MORFA CLOSED LANDFILL, PORT TALBOT

PERMIT EPR/AP3292LT

2014 Annual Review of Environmental Monitoring Results

Report Number 1394r1v1d0315

Commissioned by

Tata Steel UK Limited
Port Talbot Works
Margam
Port Talbot
SA13 2NG

Prepared by

Geotechnology Ltd
Ty Coed
Cefn yr Allt
Aberdulais
SA10 8HE

FILE REF: **Y:\Jobs\LiveJobs1351 - 1400\1394 MCL 2014 Annual Report\Report\1394r1v1d0315.doc**

MARCH 2015

Table of Contents

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

Tata Steel UK Limited (Tata) maintains the unlined Morfa Closed Landfill (MCL) that formerly operated under Waste Management Licence EAWML/34000. The WML was recently taken into the new Environmental Permitting regulations by the Environment Agency (now referred to as Natural Resources Wales or NRW). As a consequence, the site is now managed in accordance with Permit EPR/AP3292LT (variation notice number EPR/AP3292LY/V001). This Permit supersedes the Waste Management Licence. Tata also actively operates adjacent separate down-gradient non-hazardous and hazardous landfills referred to as Morfa Non-Hazardous Landfill (MNHL) and Morfa Hazardous Landfill (MHL). These are managed under separate Permits. The site location and the relative position of each of these landfills is indicated on Figures 1 and 2.

Following a final site inspection by NRW on 15 April 2014, the site is now definitively closed and in Aftercare. The Compliance Assessment Report (CAR) confirming this position is provided in Appendix 1.

1.1 Objective of Report

This report is the seventh independent annual report to be produced by Geotechnology Ltd (Geotechnology) following issue of the Aftercare Monitoring Plan. The report has been prepared to satisfy the Permit which requires Tata to submit an Annual Report summarising the monitoring undertaken. This report summarises the data gathered to December 2014. The previous annual reports prepared by Geotechnology are listed in Table 1-1.

Since completion of the previous annual report the landfill has been re-profiled, capped and restoration sand placed. The sand is now naturally vegetating and Tata has established a Working Party to ensure the biodiversity is managed.

Table 1-1 List of Annual Monitoring Reports

Report Reference	Report title
766r1v1d0309	Morfa Closed Landfill. 2008 Annual Review of Landfill Monitoring Results. March 2009.
909r1v1d0310	Morfa Closed Landfill. 2009 Annual Review of Landfill Monitoring Results. March 2010.
1047r1v1d0211	Morfa Closed Landfill. 2010 Annual Review of Landfill Monitoring Results. February 2011.
1131r1v1d0412	Morfa Closed Landfill. 2011 Annual Review of Landfill Monitoring Results. April 2012.
1212r1v1d0313	Morfa Closed Landfill. 2012 Annual Review of Landfill Monitoring Results. March 2013.
1293r1v1d0214	Morfa Closed Landfill. 2013 Annual Review of Landfill Monitoring Results. February 2014.

2 REGULATORY FRAMEWORK

On 13 June 2006, the Environment Agency issued a Closure Notice for MCL (Licence Number 1/77 (EAWML/34000)). In response, Geotechnology was commissioned by Tata to compile a Closure Report that demonstrated Definitive Closure could be achieved and also addressed specific actions prompted by the Closure Notice (see Geotechnology report 498.1/0/1106).

A key element of the Closure Report was an Aftercare Monitoring Plan (AMP) that detailed the monitoring to be completed to support the ultimate application for surrender. Following submission of the Closure Report, several comments were made by the Environment Agency and the Countryside Council for Wales, which lead to the AMP being updated in 2007 (see Geotechnology Report 498.1/1/1007 Appendix 2). The update only applied to the AMP (Appendix 2 of the original Closure Report) and the main body of text of the Closure Report was not modified.

During 2009, the Agency consulted with Tata in order to ensure the new Permit met the expectations of all parties. Following this consultation period, the new Permit was issued on 9 October 2009. The new Permit requires Tata to revise the AMP updated in 2007 as part of an Improvement Programme. In response, Geotechnology was commissioned to update the AMP (see Geotechnology report 843r1v1d0210 *Revised Closure and Aftercare Monitoring Plan).* The revised AMP consolidates all changes to the Environmental Management and Monitoring Programme.

NRW has now placed the landfill into Aftercare.

2.1 Groundwater

Interim Control Levels were previously established to provide the required assurance to the Agency that any deterioration in groundwater quality around MCL would be recognised and relevant contingency plans promptly implemented. These interim levels were presented in Geotechnology report *498.1/1/1007* Appendix 2. At the time, interim levels were established for the shallow and deep aquifer at BH8, BH9, BH15 and BH16.

More recently, the Agency requested that consideration be given to the development of emission limits and control levels for other groundwater monitoring positions around the periphery of MCL; along the boundary with the Kenfig (BH10, BH15, BH16, BH9), along the northern boundary facing Margam Moors (BH17 – BH20) and along the boundary with Margam Sands (BH14 and BH13). These emission limits were presented in Geotechnology report *795r2d0409* (*Hydrogeological Risk Assessment in Support of Environmental Permit Review).* In their review of this document (EA Ref 1/77 (34000)), the Agency indicated they were largely satisfied with the approach adopted for the derivation of proposed emission limits but they wished to see the concentration of the limits reduced to take account of site conditions. As a consequence, lower compliance and control levels were developed in accordance with the Improvement Programme set out in the new Permit at the start of 2010 (see Geotechnology report *964r1v1d0310 Review of Groundwater Emission Limits).* The new emission limits were accepted by the EA on 7 April 2010 in Compliance Assessment Report 3276.

