater quality monitoring and triggers for deeper monitoring bores.

7. References

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Appendices

Appendix A — Registered Groundwater Bores

Table A-1 Registered Bore Details

Bore	Depth	Authorised Purpose	Intended Purpose	Easting	Northing	Licence	Licence Status	WBZ	Strata	SWL	Yield	Salinity
GW012385	44.1		Groundwater Exploration	605497	6399909	-	-	19.5-19.8, 33.5-35	Gravelly Clay	9.1, 7.3	1.14	-
GW034897	1.8	Stock, Domestic	Stock, Domestic	612967	6398380	80BL028144	Converted	1.8	-	-	-	-
GW066562	73	Test Bore	Test Bore	617276	6387642	80BL141280	Cancelled					
GW054594	61.6	Stock, Domestic	Stock, Domestic	617018	6383487	80BL116653	Converted	-	-	-	-	-
GW045134	18.3	Test Bore	Public/ Municipal	614748	6396758	80BL105282	Cancelled	-	-	-	-	-
GW045135	3.7	Test Bore	Public/ Municipal	617605	6397956	80BL105283	Cancelled	3	Clay white sandy	0.9	0.76	-
GW045136	5.2	Test Bore	Public/ Municipal	617792	6398324	80BL105284	Cancelled	4.6-5.2	Unconsolidated Sandy Clay	-	-	-
GW045137	12.2	Test Bore	Public/Municipal	615448	6396318	80BL105285	Cancelled	-	-	-	-	-
GW800177	113.88	Test Bore	Test Bore	619322	6400284	80BL237099	Cancelled	2.4.5	Sand	1	0.32	Good
GW801568	81	Domestic, Stock	Domestic, Stock	619013	6385184	80BL239686	Converted	-	-	-	-	-
GW800178	80	Test Bore	Test Bore	619329	6400277	80BL237099	Cancelled	-	-	-	-	-
GW068651	97	-	Mining	616478	6383302	-	-	82-82.1, 94-94.1	Fresh siltstone	-	-	-
GW037395	4.5	Irrigation	Irrigation	616510	6397938	80BL030552	Converted	3.6-4.5	Unconsolidated Sandy Clay	2.1	1.26	-
GW802834	77	Test Bore	Test Bore	617229	6383531	80BL237359	Lapsed	54-77	Shale and siltstone	42	1.5	3900 mg/L
GW803148	5.8	Town Water Supply	Town Water Supply	617498	6397966	80BL242918	Converted	-	-	4.4	1	-
GW803681	3.5	Monitoring Bore	-	614686	6395749	80BL245013	Active	-	Weathered shale	-	-	-
GW803678	4	Monitoring Bore	-	614695	6395743	80BL245013	Active	-	Claystone	-	-	-

Bore	Depth	Authorised Purpose	Intended Purpose	Easting	Northing	Licence	Licence Status	WBZ	Strata	SWL	Yield	Salinity
GW803682	3.5	Monitoring Bore	-	614688	6395758	80BL245013	Active	-	Weathered shale	-	-	-
GW803680	4.5	Monitoring Bore	-	614685	6395767	80BL245013	Active	-	Sandy Clay/Clay	-	-	-
GW803679	4	Monitoring Bore	-	614680	6395761	80BL245013	Active	-	Claystone/ Shale	-	-	-
GW804130	69	-	Test Bore	604604	6388873	-	Abandoned	-	-	-	-	-
GW804137	64	-	Test Bore	603562	6395423	-	-	-	-	-	-	-

Appendix B -- Groundwater Inflow Calculation Methodology

Modified Point-Sink Equation

Equations for estimating the radius of drawdown and flow from a production bore have been modified to estimate the radius of drawdown and inflow from the open cut pits and underground workings at the Mine. One advantage of using the adopted equations is they are able to represent a confined groundwater source, which is representative of the source of observed groundwater inflows into the open cut pits at the Mine. The equation also allows for transient analysis, rather than steady state, so that time varying inflows can be input into the water balance model.

Groundwater inflow was calculated from the Point-Sink equation adopted from Lohman (1972):

$$Q = 4\pi s_{max} T / 2.3 \log(2.25 T t / S r_p^2) \quad (1)$$

Where:

- Q is groundwater inflow (m³/day)
- T = k x b; where k is vertical hydraulic conductivity (m/day) and b is thickness of confined aquifer (m);
- t is length of time of inflow (days);
- S is the storativity of the confined aquifer (unitless);
- r_p is the pit radius (m) (or radial distance from the pit for distance-drawdown analysis);
- s_{max} is the maximum drawdown of the confined aquifer (m) (or drawdown at distance r for distance-drawdown analysis).

Data sources and assumptions used to derive input values for each of the parameters required for the modified production bore equation are outlined below:

Hydraulic Conductivity (k)

Hydraulic conductivity values have been based upon testing undertaken at the Mine monitoring bores as discussed in Section 3.5. Reported hydraulic conductivities varied between 0.002 to 0.11 m/d (Coffey, 2007) and 0.0001 and 0.06 m/d (Impax Group, 2011).

Thickness of confined aquifer (b)

The thickness of the aquifer was assumed to be equal to the depth of the pit below the approximate top of the confined fractured groundwater source. As discussed in Section 4.2.4 the top of the confined fractured groundwater source is assumed to be 190 m AHD.

Length of time of inflow (t)

Length of time of inflow was set according to the mining schedule.

Pit radius (r_p)

Effective pit radius of calculated by dividing the volume of each open cut pit below the top of the confined fractured groundwater source by the pit depth below the top of the confined fractured groundwater source and applying the formulae for the area of a circle i.e. $A = \pi r_p^2$.

Maximum drawdown (s_{max})

The long term average groundwater level in the vicinity of the open cut pits is approximately 215 m AHD. This has been calculated from an average of long term groundwater levels at WYMB002 and WYMB003.

Storativity (S)

The storativity of a confined aquifer typically ranges from 5×10^{-3} to 5×10^{-5} (Kruseman and de Ridder, 1994).

In order to calibrate storativity and hydraulic conductivities, the Point-Sink equation was rearranged to make the drawdown the subject. This equation is referred to as the Distance-Drawdown equation (Lohman, 1972) as shown below:

$$s = (2.3Q/4\pi T) \log(2.25Tt/Sr_p^2) \quad (2)$$

For varying hydraulic conductivities and storativity values the Point-Sink equation (equation 1) was solved and the calculated inflow was input into the Distance-drawdown equation (equation 2). For each combination of hydraulic conductivity and storativity values, the radius of drawdown was iteratively calculated from the Distance-Drawdown equation by varying the value for 'r' until the calculated drawdown (s) was equal to zero.

Observed groundwater inflow into Wyoming 3 is minimal even though the pit is almost complete, and it has not resulted in drawdown in groundwater levels at the surrounding monitoring bores as discussed in Section 4.2.4. This indicates that the radius of influence of Wyoming 3 is less than 765 m which is the approximate distance from the centre of the Wyoming 3 pit to the closest monitoring bore WYMB003. This allowed values for hydraulic conductivity and storativity to be selected that corresponded with the observed radius of influence for Wyoming 3.

The results of the calibration assessment are shown in Table A–1. Calibrated combinations of hydraulic conductivity and storativity varied between 0.0001 to 0.01 m/day and 0.001 to 0.00001 respectively. The hydraulic conductivity values are at the lower end of the range measured on site due to the low inflows observed into the Wyoming 3 pit.

Table A – 1 Predicted Radius of Influence – Wyoming 3 pit, current conditions

		Hydraulic Conductivity (k) (m/day)			
		0.0001	0.001	0.005	0.01
Storativity (S)	0.001	Not assessed	124	394	554
	0.0001	176	392	1241	1755
	0.00001	555	1241		

Legend:

Acceptable
Not Acceptable

Appendix C - Site Water Balance

The water balance model was developed using GoldSim Version 10.50 (GoldSim Technology, 2011). GoldSim is a graphical object-orientated system for simulating either static or dynamic systems. It is like a 'visual spreadsheet' that allows one to visually create and manipulate data and equations.

Time Steps and Simulation Timeline

GoldSim was used to model the transfer, consumption and storage of water within the Mine water management system from 2016 to 2020 (inclusive) using daily time steps. Daily time steps were used since daily historical rainfall data was available and major changes that may affect the water balance are typically made over a period of days.

Probabilistic Modelling – Rainfall Series

To assess the impact of rainfall at the Mine, the water balance modelling utilised 124 rainfall realisation for the simulation period (2016 to 2020), based on the historical rainfall series.

Key Variables

The variables that were reported on were associated with the major extractions to and discharges from the Mine, including:

- Pit inflows from groundwater sources.
- Surface water runoff generated within the Mine.
- Discharges from sites through LDPs into surface water systems.
- Storages levels within the various clean, dirty and process water storages.
- Pump transfers between the storages.
- External supplies.

Modelling Assumptions

The following assumptions were adopted as part of the assessment:

- Open Cut areas were considered as the final shell size and not as a progress extraction.
- Groundwater inflow has been based on an empirical equation based on pit staging. This was incorporated into the model as data points with the model interpolating between the points. Seepage has not been considered as a component of the groundwater cycle.
- Groundwater inflows consider each pit in isolation rather than collectively. This is likely to have resulted in a conservative inflow result.
- Calibrations of the model have not been completed, although sensitivity testing has been completed as part of individual elements. Validation testing is to be undertaken within 6 months of the approval of the modification.
- Open cut areas were dewatered to the Large Wyoming Storage as a priority and thresholds for transfers were lowered such that the open cut areas were not accumulating water over the Project.

Rehabilitation and Closure

After the active mining phase, it was assumed that TGO will commence rehabilitation. In the absence of site-specific information, rehabilitation was assumed to continue over a seven year period. Over the rehabilitation phase it was assumed that disturbed areas would be progressively rehabilitated and diverted away from the LDP catchments, thereby decreasing the discharge through these locations over time. As the model has only been considered up to the year 2020, the rehabilitation considerations for the Project were not considered in the water balance model.

Modelling Predictions of each year of the Project

The predicted water cycle for each year of the Project has been provided in Figure B-1 to B-5 (mean, minimum and maximum volumes). Consideration of yearly water cycle results allows for the consideration of variations in the demands and discharges as groundwater contribution increases. This was found to be the influencing factor from years 2018 forward.



EXISTING STORAGE
PROPOSED STORAGE

LEGEND

MINIMUM (ML/YR)

MEAN (ML/YR)

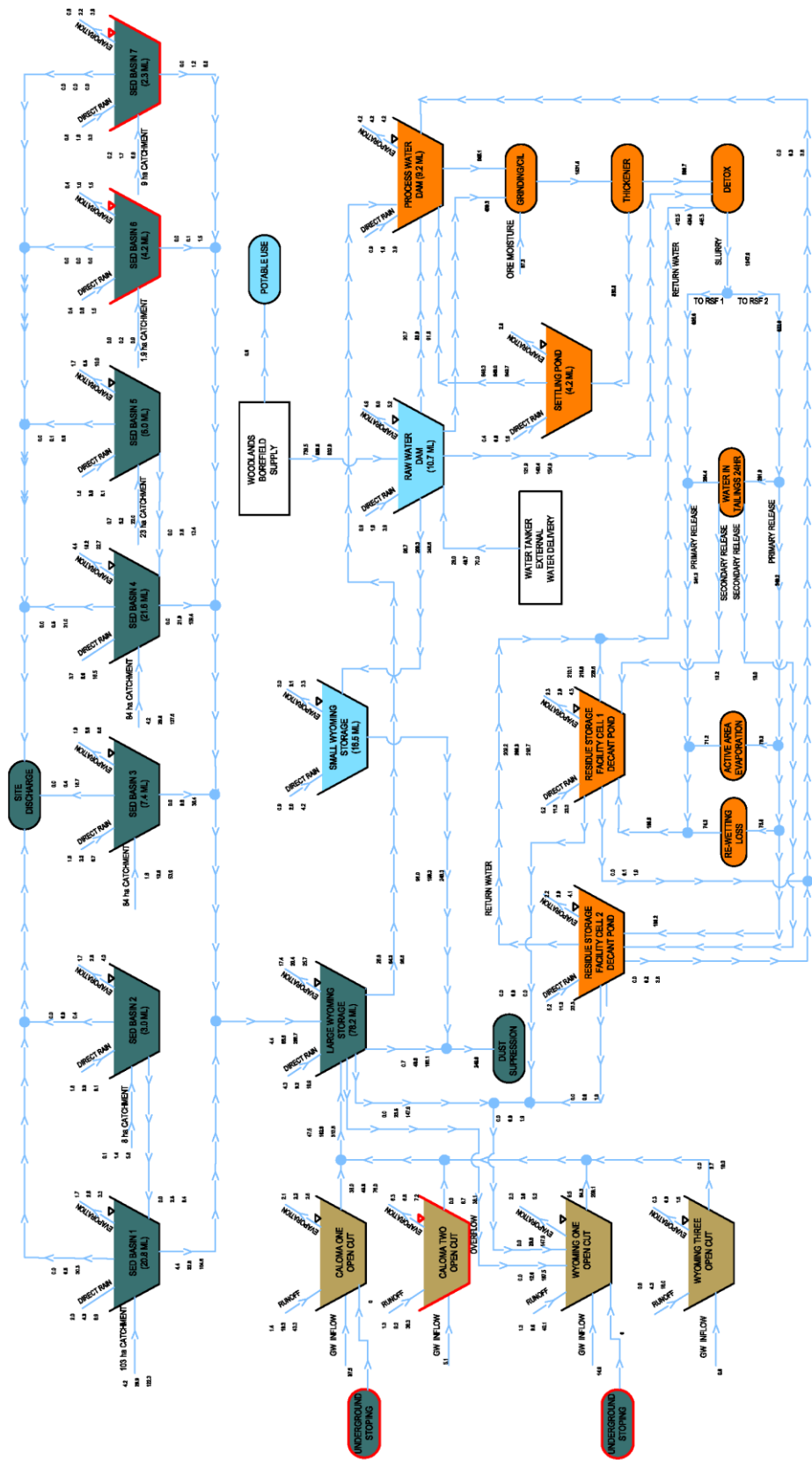
MAXIMUM (ML/YR)

MINIMUM, MEAN AND MAXIMUM RESULTS
INDICATING RANGE OF POTENTIAL CLIMATE VARIABILITY
WHERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN, VALUE IS CONSTANT

WHERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN

Printed for: Leifian Hammarberg





TOMINGLEY GOLD MINE
Water Resources Assessment
Water Balance
UPDATED WATER CYCLE SCHEMATIC
PROPOSED MODIFICATION (2017)
Job Number | 22-18072
Revision | A
Date | November 15
Figure B-2



LEGEND
EXISTING STORAGE
PROPOSED STORAGE
MINIMUM (ML/YR)
MEAN (ML/YR)
MAXIMUM (ML/YR)
MINIMUM, MEAN AND MAXIMUM RESULTS
INDICATING RANGE OF POTENTIAL CLIMATE VARIABILITY
WHERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN, VALUE IS CONSTANT

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Project: Tomingley Gold Mine
Scale: 1:10000
Author: GHD
Check: GHD
Drawn: GHD
Reviewed: GHD
Approved: GHD



LEGEND

	EXISTING STORAGE
	PROPOSED STORAGE

MINIMUM (ALFPO)
MEAN (ALFPO)
MAXIMUM (ALFPO)

MINIMUM, MEAN AND MAXIMUM RESULTS
INDICATING RANGE OF POTENTIAL CLIMATE VARIABILITY
HERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN, VALUE IS CONSERVATIVE

Source: <https://www.epa.gov/energy/energy-storage-systems>

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LEGEND

	EXISTING STORAGE	PROPOSED STORAGE
MINIMUM (MAY)		
MEAN (MAY)		
MAXIMUM (JULY)		

MINIMUM, MEAN AND MAXIMUM RESULTS
INDICATING RANGE OF POTENTIAL CLIMATE VARIABILITY
IF THERE IS NO MINIMUM AND MAXIMUM VALUE IS SHOWN, VALUE IS CONSTANT

Source: National Oceanic and Atmospheric Administration, National Ocean Service, and NOAA

WHERE NO MINIMUM AND MAXIMUM VALUE IS SHOWN

Journal of Management Education 34(4) 416-430

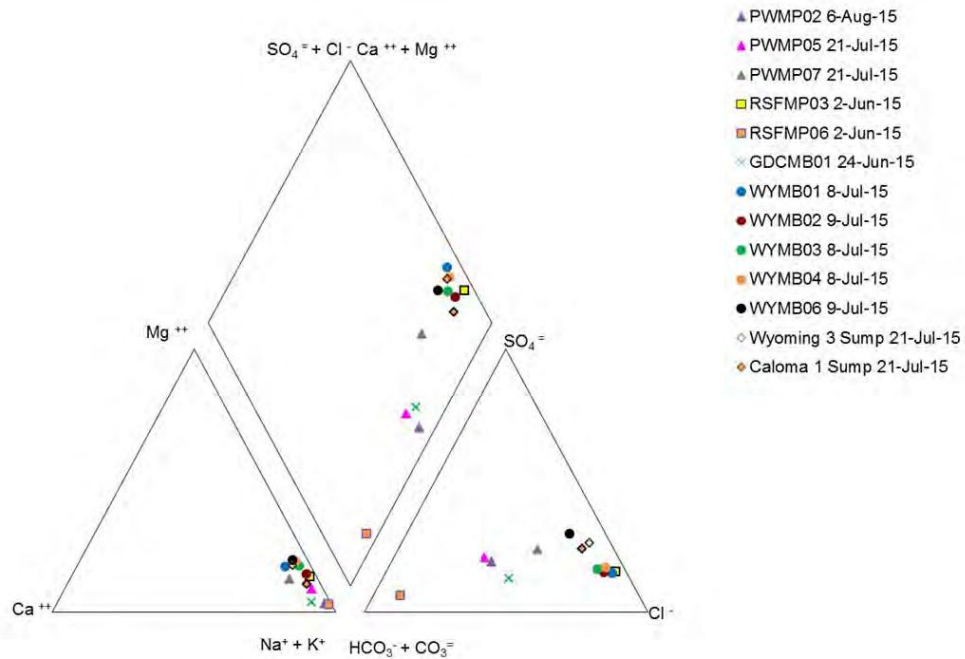


LEGEND

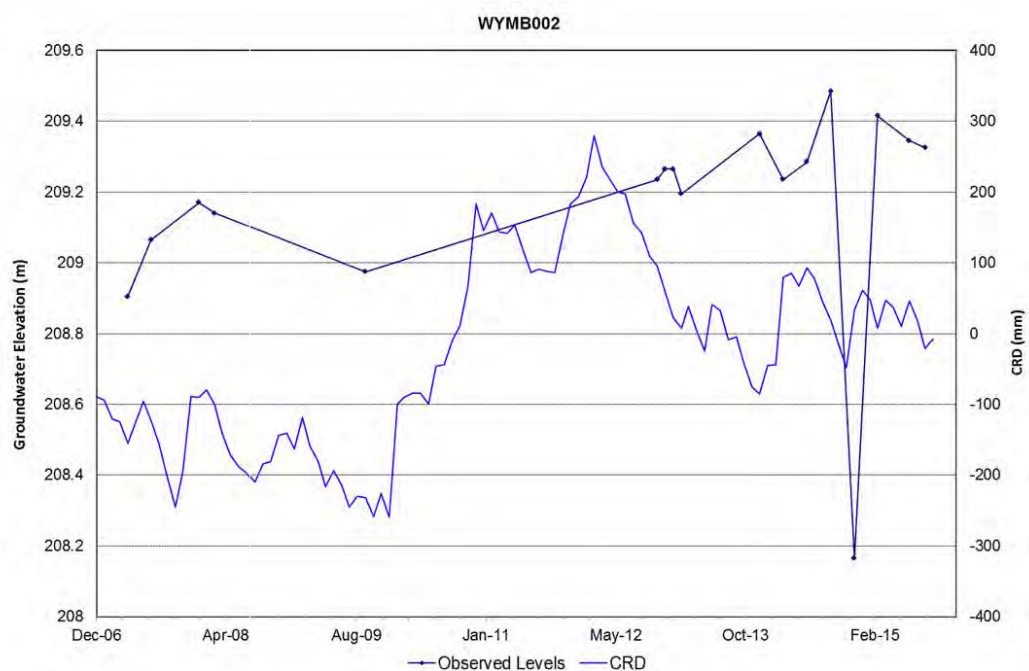
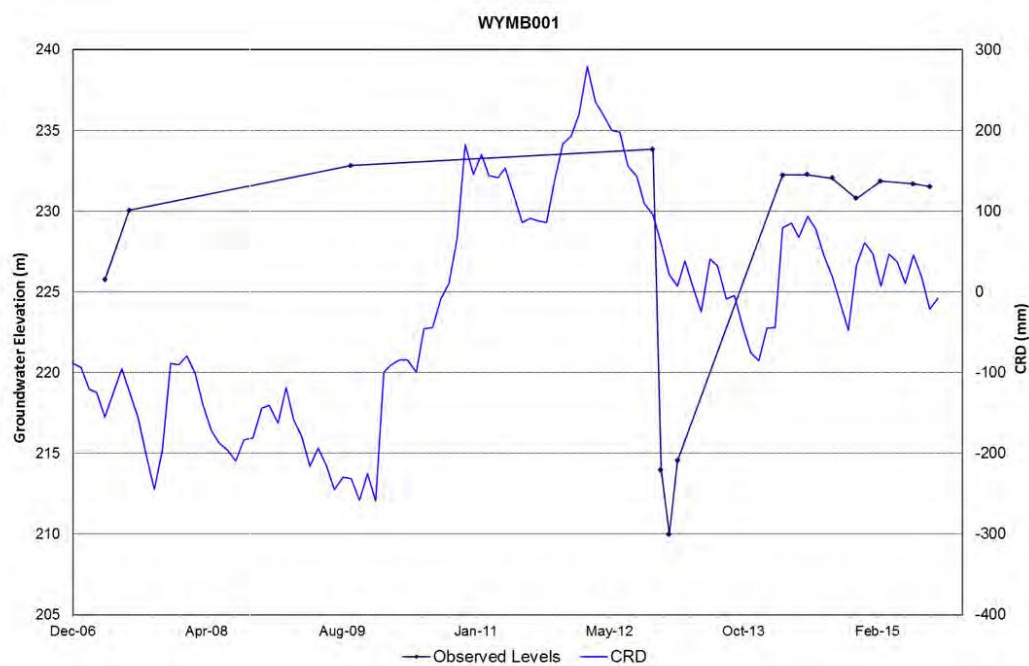
- MINIMUM (M190)
- MEAN (M70)
- MAXIMUM (M195)
- EXISTING STORAGE
- PROPOSED STORAGE