Due to different flow conditions and receptors around MCL each boundary is discussed separately in the following sections.

2.1.1 Boundary with the River Kenfig

The agreed emission limits for the groundwater at monitoring positions BH8, BH9, BH15 and BH16 are presented in Table 2-1 and Table 2-2.

Table 2-1 Summary of trigger and control levels for BH8S and BH8D

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury
Trigger Level (50% above maximum)	122	27279	8423	0.036	0.003	<0.0001
Control Level 2 (30% above maximum)	106	23642	7300	0.0312	0.0026	<0.0001
Control Level 1 (20% above maximum)	98	21823	6738	0.0288	0.0024	<0.0001
All values mg/l						

Table 2-2 Summary of trigger and control levels for BH9S, BH15S and BH16S

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury
Concentration needed in groundwater to reach EQS in Kenfig	7	118750	118750	13	0.0475	0.00475
Trigger Level (50% above maximum)	2.1	1689	663	0.012	<0.0001	<0.0001
Control Level 2 (30% above maximum)	1.8	1464	575	0.0104	<0.0001	<0.0001
Control Level 1 (20% above maximum)	1.7	1351	530	0.0096	<0.0001	<0.0001
All values mg/l						

In deriving these emission limits, Geotechnology reviewed the applicability of setting limits for both the shallow and deep aquifers. As discussed in previous annual reports and report *964r1v1d0310 Review of Groundwater Emission Limits*, MCL is not the only potential source of contaminants impacting deep groundwater. Groundwater migrating seaward from higher ground to the east passes beneath industrial and agricultural areas (where it is utilised for water resources), beneath the railway and then beneath the site. In comparison, the shallow aquifer is solely recharged by direct precipitation and leaching of the waste materials contained at MCL and other unlined locations across the site. As discussed in Geotechnology report *795r2v1d0409*, setting emission limits for the deep aquifer is not considered useful or workable as there are other off-site contributions impacting groundwater around MCL. In their review, the Agency did not comment upon this position. However, the new Permit for MCL requires Tata to set trigger levels for the deep groundwater.

To satisfy the requirements of the Permit, Geotechnology therefore, adopted the same approach used to set emission limits for shallow groundwater in deriving emission limits for the deep groundwater. These emission limits are summarised in Table 2-3.

Table 2-3 Summary of trigger and control levels for BH9D, BH15D and BH16D

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury
Trigger Level (50% above maximum)	203	4208	2538	0.009	<0.0001	<0.0001
Control Level 2 (30% above maximum)	176	3647	2200	0.0078	<0.0001	<0.0001
Control Level 1 (20% above maximum)	162	3366	2030	0.0072	<0.0001	<0.0001
All values mg/l						

2.1.2 Boundary with Margam Moors

Unlike the boundary with the River Kenfig, a well-documented significant and discernible impact is occurring along the boundary of MCL with Margam Moors. This situation has been evident for some time and is a consequence of the flow regime within the shallow aquifer. As the surface of MCL is now fully capped and the recharge trench partly constructed, the impact along the boundary with Margam Moors is expected to change as recharge will be dominated by captured rainfall rather than contaminated shallow groundwater.

Water quality along this boundary with MCL has shown recent improvement as a result of site restoration. Geotechnology previously considered that there was little advantage to be gained from setting formal numeric emission limits to warn of deteriorating water quality and to enable contingency actions to be implemented. Geotechnology suggested in report *795r2v1d0409* that a more useful and practicable approach would be to set criteria that would enable sustained deterioration in water quality along the boundary to be detected. Geotechnology proposed continuing to monitor and if levels increase over three consecutive sampling rounds, this will trigger contingency actions. Given the improvements in water quality along this boundary, the Agency agreed with this philosophy but requested that numeric upper limits still needed to be set.

To satisfy the requirements of the Agency, Geotechnology reviewed the monitoring data in report *964r1v1d0310*. Although the overall trend is for improving water quality, there remains unpredictable variations in the data which needed to be accommodated within the numeric limits and in the way the limits are applied.

Trigger levels were previously in place for the monitoring boreholes along this boundary. In agreement with the Agency these were removed in 2007 following review of their applicability. Consequently, rather than set new trigger levels along a boundary where water quality is improving, Tata suggested establishing three sets of controls levels for evaluating the shallow groundwater data. These are presented in Table 2-4. Control levels for the deep groundwater along this boundary were not considered applicable due to the contribution from off-site sources.

Table 2-4 Summary of control levels for shallow groundwater at BH17 – BH20

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury
Previous trigger levels	2	215	850		0.005	0.001
Control Level 3	2	215	500	0.01	<0.0001	<0.0001
Control Level 2	1.6	172	400	0.008	<0.0001	<0.0001
Control Level 1	1.4	151	350	0.007	<0.0001	<0.0001
All values mg/l. Control levels apply to shallow groundwater at BH17, BH18, BH19 and BH20						

2.1.3 Boundary with Margam Beach

In report *795r2v1d0409* Geotechnology discussed the setting of emission limits for BH13 and BH14. However, the new Permit for MCL does not require emission limits for BH13 and BH14.