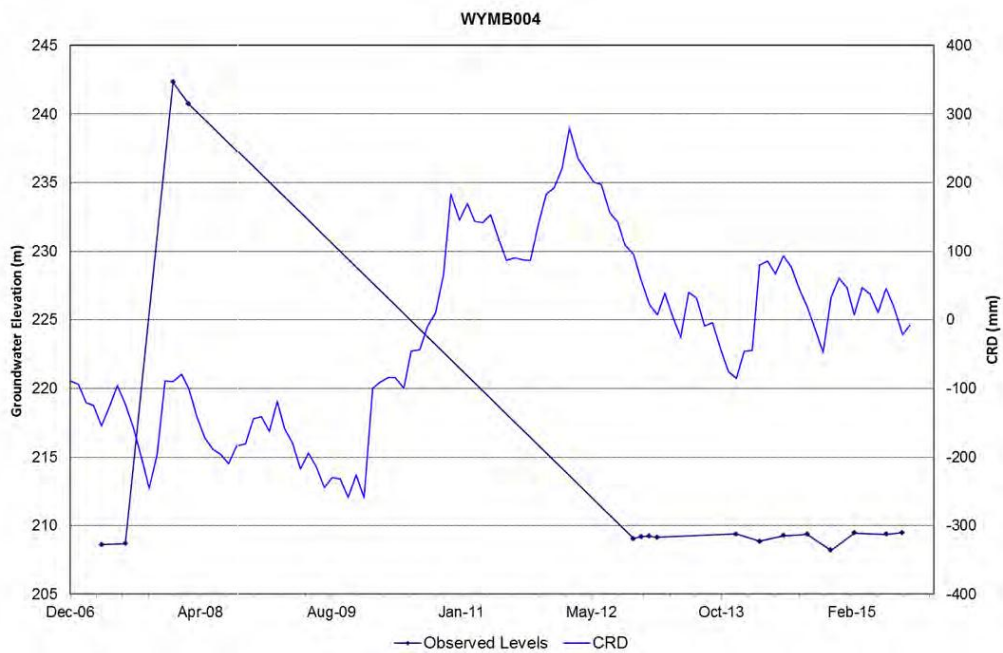
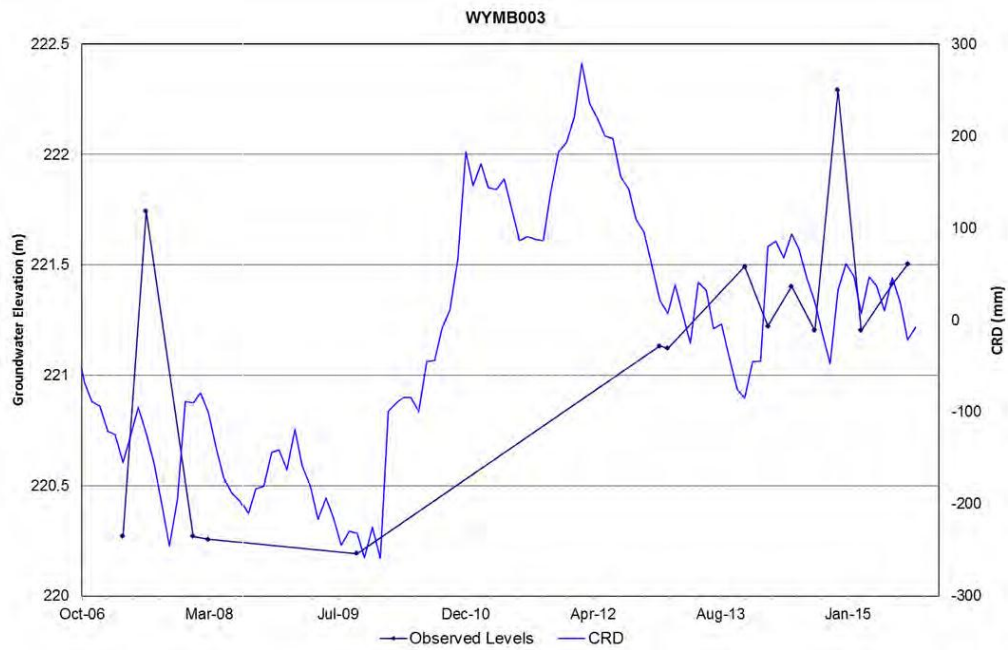
Editorial Board 4 November 2018 - 19 July 2019
Richard van Ierland, Member

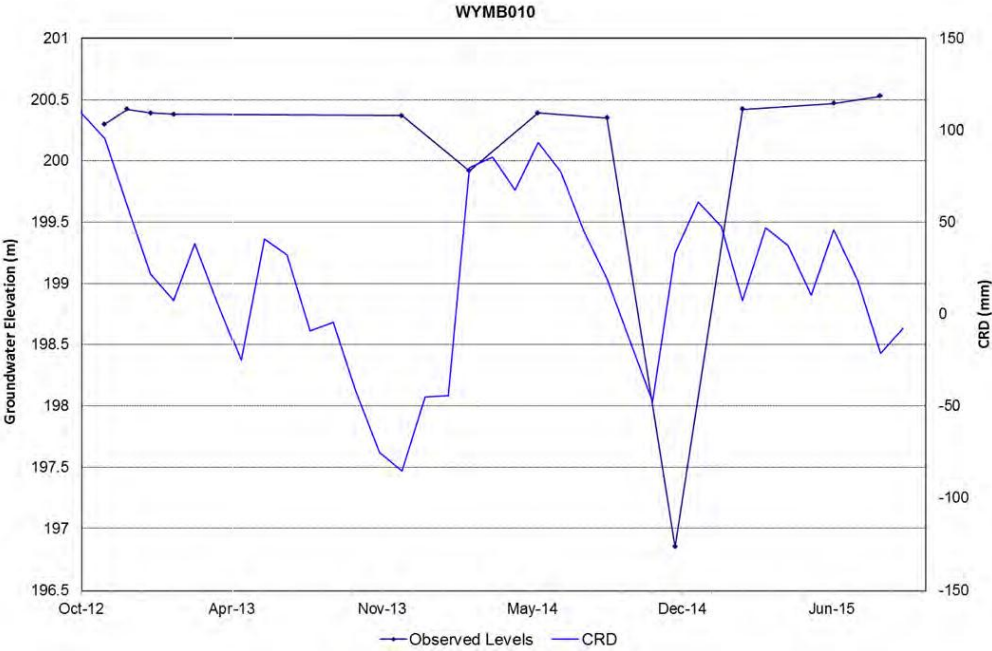
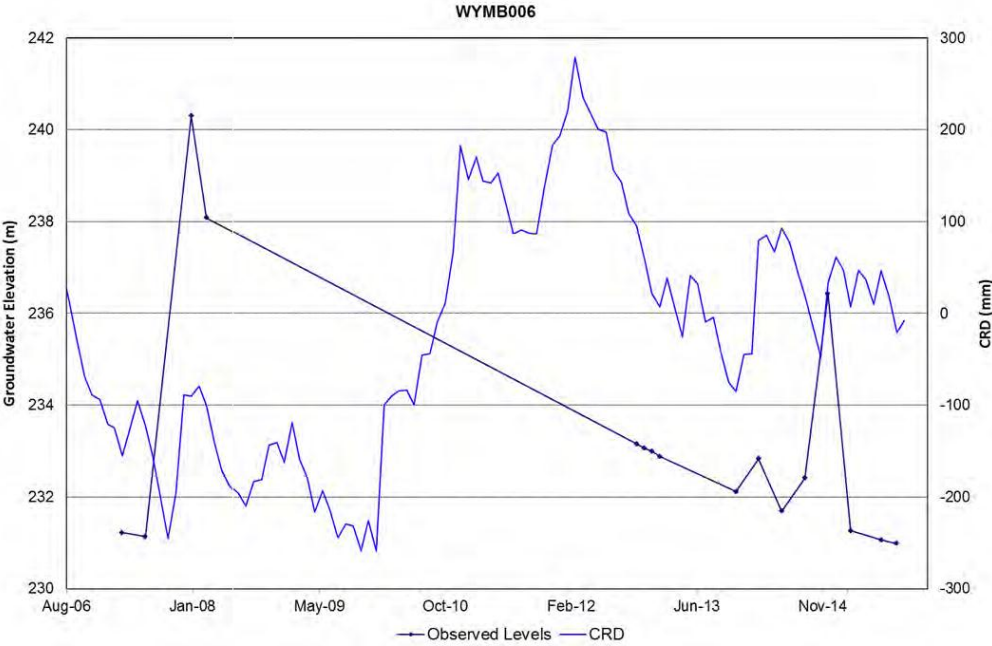
Appendix D - Groundwater Piper Plot

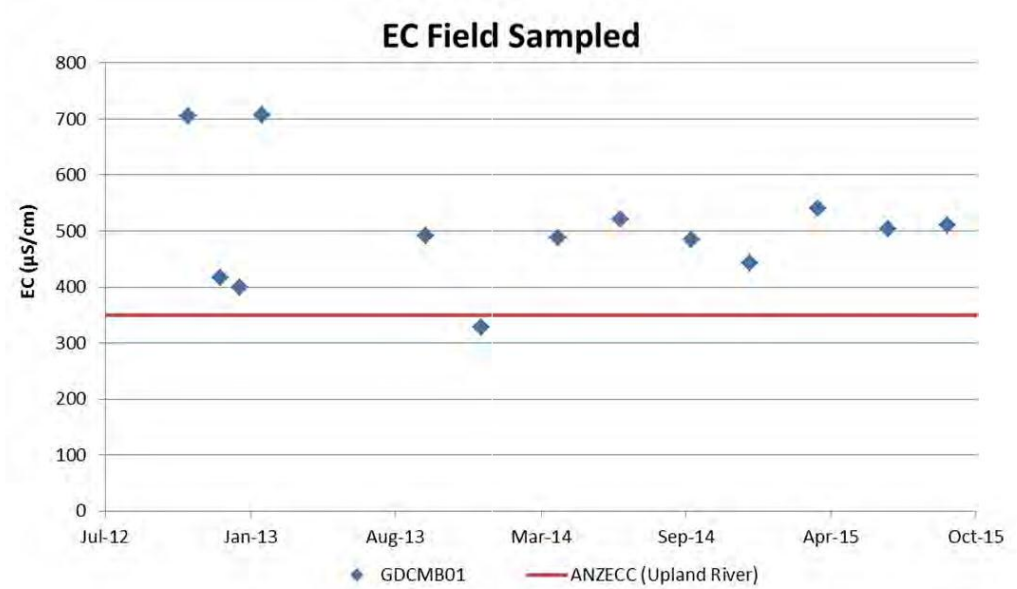
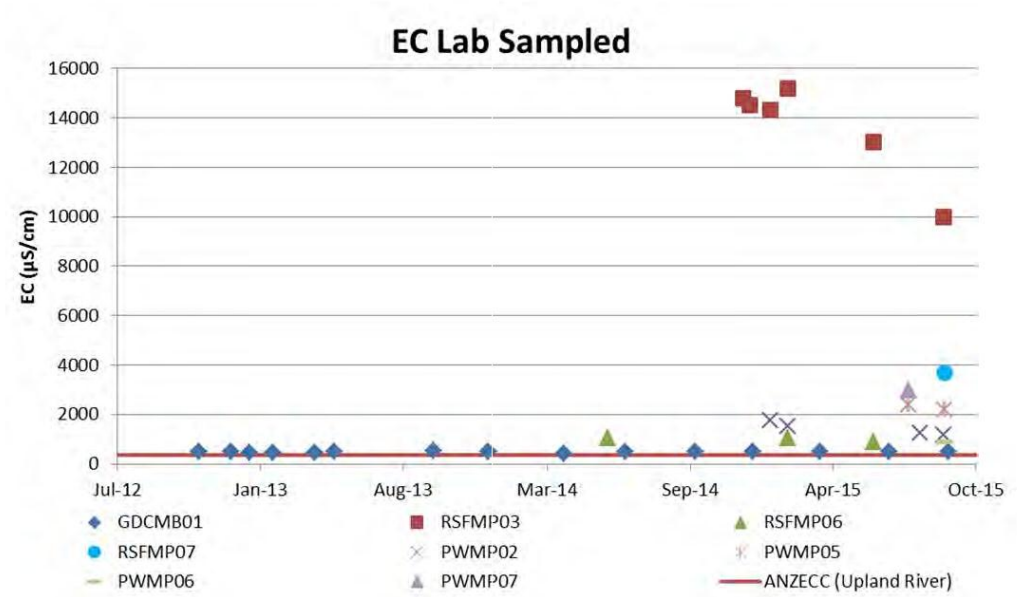


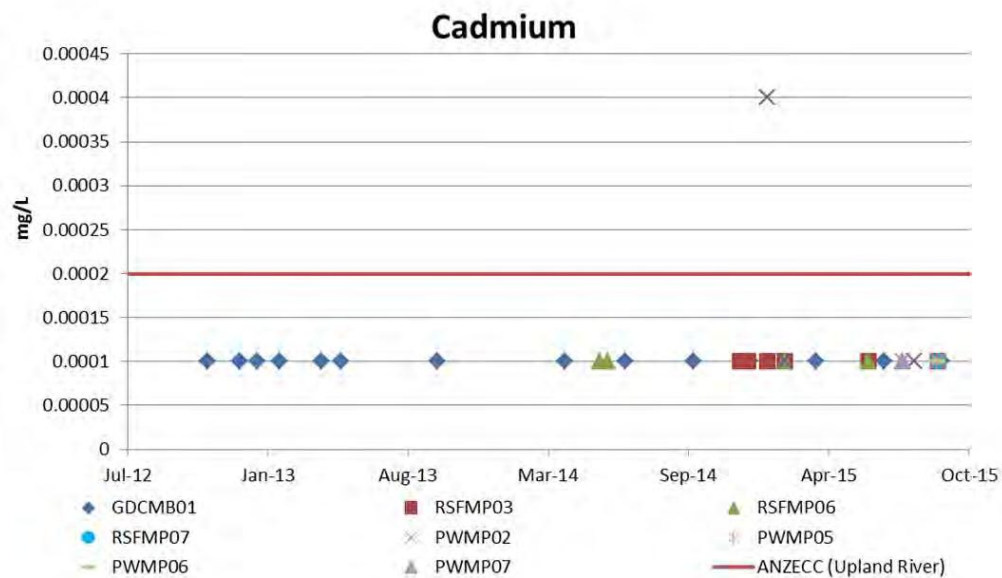
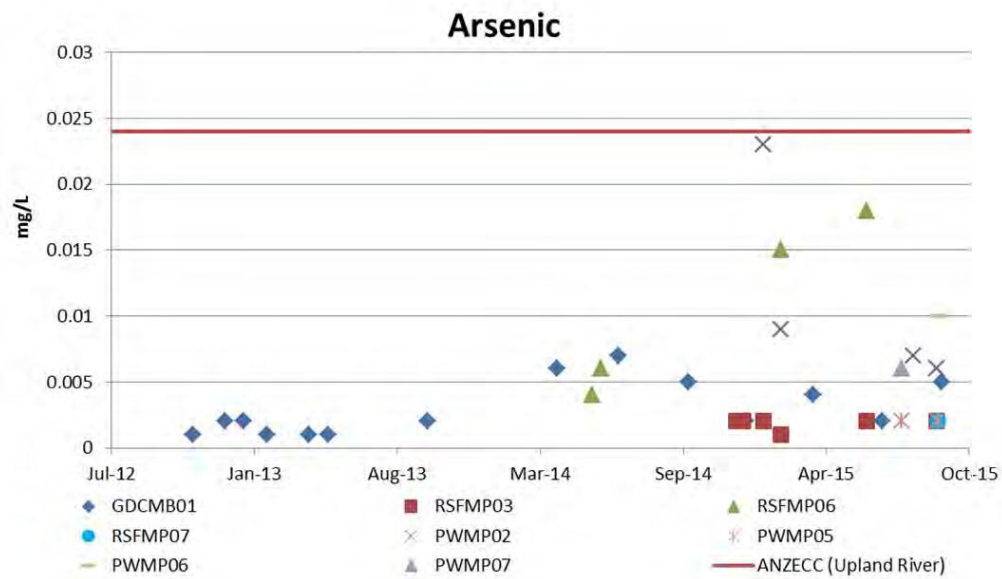
Appendix E – Groundwater Hydrographs

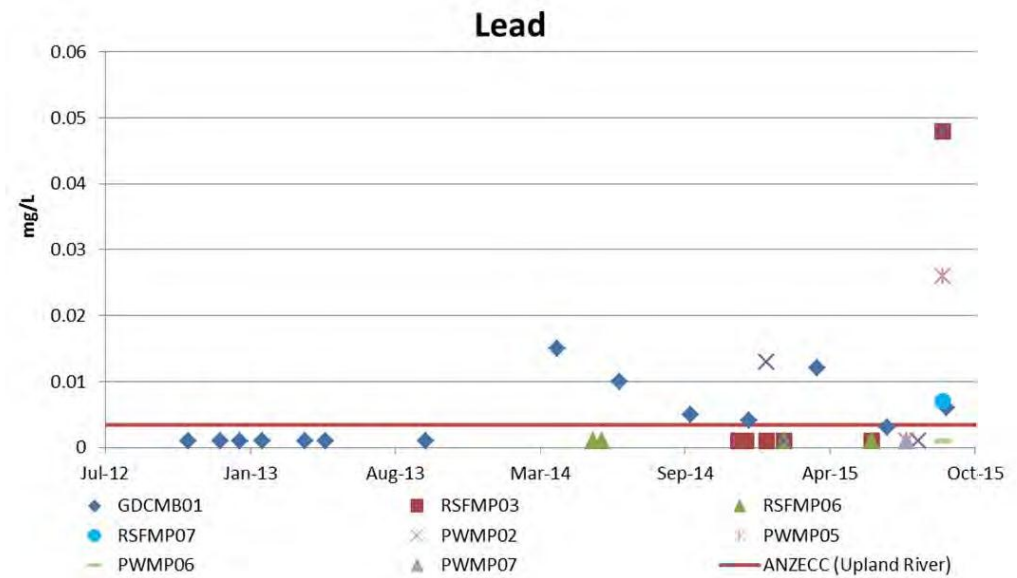
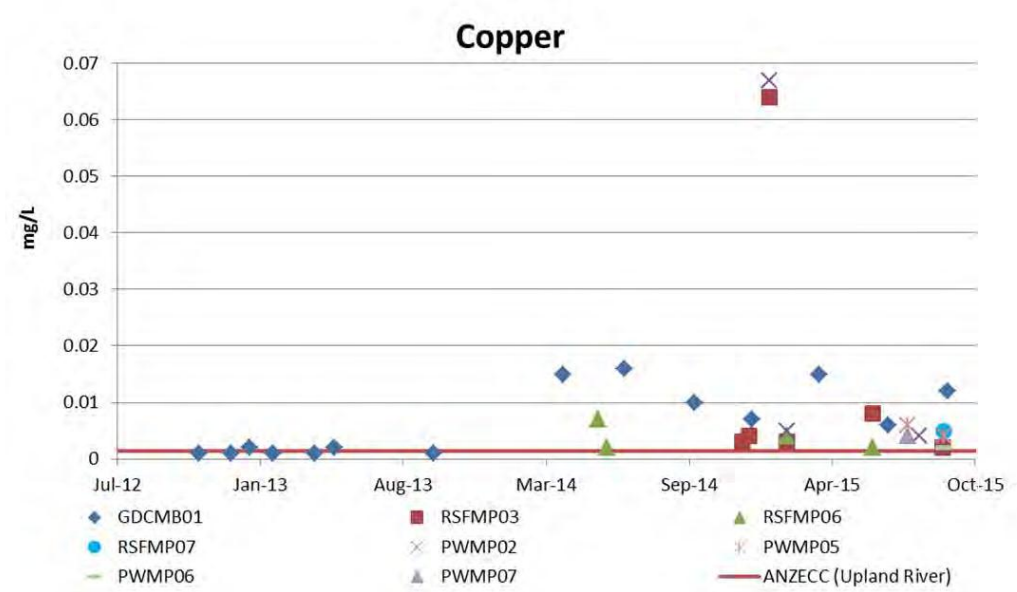


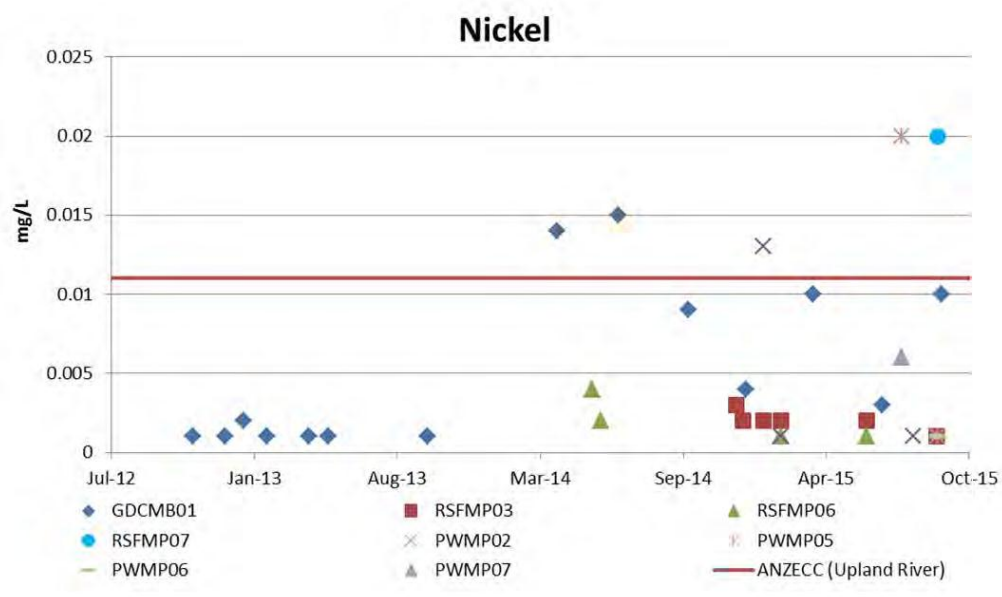
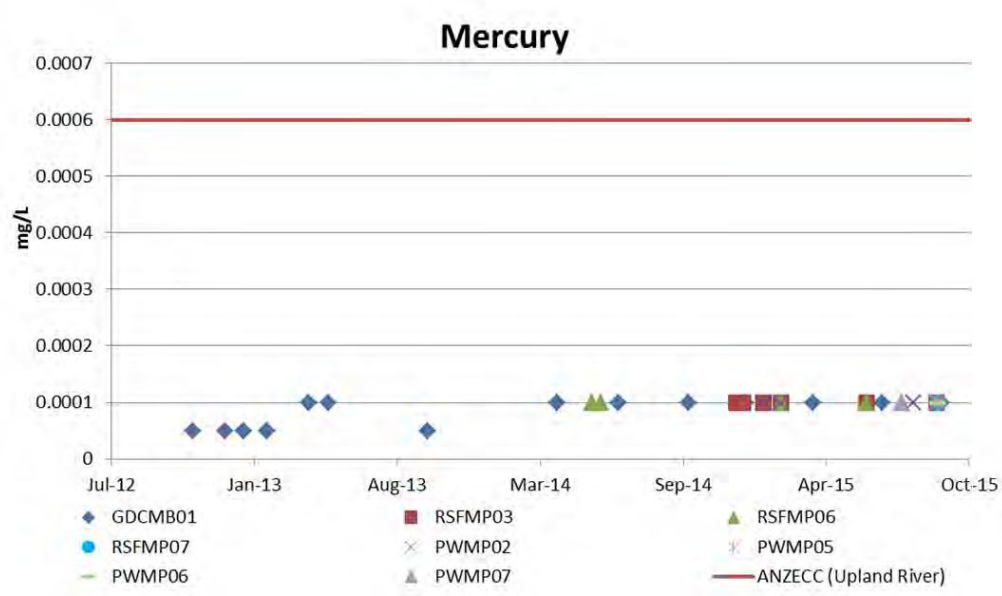