2.2 Landfill Gas

The potential for landfill gas evolvement at MCL is relatively unknown at this stage. To ensure that the gas evolution at MCL is assessed within a framework that would allow such aspects to be assessed, the AMP established control levels for internal landfill gas. These levels are summarised in Table 2-5.

Table 2-5 Gas Control Levels

Determinant	Availability of Baseline Gas Quality Data	Proposed Compliance Concentration	Unit Of Measurement	Gas Monitoring Location
Methane (CH_4)	No	1	% by volume in air	At any gas vent stack monitoring location or borehole
Carbon Dioxide (CO_2)	No	1.5	% by volume in air	

2.3 Perimeter Gas

At the request of NRW, Tata started to use the perimeter groundwater wells as surrogate perimeter gas wells. There are no control or trigger levels for these wells at this stage.

3 MONITORING NETWORK PERFORMANCE

3.1 Monitoring Programme

The full groundwater monitoring network available to Tata for all of the landfills is shown in Figure 2. From this network the infrastructure used for the monitoring of MCL is summarised in Table 3-1. The table also summarises the main features of the current monitoring programme. To assist with understanding the processes occurring at MCL, this annual report also draws on data collected from aspects of the MNHL monitoring network.

During 2012, Tata commissioned Geotechnology to prepare a review of the Hydrogeological Risk Assessment (HRA) that underpins the design of MNHL. Although the HRA has no direct bearing on MCL, Geotechnology suspected that modifications to the analytical and monitoring schedule for MNHL would influence the schedules for MCL given the proximity of the two sites and overlaps in the monitoring infrastructure. For this reason, the monitoring programme was not modified as part of the 2011 annual monitoring review. Following acceptance of the HRA review for MNHL by the EA, Tata wrote to the EA on 4 February 2013 summarising the consolidation of the monitoring regime for MCL with that of MNHL. The monitoring programme is summarised in Table 3-1.

Table 3-1 New Monitoring Schedule

	Lab analysis	Surface water samples	Quarterly Groundwater samples	Monthly levels	Gas
Q1 (Jan–Mar)	Indicator suite	SW11, SW12 Ponds 1 – 6 on surface of MCL	BH8S, BH8D, BH9S, BH9D, BH15S, BH15D, BH16S, BH16D,	SW gauges 1,2,4,5,6 Piezometers Sampled groundwater wells	GV1 – GV4, BH8S, BH9S, BH14S, BH15S, BH16S, BH17S
Q2 (Apr–Jun)	Indicator suite/ Characterisation Suite (alternated every year with Q4)	SW11, SW12 Ponds 1 – 6 on surface of MCL	BH8S, BH8D, BH9S, BH9D, BH15S, BH15D, BH16S, BH16D,	SW gauges 1,2,4,5,6 Piezometers Sampled groundwater wells	GV1 – GV4, BH8S, BH9S, BH14S, BH15S, BH16S, BH17S
Q3 (Jul-Sep)	Indicator suite	SW11, SW12 Ponds 1 – 6 on surface of MCL	BH8S, BH8D, BH9S, BH9D, BH15S, BH15D, BH16S, BH16D,	SW gauges 1,2,4,5,6 Piezometers Sampled groundwater wells	GV1 – GV4, BH8S, BH9S, BH14S, BH15S, BH16S, BH17S
Q4 (Oct–Dec)	Indicator suite/ Characterisation Suite (alternated every year with Q2)	SW11, SW12 Ponds 1 – 6 on surface of MCL	BH8S, BH8D, BH9S, BH9D, BH15S, BH15D, BH16S, BH16D,	SW gauges 1,2,4,5,6 Piezometers Sampled groundwater wells	GV1 – GV4, BH8S, BH9S, BH14S, BH15S, BH16S, BH17S

3.2 Monitoring Infrastructure

3.2.1 Landfill Leachate

As the landfill is unlined there is no system to allow the collection, management and sampling of leachate.

3.2.2 Groundwater Monitoring Infrastructure

The integrity of the groundwater monitoring network is inspected during each sampling event. Since 2010, several monitoring positions have been vandalised despite new headworks and padlocks being constructed. Tata is aware of the on-going vandalism and that replacement monitoring equipment is required at times.

3.2.3 Shallow Piezometer Monitoring Infrastructure

A series of shallow piezometers have been manually installed into the shallow aquifer along the boundary with Margam Moors, as shown on Figure 2. These have been routinely monitored since 2006.

3.2.4 Surface Water Monitoring Infrastructure

In August 2006, four surface water level gauge boards were installed at the positions shown on Figure 2. These were monitored monthly as part of the monitoring programmes for MNHL and MHL. During 2010, detailed consideration was given to the safety of the approach to surface water Gauge 3. As the gauge was located on the outside of a meander and only accessible down a steep grassed bank, which can be very slippery, a safer location was identified. The new gauge (referred to as gauge 6) was installed at a more accessible upstream location at the position shown on Figure 2.

During 2013, a fire, potentially started by arsonists, destroyed the gauge on the Kenfig at SW4. A new gauge (Gauge 7) has been installed at the position shown on Figure 2.

3.2.5 Gas Monitoring Infrastructure

As a result of the completion of the capping system, four new gas wells have been selected for monitoring. These are referred to as GV5, 6, 7 and 8 and are in addition to the four vents already monitored (GV1 – GV4), as shown on Figure 2. The monitoring of these additional vents started in December 2013.