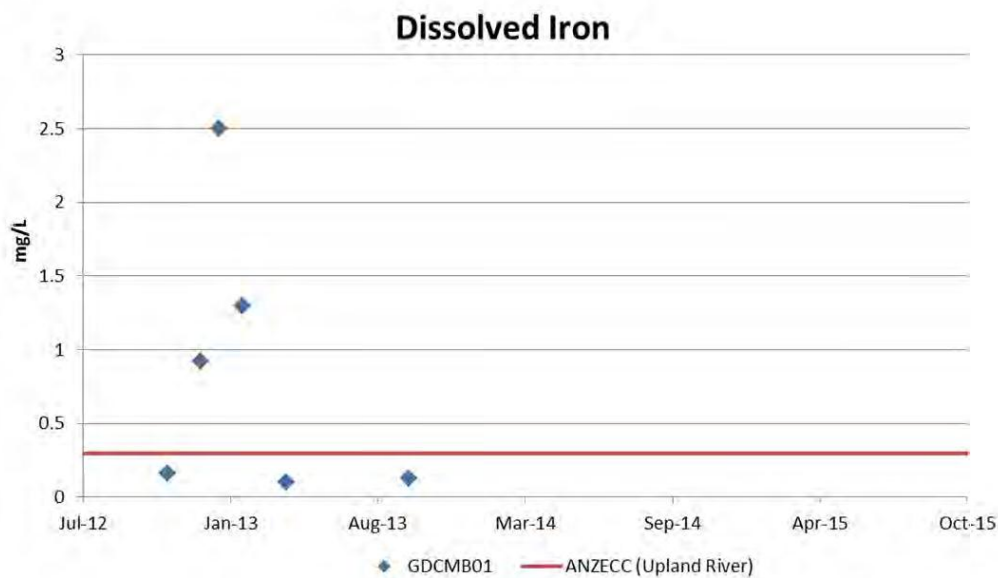
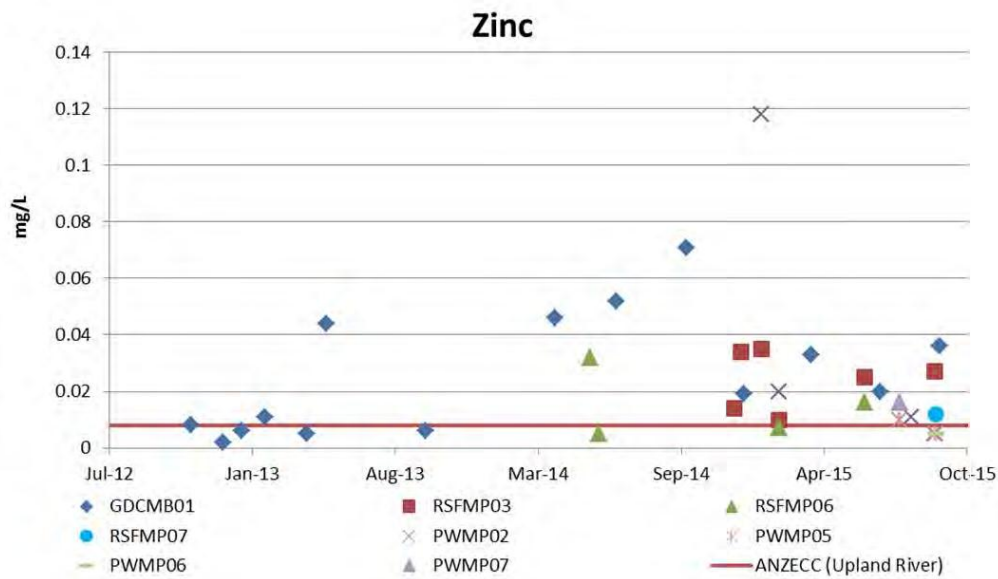


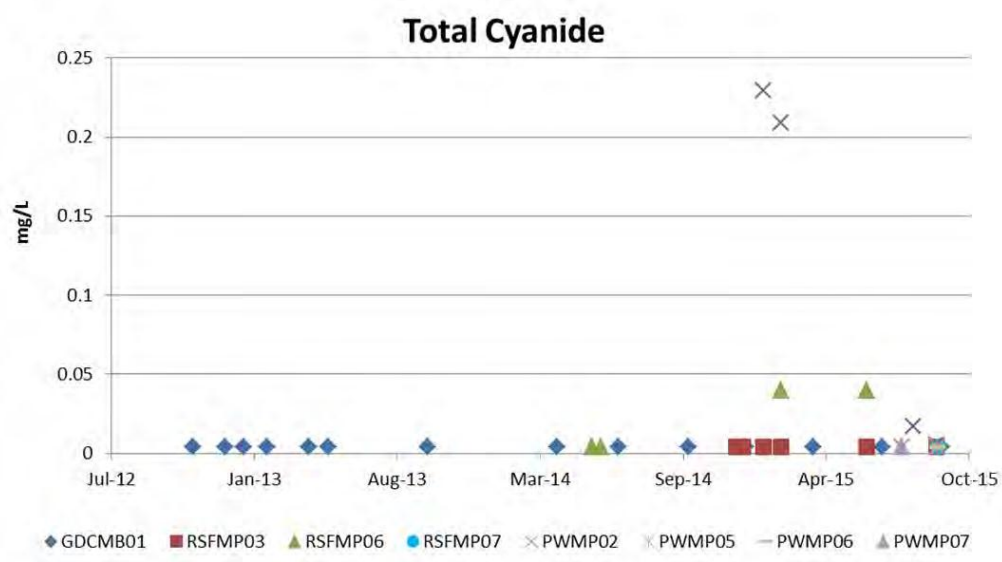
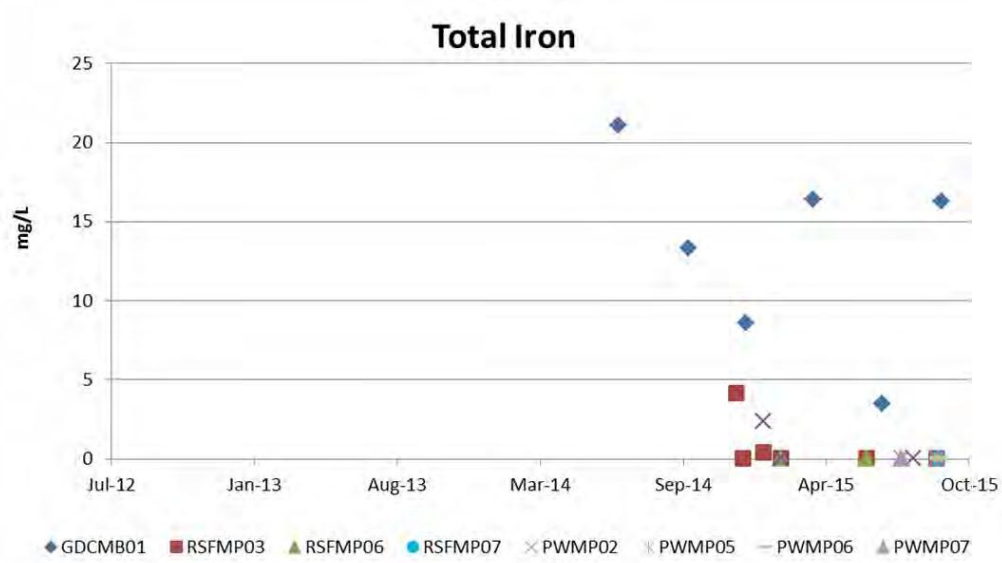


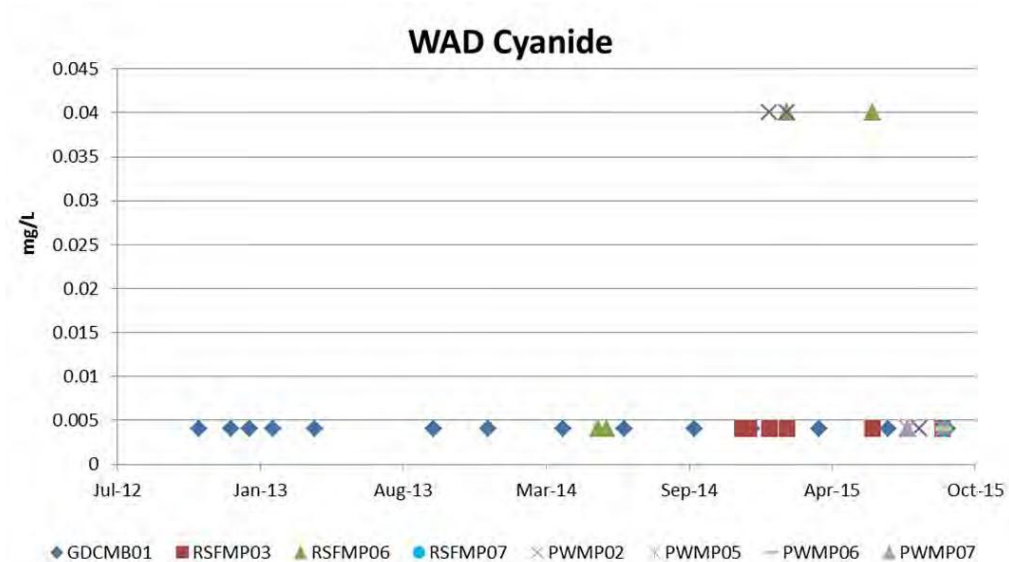
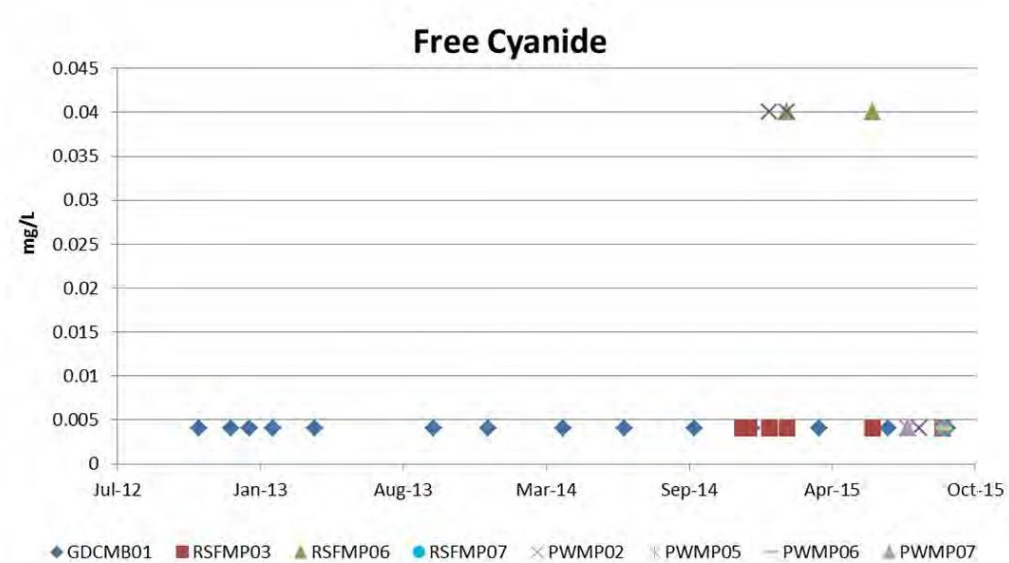