The integrity of the internal landfill and perimeter gas monitoring network is inspected monthly and no improvements are considered necessary at this stage.

3.2.6 Dust Monitoring Infrastructure

Dust monitoring is coordinated when necessary by Tata Environment Department, particularly during times of restorations and materials importation. Dust monitoring has not been necessary during 2013 or 2014.

4 ANALYTICAL TESTING

4.1 Laboratory Selection

All aspects of the analytical and monitoring programme are directly managed by Tata Environment Department. Tata is responsible for determining which samples are collected each month and for assessing the data each month against any relevant compliance and control levels. Geotechnology is commissioned to collect the identified samples on behalf of Tata and to compile the annual report under the direction of the Environment Department.

Testing Solutions is the laboratory selected by Tata for all of the water analysis. Testing Solutions is based at the Engineering Centre for Manufacturing and Materials (ECM) in Margam, adjacent to the steelworks.

4.2 Testing Parameters

The current analytical programme is summarised in Table 4-1.

Table 4-1 Analytical Testing Programme

	Indicator Suite	**Characterisation suite***
Frequency	**Quarterly (Q1, Q2, Q3, Q4)**	**Annually (alternated each year between Q2 and Q4)**
Analysis	pH, Electrical Conductivity, alkalinity, Calcium, Chloride, Chemical Oxygen Demand, Total Organic Carbon, Ammoniacal Nitrogen, Nitrate, Nitrite, Phosphorous, Phosphate, Arsenic	In addition to indicator suite: Sodium, Potassium, Magnesium, Sulphate, Boron, Total Chromium, Copper, Iron, Lead, Vanadium, Zinc, Cadmium, Mercury, VOC and SVOC
*Other parameters may be added depending upon any changes to the types of waste landfilled and review of results from preceding indicator suite		

5 RESTORATION OF MORFA CLOSED LANDFILL

The current site topography is shown in Figure 3. This is based on a survey completed during December 2013. An aerial photograph of the site is provided below.

5.1 Historical Landfilling

In the early 1970's, Morfa Landfill was constructed as an ad-hoc deposition of wastes onto natural ground. A more structured depositional regime was implemented in the late 1980's with waste streaming into slag constructed cells. Waste was end-tipped into these cells. However, the identification of specific waste depositional areas cannot be readily made. A planning restriction on height has resulted in the topography of MCL comprising steep slopes with a large flat plateau area.

Aerial photograph of Morfa Site with MCL in foreground (2014)

No basal liner was placed beneath the deposited wastes at MCL and there is no leachate collection or leachate management system. This has resulted in leachate from the wastes being in direct contact with the shallow groundwater. In areas where the clay aquitard is absent, this leachate could potentially recharge the deep aquifer, if and when, the head differential is suitable. There is limited evidence of such recharge.

MCL accepted all the waste originating within the steel plant between the mid 1970's and 2004. Since December 2004, no additional waste has been deposited. During the landfill operation, the waste comprised the sources listed in Table 5-1. The total tonnage deposited is approximately 10 million tonnes. The waste is dominated by BOS and BF slag.

Table 5-1 Estimated Waste Composition of MCL

Waste Material	Percentage of Total Waste
BOS and BF Slag, Refractory material and Rubble	89%
Water treatment solids, mill scale, wood and general commercial waste	7%
Canteen and Horticultural waste	0.3%
Filter Cake	3.7%
Asbestos	0.002%

5.2 Restoration of Morfa Closed Landfill (MCL)

Phased restoration of MCL was completed during 2013 having commenced in September 2004. The restoration scheme has involved placement of geomembranes over the surface of the waste which, in combination, provide gas and surface water management as well as providing barriers to precipitation ingress and gas egress. The sympathetic restoration has also involved the placement of sand on top of the geomembranes, creating dune morphology similar to the surrounding land.

The cap is designed to prevent infiltration into the underlying waste mass. At this stage, the captured rainfall is directed through pipework under gravity towards the boundary with Margam Moors in close proximity to BH17, towards Kenfig near to BH15 and towards BH10. This water will ultimately be directed to a recharge trench which has been partly constructed on the northern boundary between MCL and the Margam Moors.

5.3 Materials Recovery

As part of the last phase of restoration, the existing waste surface needed to be reprofiled to achieve side slopes that are stable and a restoration surface that is able to shed water toward the collection ponds. As part of this process, materials were recovered for use in the steelworks. Based on a comparison of surveys completed prior to and after completion of this aspect, an estimated 30,000m^3 was removed. During this phase, areas of waste that have not been directly exposed to the environment for many years, possibly decades, were exposed. These areas were available to react with the atmosphere and open to weathering and leaching. The products from these processes could ultimately reach the underlying groundwater system.

5.4 Other site activities

Since issue of the Permit for MNHL, two biodegradable cells (bio cells) and two of the non-hazardous waste cells have been constructed. Two hazardous waste cells have also been constructed.

6 LANDFILL STABILITY AND SETTLEMENT

6.1 Stability

Visual inspection for signs of settlement and instability are undertaken as part of the quarterly monitoring programme and also more frequently by the landfill manager. To date, the only area where settlement has been observed is a small area (<20m^2) on an access track on the lower northwestern bench between the site and MNHL bio cells. The suspected cause of this settlement is the removal of restoration materials from below the access road by the flow of water off the cap.