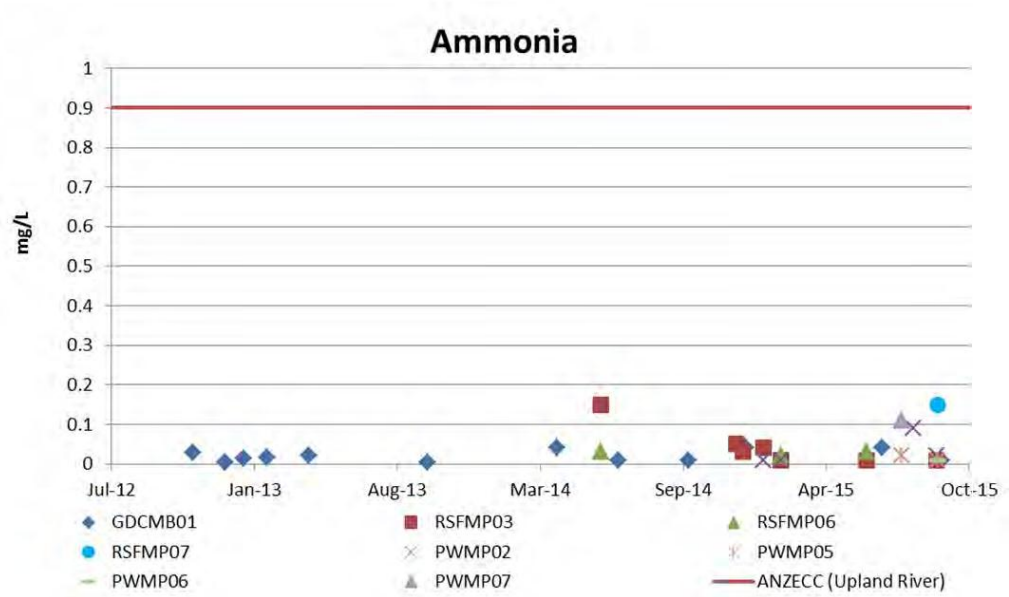




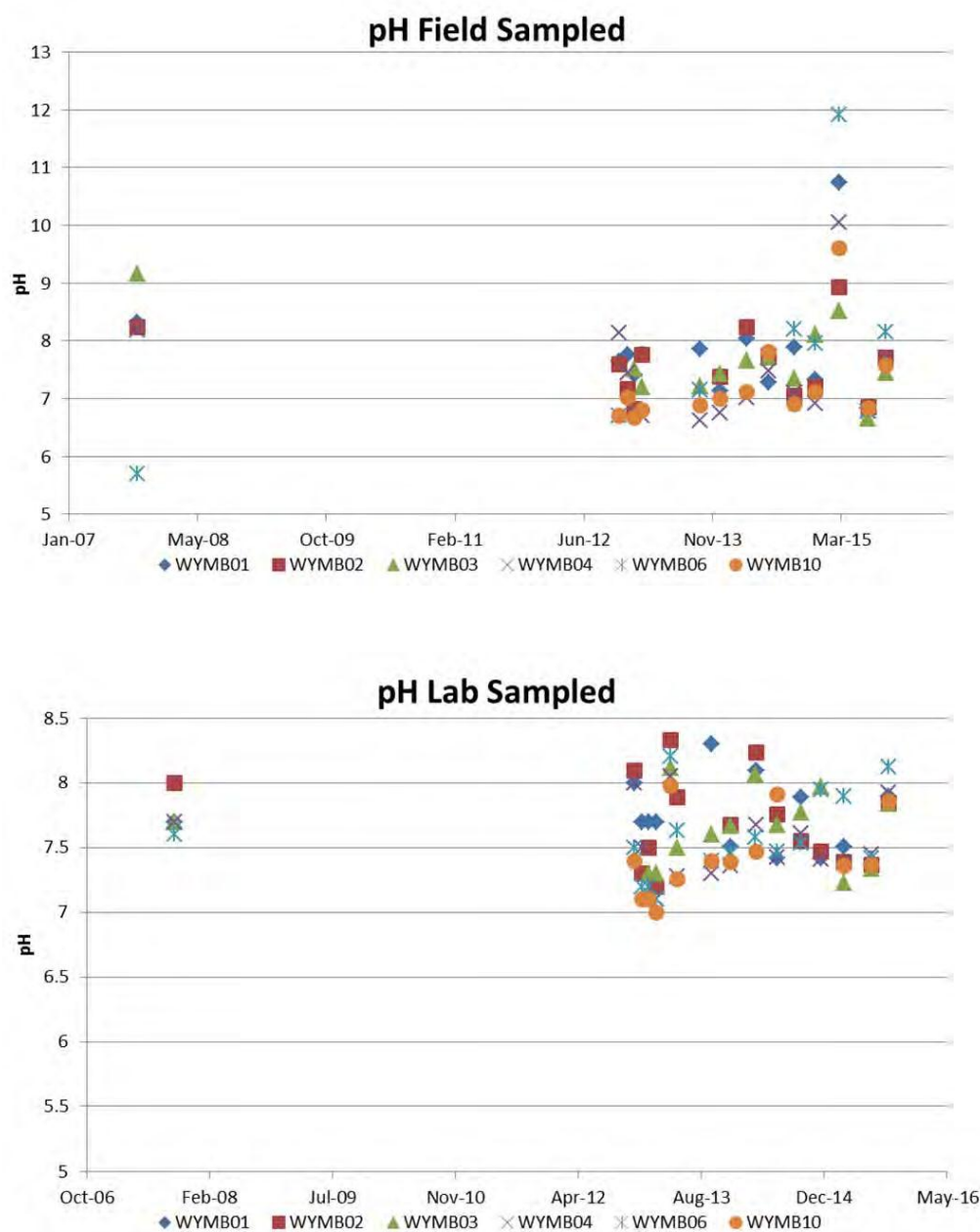


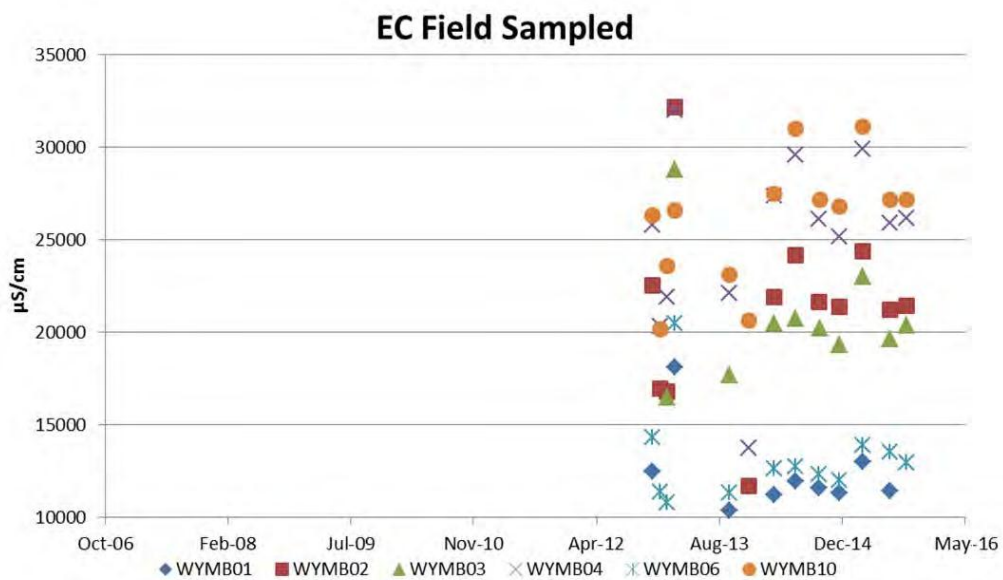
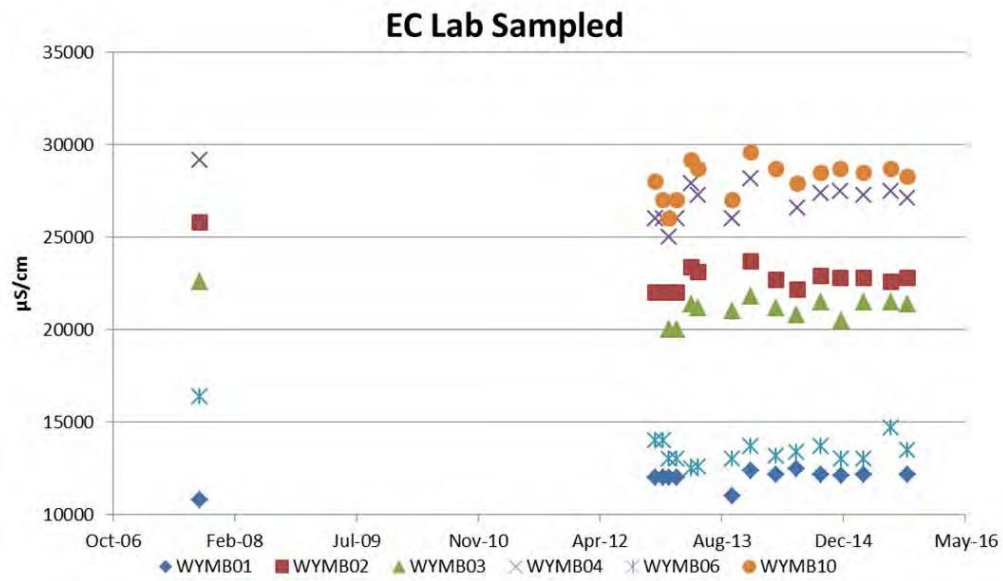


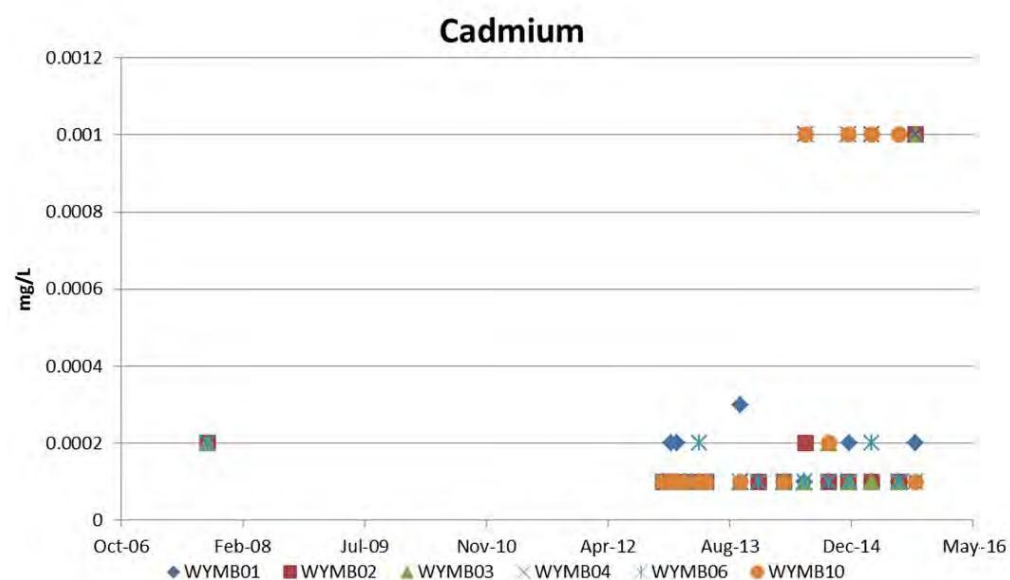
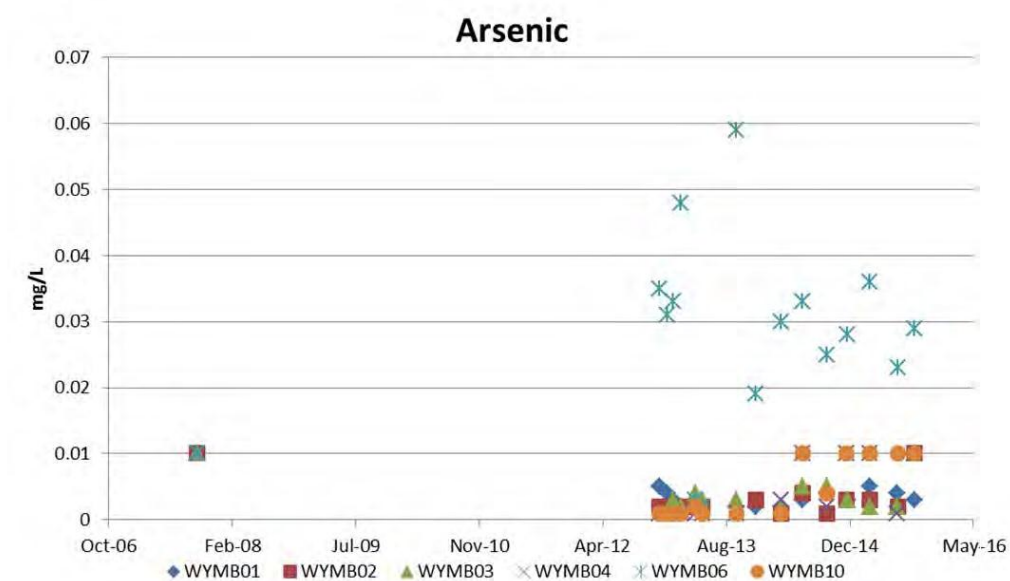


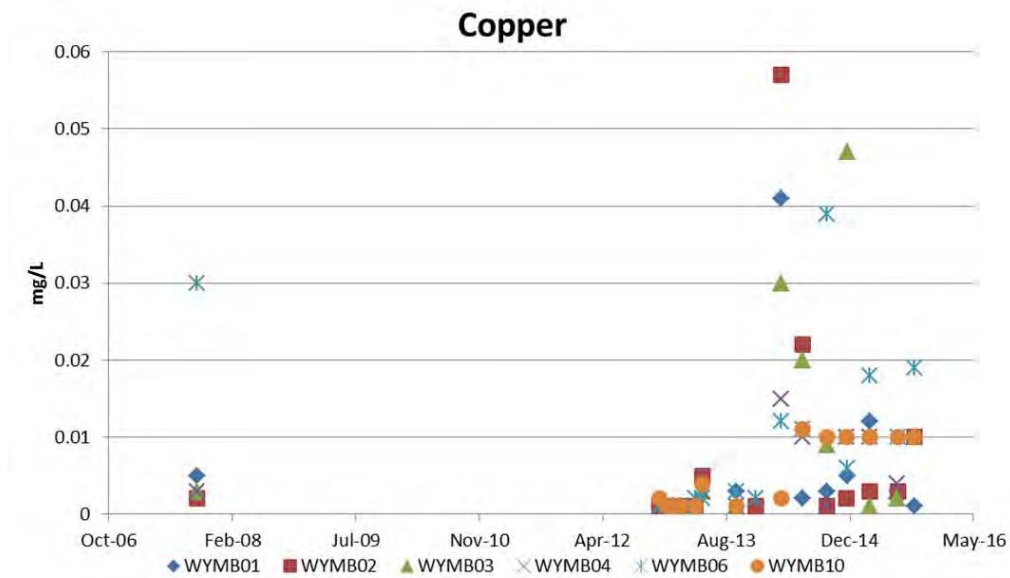
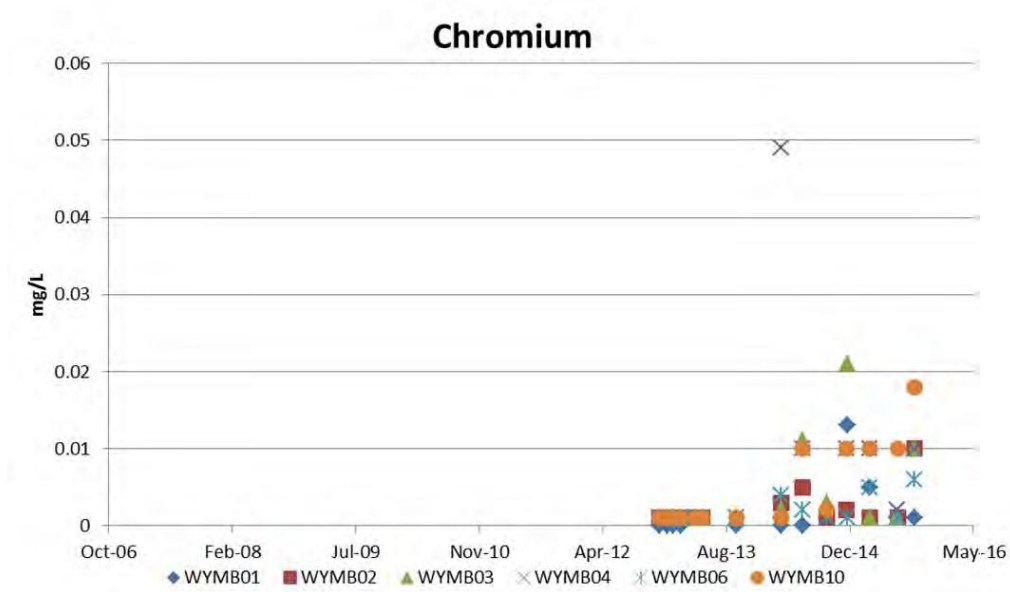


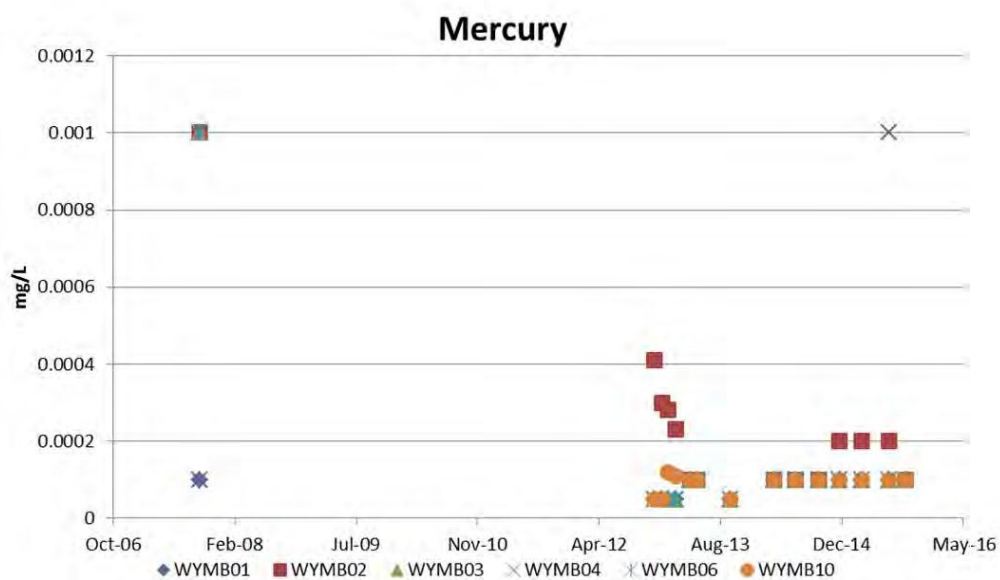
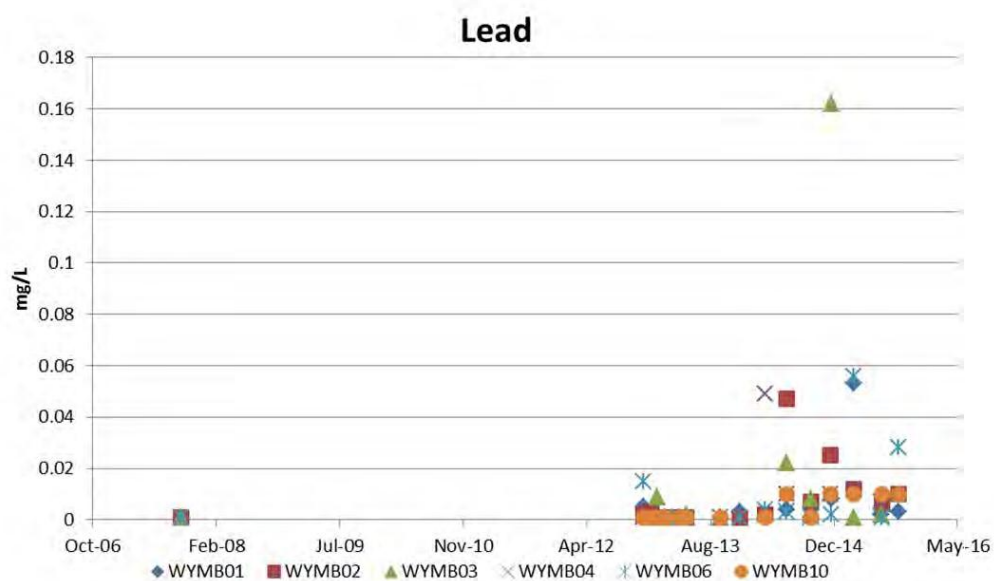
Deep Groundwater Bores