6.2 Settlement Monitoring

Now that the landfill is capped, evaluation of settlement is achieved using a network of settlement markers. The location of these markers is shown on Figure 4. Monitoring of these positions will satisfy the requirements of Permit condition 4.2.2 and negate the need for an annual topographic survey as required by Permit condition 3.5.3.

Permanent Settlement Marker on MCL (Before Installation)

Twenty five settlement markers were installed in December 2013 along with two fixed survey stations in the stable ground approximately 100m to the southwest of the closed landfill. At each monitoring position a hand dug hole was made in the restoration soils and the settlement monitoring marker (as seen above) was placed directly onto the pozidrain. The marker was then secured in place with a bag of ready mixed cement and covered over with restoration soil.

An initial set of readings was taken on each of the monitoring markers a week after installation having given the cement time to set completely. In order to take measurements a Topcon QS3 Robotic total station (fully calibrated for the purpose) was set up using the

permanent stations to the southwest of the landfill. A temporary control station was then placed at the crest of the landfill slope within line of site of many of the monitoring positions. The total station was then moved to this location and readings taken on each of the positions to provide eastings, northings and elevations. Two more moves were required during the course of the monitoring in order to see each of the positions. These coordinates have provided a base reading which all future survey monitoring will be checked against.

The settlement monitoring carried out in March 2015 has followed the same procedure as the initial base reading survey using the same instrument and the same control stations. The instrument was set up using the permanent control stations and used to establish new temporary positions on the crest of the landfill slope. The instrument was then moved to a newly installed temporary position and measurements of each monitoring position were taken as in the baseline survey. The table below shows the level difference between the base reading and the March 2015 reading.

Table 6-1 Settlement Marker Level Changes (December 2013 – March 2015)

Point ID	Level Change (m)		Point ID	Level Change (m)
1	-0.023		14	-0.002
2	0.002		15	-0.064
3	-0.013		16	-0.017
4	-0.013		17	-0.009
5	-0.052		18	-0.015
6	0.002		19	-0.004
7	-0.002		20	-0.012
8	0.005		21	-0.008
9	Covered over		22	-0.005
10	0.001		23	-0.01
11	-0.006		24	Destroyed
12	-0.006		25	-0.009
13	-0.004			

The majority of readings fall within the range of settlement which would be expected for a landfill, although there are several positions (1, 5 and 15) where larger settlements have been identified. At this stage, with only two sets of data, it is not possible to tell whether these values are truly representative of settlement or are anomalies arising from survey error or other factors. Particular attention will be paid to monitoring these positions in future years. It is also proposed that future monitoring visits will utilise additional survey methods to increase the precision of the monitoring and reduce the potential for anomalous readings.

7 LEACHATE

As the landfill is unlined there is no formal leachate collection and management system.

Visual inspection of the landfill boundary has not revealed the presence of any new leachate breakout. Monitoring has previously shown leachate from MCL to be impacting shallow groundwater, particularly to the northwest of the site.

8 GROUNDWATER

8.1 Groundwater Level and Flow

Examination of the shallow groundwater surface shown in Figures 5 and 6 shows that it is domed, with a concentric series of groundwater elevation contours centred on the highest elevation, close to the centre of the site. Groundwater flows in response to head loss and accordingly, flow lines will be normal to the contours, radiating outwards from the dome. This radial flow pattern is considered to be a response to groundwater recharge in the shallow aquifer, which has very limited extent, following almost exactly the footprint of the site. Clearly, shallow groundwater flow from beneath the site would be expected toward Margam Moors, Margam Beach, the River Kenfig and the railway sidings.

The shallow groundwater body lies within a wind-blown sand aquifer that overlies a low permeability clay layer which in turn overlies an alluvial sand and gravel sequence. The deeper aquifer is water saturated and beneath the clay layer it is confined, with a piezometric head above the clay layer, but beneath the shallow groundwater surface.

Deep groundwater piezometric levels shown on Figures 5 and 6 indicate an overall decrease in head toward the north and west. There is no suggestion of a radial pattern to the contours, but rather a uniform loss of head from the east toward the west is indicated. The principle recharge to the deep aquifer takes place at some distance to the east of the site, where the sand and gravel deposits form undulating farmland in the Cornelly/Pyle/Margam district. Groundwater migrating seaward from this higher ground passes beneath the industrial areas (where it is utilised for water resources), beneath the railway and then beneath the site.

An examination of the deep groundwater plan shows that the deep groundwater surface is at the same level as the River Kenfig at the southern boundary of the site, strongly indicating a degree of interaction with the surface water. In this area, drilling has also revealed that the clay aquitard is absent, with the wind blown sand aquifer directly overlying the estuarine sequence. The absence of the clay appears to have resulted in both groundwater bodies coming together along the northern bank of the River Kenfig, though deep and shallow monitoring reveals that both water pressures and chemistry remain distinctly different in the wind blown sand and the estuarine sand beneath.

Figures 5 and 6 reveal that the deep groundwater is recharged to the east before flowing beneath the site as a confined aquifer. Along the edge of the Kenfig and for a distance of some 200m into the southern part of Morfa site, the confining clay layer is absent and the deeper water is free to mix with the shallow water. The elevation of the deeper groundwater surface appears to coincide with the elevation of the River Kenfig, though the groundwater gradients between the deep groundwater and the river are flat. This suggests little inflow or outflow between deeper groundwater and the Kenfig, although some exchange would be expected.

Based on the predicted groundwater flow directions from the accessible monitoring network, it is clear that all shallow groundwater monitoring infrastructure can be considered downgradient of MCL, as there appears to be a radial component to flow direction. This is partly due to the lack of direct access to groundwater below MCL apart from at BH8. For this reason, the boreholes within the shallow aquifer are grouped according to their hydrogeological position relative to MCL as follows:

- BH8 – Below MCL.
- BH9, BH10, BH15, BH16 – Between MCL and the rail sidings and River Kenfig.
- BH11, BH12, BH13, BH14 – Down gradient to the west and north. Adjacent to Margam Sands
- BH17, BH18, BH19, BH20 – Down gradient to the north. Between MCL and Margam Moors.

Groundwater levels measured at the shallow piezometers and at the gauges installed in the Margam Moors Mother Ditch and River Kenfig are graphically illustrated in Appendix 2. Waterlevels in the shallow aquifer have not significantly fallen despite the partial placement of capping systems at MCL.

8.2 Groundwater Chemistry

To assist with understanding variations in water chemistry at monitoring positions around MCL, temporal summaries are provided in Appendix 3.

8.2.1 Below MCL

Groundwater samples recovered from directly below MCL at BH8 routinely report a temperature in excess of 30 degrees. This is considered to be due to the exothermic slaking of lime contained within waste. Under such conditions an alkaline pH would be expected, but the water chemistry data indicates that the pH is below 9 and alkalinity is typically below 200 mg/l. On several occasions, acidic pH values have been recorded suggesting that there are other mineral interactions occurring. During 2014, the groundwater chemistry was similar to that observed previously with the annual suite, demonstrating that most parameters remain below freshwater Environmental Quality Standards (EQS).

Historically, groundwater within the vicinity of MCL is impacted by a wide range of inorganic and organic contaminants. Given the predominance of slag based wastes in the unlined landfill, key indicators of slag leaching in the shallow aquifer are pH, Ca and alkalinity. Other parameters such as chloride and ammonia are reflective of the leaching of other waste types; at BH8 some of the concentrations observed in groundwater have at times exceeded the concentrations observed in leachate from MNHL and MHL. In addition to the groundwater below MCL being vertically stratified, there is also considerable spatial variations around the perimeter of MCL. Such differences in water chemistry between the monitoring boreholes around MCL likely reflect differences in waste types contained within MCL, as the waste in the landfill is known to be heterogeneous.

8.2.2 Boundary with the River Kenfig

Whilst in general, shallow groundwater flows southward from the site towards the Kenfig, flow reversal does rarely occur. Now that the landfill is capped, this situation will be evaluated in closer detail as part of next year's annual report when more data will be available.

All groundwater chemistry was within the emission limits established for the groundwater monitoring positions along the boundary with the River Kenfig, as summarised in Tables 8-1 to 8-3.

Table 8-1 Evaluation of data against trigger and control levels for BH8S and BH8D

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury	Comment
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
ASSESSMENT CRITERIA							
Trigger Level (50% above maximum)	122	27279	8423	0.036	0.003	<0.0001	
Control Level 2 (30% above maximum)	106	23642	7300	0.0312	0.0026	<0.0001	
Control Level 1 (20% above maximum)	98	21823	6738	0.0288	0.0024	<0.0001	
MONITORING RESULTS							
2014 Data Evaluation (max values recorded)	67.43	3700	3200	0.005	0.0018	<0.0001	All data below control levels

Table 8-2 Evaluation of data against trigger and control levels for BH9S, BH15S and BH16S

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury	Comments
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
ASSESSMENT CRITERIA							
Concentration needed in groundwater to reach EQS in Kenfig	7	118750	118750	13	0.0475	0.00475	
Trigger Level	2.1	1689	663	0.012	<0.0001	<0.0001	
Control Level 2 (CL2)	1.8	1464	575	0.0104	<0.0001	<0.0001	
Control Level 1 (CL1)	1.7	1351	530	0.0096	<0.0001	<0.0001	
MONITORING RESULTS							
2014 Data evaluation (max concentration)	<0.05	180.1	75.2	0.0067	<0.0001	<0.0001	All data below control levels

Table 8-3 Evaluation of data against trigger and control levels for BH9D, BH15D and BH16D

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury	Comments
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
ASSESSMENT CRITERIA							
Trigger Level	203	4208	2538	0.009	<0.0001	<0.0001	
Control Level 2 (CL2)	176	3647	2200	0.0078	<0.0001	<0.0001	
Control Level 1 (CL1)	162	3366	2030	0.0072	<0.0001	<0.0001	
MONITORING RESULTS							
2014 Data evaluation (max concentrations)	2.27	510.8	141.87	0.002	<0.0001	<0.0001	All data below control levels

8.2.3 Boundary with Margam Moors

On the northeastern side of the existing landfill a noticeable discharge of high pH water has been monitored for some time. The water issues from a series of spring lines at the edge of Margam Moors where it drops a distinctive white calcium precipitate. This phenomenon has been described in detail previously and is known to be impacting the Moors in proximity to the site. Directly up (groundwater) gradient of the spring lies the unlined waste deposits of

MCL and it is the leaching of these components and other unlined areas that generates the characteristic precipitates.