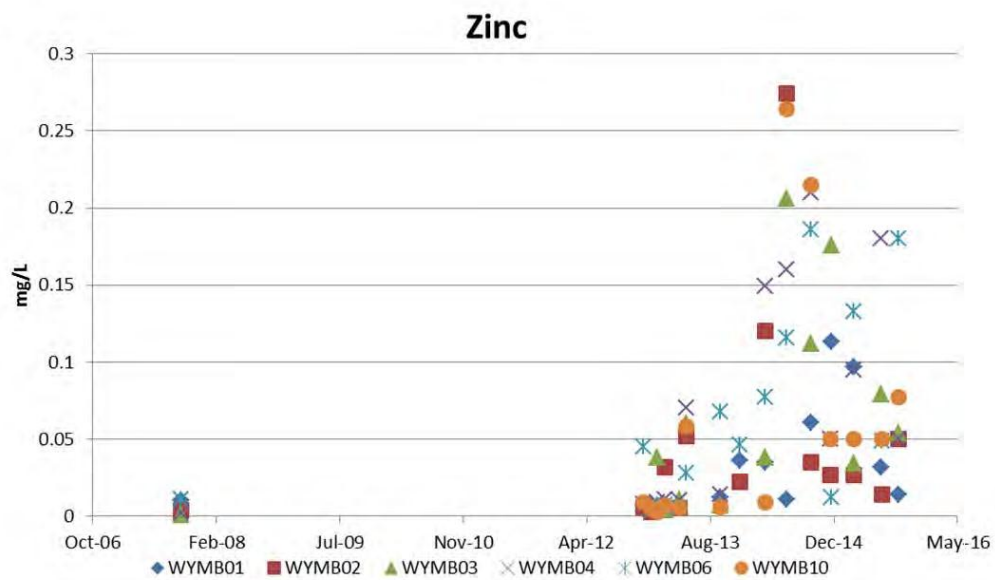
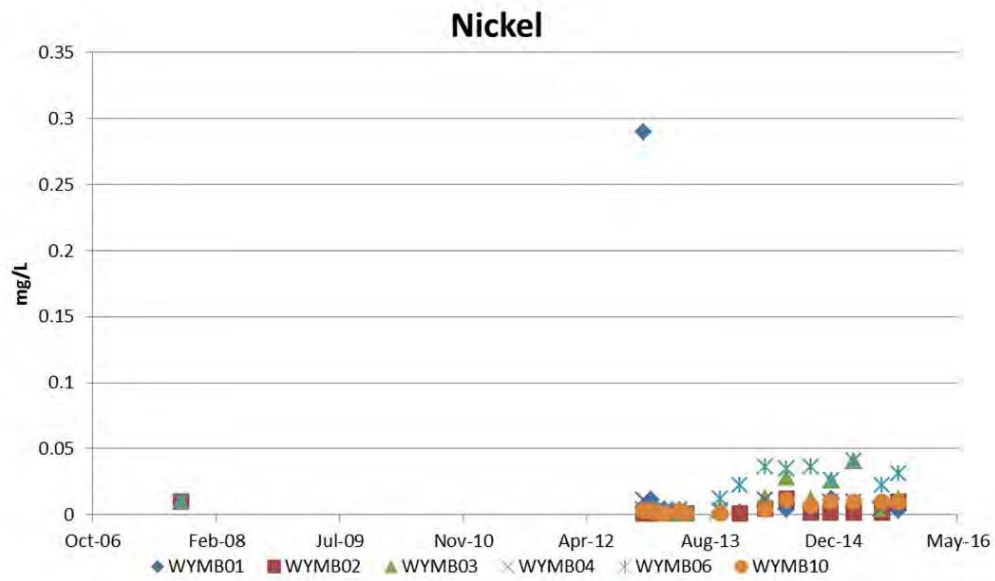


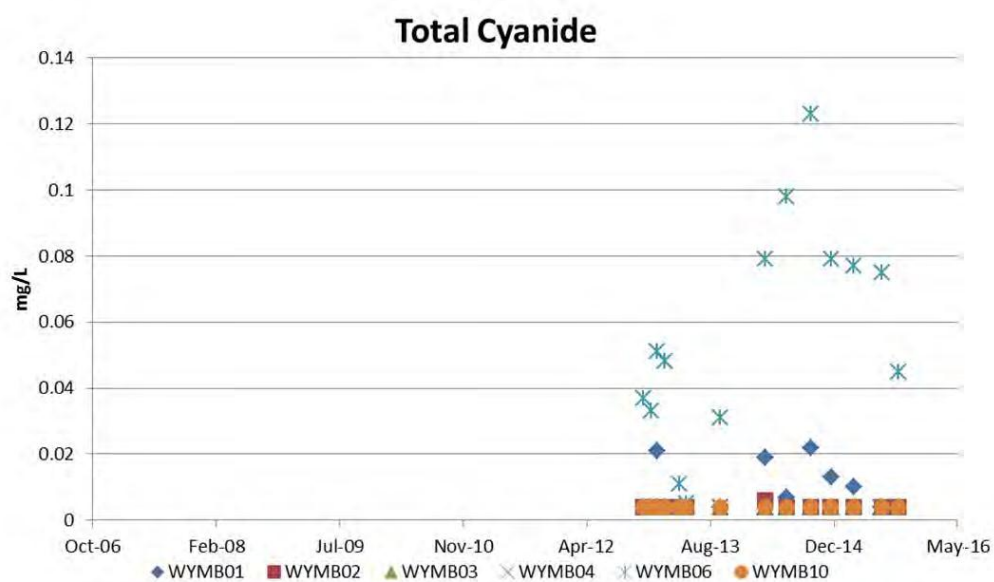
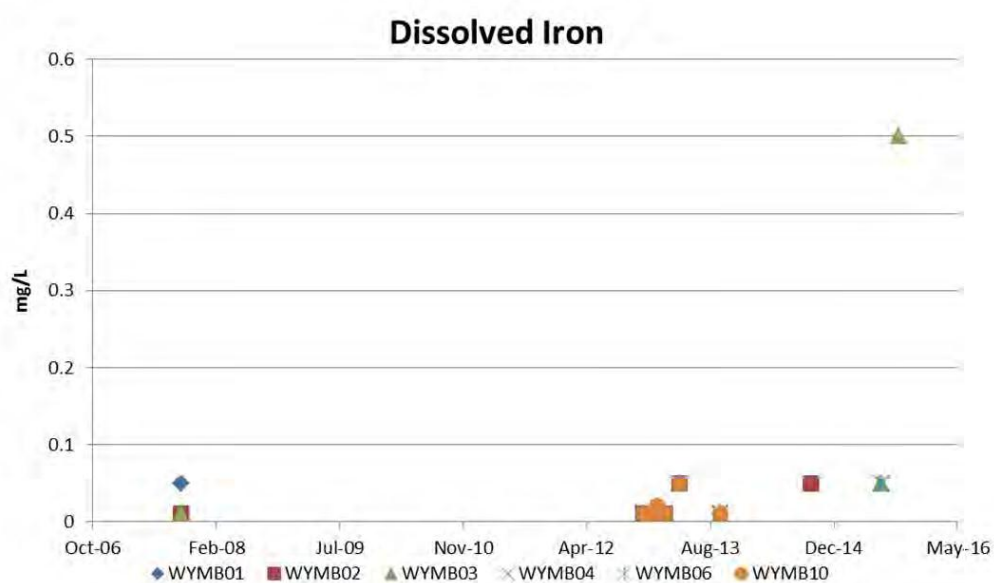


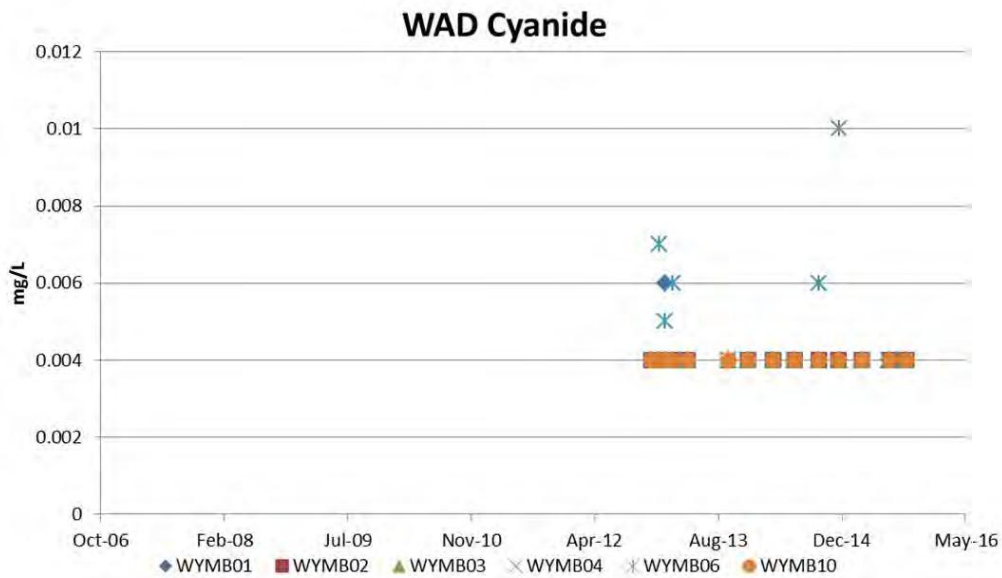
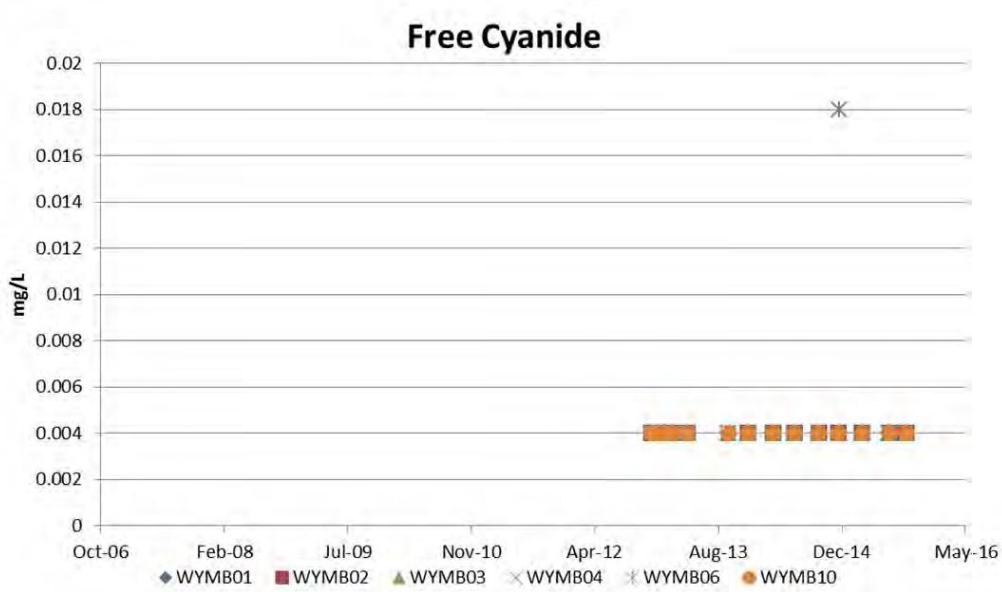


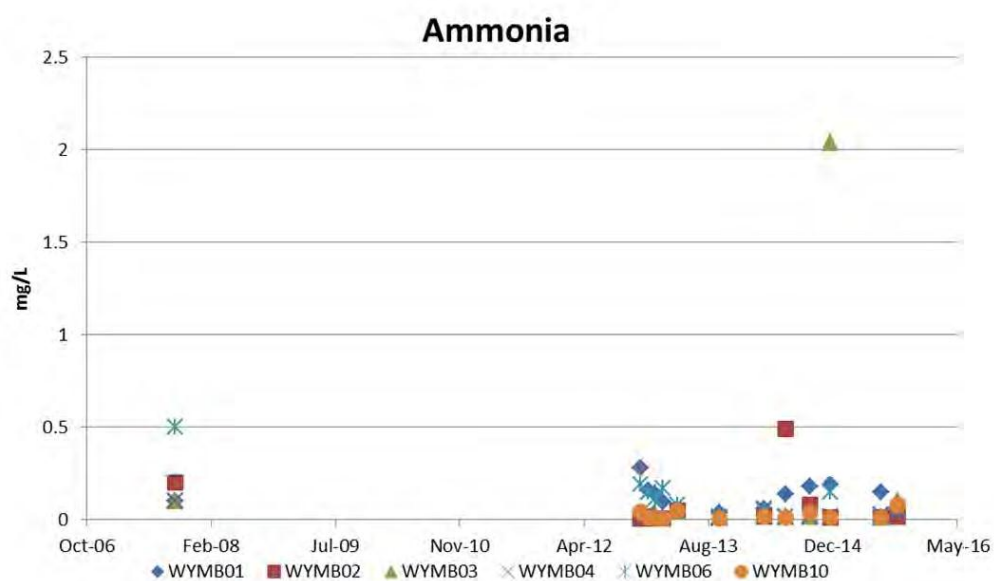












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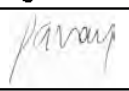
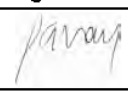
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