Potentially in response to the restoration of MCL, shallow groundwater quality has been improving at monitoring positions BH17S - BH20S over the past few years. Along this northern boundary there has been sustained decrease in the concentration of several parameters including ammonia, arsenic, chloride and Chemical Oxygen Demand. These variations are not yet observed elsewhere in the monitoring network. Geotechnology previously suspected that these trends may be temporarily reversed if poor quality seepage issues from waste exposed during the landfill restoration. With time, the water quality may also become less alkaline as less slag based waste is now exposed to leaching due to the capping. As the water quality changes, trace metals may potentially become slightly more mobile. These processes may explain why increased ammonia, copper and cadmium were detected for short periods during 2014. At the other monitoring positions (BH17S and BH20S) cadmium was below the level of analytical detection.

Table 8-4 Summary of control levels for shallow groundwater at BH17 – BH20

	Ammonia	Chloride	Calcium	Copper	Cadmium	Mercury	Comments on data trends
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
Control Level 3	2	215	500	0.01	<0.0001	<0.0001	
Control Level 2	1.6	172	400	0.008	<0.0001	<0.0001	
Control Level 1	1.4	151	350	0.007	<0.0001	<0.0001	
2014 Data evaluation (max concentrations)	6.52 @ 17S 23/1/14 2.8 @ 18S 13/11/14 <1.4 at all other times	100.6	165	0.007	0.0003 at 19S 13/11/14	<0.001	Brief breaches of control levels

8.2.4 Boundary with Margam Beach

Groundwater flow towards Margam beach in the shallow aquifer has been estimated at 3 l/sec along the 1236m boundary with the site. Discharge of groundwater from the shallow aquifer is very difficult to discern due to the low volumes involved, but a linear seepage line at an elevation of approximately 2.5m AOD is present during very low tides and this is thought to be mixed groundwater and tidal water. The discharge has been considered analogous to a point source discharge to the coastal water. In this analogy, the groundwater concentration that would result in EQS concentrations in the coastal water (hereafter termed the critical groundwater concentration) can be derived using the approach presented *in IPPC Horizontal Guidance Note for Environmental Assessment and Appraisal of BAT*.

In the guidance, three levels of dispersion rate (low, medium and high) are provided to approximate the mixing that occurs in the coastal water. To ensure a conservative approach, the lowest dispersion rate of 2500 l/sec has been adopted. Multiplying this value by the EQS therefore quantifies the pollutants required to reach the EQS in the mixing zone. If this is divided by the groundwater flow rate, the critical groundwater concentration can be calculated.

In reality, the 3 l/sec of groundwater that moves towards Margam beach will not behave as a point source discharge. The flow rate and therefore the flux of potential contaminants, will be distributed along the entire 1236m long flow boundary. Therefore, the intermixing will be

significantly greater than has been assumed so this approach can be considered a highly conservative approach to determining the critical groundwater concentration.

The calculations in Table 8-5 reveal that pollutant concentrations significantly greater than those observed would be required to cause the water chemistry to reach EQS levels in the coastal water.

Table 8-5 Comparison of Groundwater Chemistry with Critical Groundwater Concentration along Boundary with Margam Beach

		Ammonia	Calcium	Arsenic	Copper	Cadmium	Mercury
Critical groundwater concentration	mg/l	16	208333	20	4	2	0.25
Maximum value in 2012 at BH13S and BH14S	mg/l	11.6 @ BH14S in Nov. Ammonia below detection limit at all other times	115	0.18	<0.0005	0.0006	<0.0005
Maximum value in 2013 at BH13S and BH14S	mg/l	<0.05	104.6	0.1	<0.001	<0.0001	<0.0001
Maximum value in 2014 at BH13S and BH14S	mg/l	<0.05	97.8	0.026	0.003	0.0002	<0.0001

9 SURFACE WATER

9.1 Surface Water Levels

The results of the surface water level monitoring are presented in Appendix 2.

9.2 River Kenfig

Appendix 4 provides a summary of temporal variations of the water chemistry encountered at SW11 (upstream) and SW12 (downstream) in the River Kenfig. Unlike previous data, the most recent datasets reveal subtle differences in alkalinity and calcium in the downstream samples. Although the concentrations detected have been observed previously, the key point to note is that the downstream concentrations are higher than those upstream.

Although the groundwater in this area is slightly mineralised as a result of seepage from MCL, the concentration levels in groundwater at BH15S and BH16s are lower than the concentrations observed in SW12. On this basis, groundwater seepage from the landfill is not likely to be the cause of the variations in water quality observed in the Kenfig. However, to better understand the processes occurring, Geotechnology suggests the frequency of sampling surface water should be increased. With the benefit of more data, the effect of the recent capping of MCL will be better evaluated in next year's annual report.

9.3 Dune Slacks and Restoration Ponds

A key element of the restoration of MCL is the construction of a recharge trench that will direct surface water collected in restoration ponds on the cap into a network of trenches to sustain shallow groundwater levels. As part of the AMP, surface water has been collected from the restoration ponds on the surface of MCL and two dune slacks in Kenfig National Nature Reserve for laboratory analysis; one from a mature slack and one from a new slack being constructed by KNNR/CCW. This data has been previously scrutinised in order to discharge pre-operational measure 1 of the new Permit, which requires Tata to derive control and emission limits for each of the recharge trench discharges. As part of this process, CCW commented that there was no longer any benefit in sampling the dune slacks and so this ceased at the end of 2012. However, the pre-operational measure 1 has not yet been discharged so this section of the annual report is intended to address this outstanding element which requires trigger levels to be set for the recharge trench.

To address pre-operational condition 1, Geotechnology previously prepared report 1085r1v1d0811 *Recharge Trench Design Targets*. This previous report suggested control and emission limits for a set of substances for the recharge trench. Following issue of the report, the Countryside Council for Wales commented on the control and emission limits, alongside other aspects, as set out in their correspondence in Appendix 5. Since this time, additional monitoring data has been gathered from the new ponds constructed on the cap. With the benefit of further data, Geotechnology agrees with the suggestions made by CCW in revising downwards several of the suggested control and emission limits. Based on this feedback the revised control levels and emission limits are summarised in Table 9-1.

These levels are intended to satisfy pre-operational measure 1 of the Permit covering MCL (EPR/AP3292LT). These levels provide a regulatory framework within which the recharge system can be evaluated. Other parameters will be analysed and evaluated as part of the operation of the system in accordance with the Permit. Each quarter spot samples would be

recovered from the recharge chambers and analysed for the same parameters measured in groundwater as prescribed in the Permit.

Table 9-1 Proposed Control Levels and Emission Limits for Recharge Chambers

	Control level	Emission level	Control level test	Emission test
	mg/l	mg/l		
Phosphate	0.5	1.0	Control level assessed based on annual average	>Emission level based on quarterly monitoring
Alkalinity	300	350		
Chloride	50	100		
Calcium	>40			
Total Ammonia	0.5	1.0		

In accordance with other aspects of the Permitted monitoring programme the analytical results gathered from the monitoring programme will be evaluated within a structured contingency action framework.

10 INTERNAL LANDFILL GAS

Monitoring of gas vents on the surface of MCL did not commence until mid-way through 2008 when part of the restoration had been completed. The monitoring network has now been extended to include 4 more vents now that the capping is complete.

At this stage, the monitoring is limited to bulk landfill gases. The applicability of the gas monitoring regime will be reviewed in the future as data is gathered following the completion of capping. The objective should be to ensure that the monitoring keeps pace with potential changes in monitoring techniques, particularly as the understanding of the degassing of largely inorganic waste improves.

10.1 Assessment against Permit Compliance Levels

All data collected to date indicates that the gas concentration levels are below the relevant control levels for carbon dioxide and methane (see Appendix 6).

During 2014, neither methane or carbon dioxide were detected above 0.3%. Despite undertaking sampling during times of falling and rising atmospheric pressures, many sampling occasions revealed that the gases were not found above detection limits.

The monitoring does, however, suggest that areas of the landfill do have low levels of oxygen (<10%) and in these areas carbon monoxide (up to 388 ppm during 2014) and hydrogen sulphide (up to 372 ppm during 2014) are detected.

11 PERIMETER GAS

Perimeter gas is measured at groundwater monitoring locations BH14, BH15, BH16 and BH17. This is not ideal as the wells were principally designed for groundwater monitoring.

The monitoring data gathered since 2011 reveals that ground gases at these monitoring locations do not contain more than 0.5% methane and 0.1% carbon dioxide. Carbon monoxide and hydrogen sulphide have been rarely detected but at low concentration (<10 ppm carbon monoxide and <50 ppm hydrogen sulphide).

12 SUMMARY AND RECOMMENDATIONS

12.1 Environmental Protection

Groundwater and surface water monitoring has previously shown MCL to be negatively impacting shallow groundwater draining towards Margam Moors. In recent years, this shallow groundwater has started to show improvements in quality and there may now be signs that groundwater directly below MCL is becoming more dilute.

The River Kenfig and Margam Beach show no clear signs of impact from the leaching of wastes within MCL. During 2014, increased calcium and alkalinity was detected downstream of the landfill but these variations do not appear to be related to seepage from the landfill as the concentration of these parameters in shallow groundwater was lower than detected in surface water. This situation will however be more closely evaluated in 2015.

Based on the available data, Morfa Closed Landfill is not considered to be a significant source of landfill gas due to the lack of biodegradable wastes deposited. All data collected to date indicates that the gas concentration levels are below the relevant control levels for carbon dioxide and methane.

12.2 Monitoring Network Maintenance

Tata is aware of vandalism to part of the monitoring network and that replacement monitoring equipment is, at times, required.

- Settlement markers need to be maintained with vegetation cut back to ensure identification and access
- Vegetation should be routinely cut back to enable safe access to all monitoring locations

12.3 Recommendations

Excavation and re-profiling of the waste and internal and external landfill gas monitoring has failed to detect waste that is likely to provide a significant gas source. Given the lack of a significant gas generating mechanism and the lack of environmental receptors, there would appear to be little benefit in continuing to monitor gas on a quarterly basis in the external groundwater well. Monitoring of these wells has revealed that ground gas at these monitoring locations does not contain more than 0.5% methane, 0.1% carbon dioxide and low levels of carbon monoxide and hydrogen sulphide. As these groundwater wells were not designed for ground gas monitoring and, as there are few direct receptors (apart from vegetation) Geotechnology suggests that this aspect of the monitoring programme is no longer beneficial and could be stopped with no loss of environmental protection. Before the monitoring is stopped this position should first be agreed with NRW.

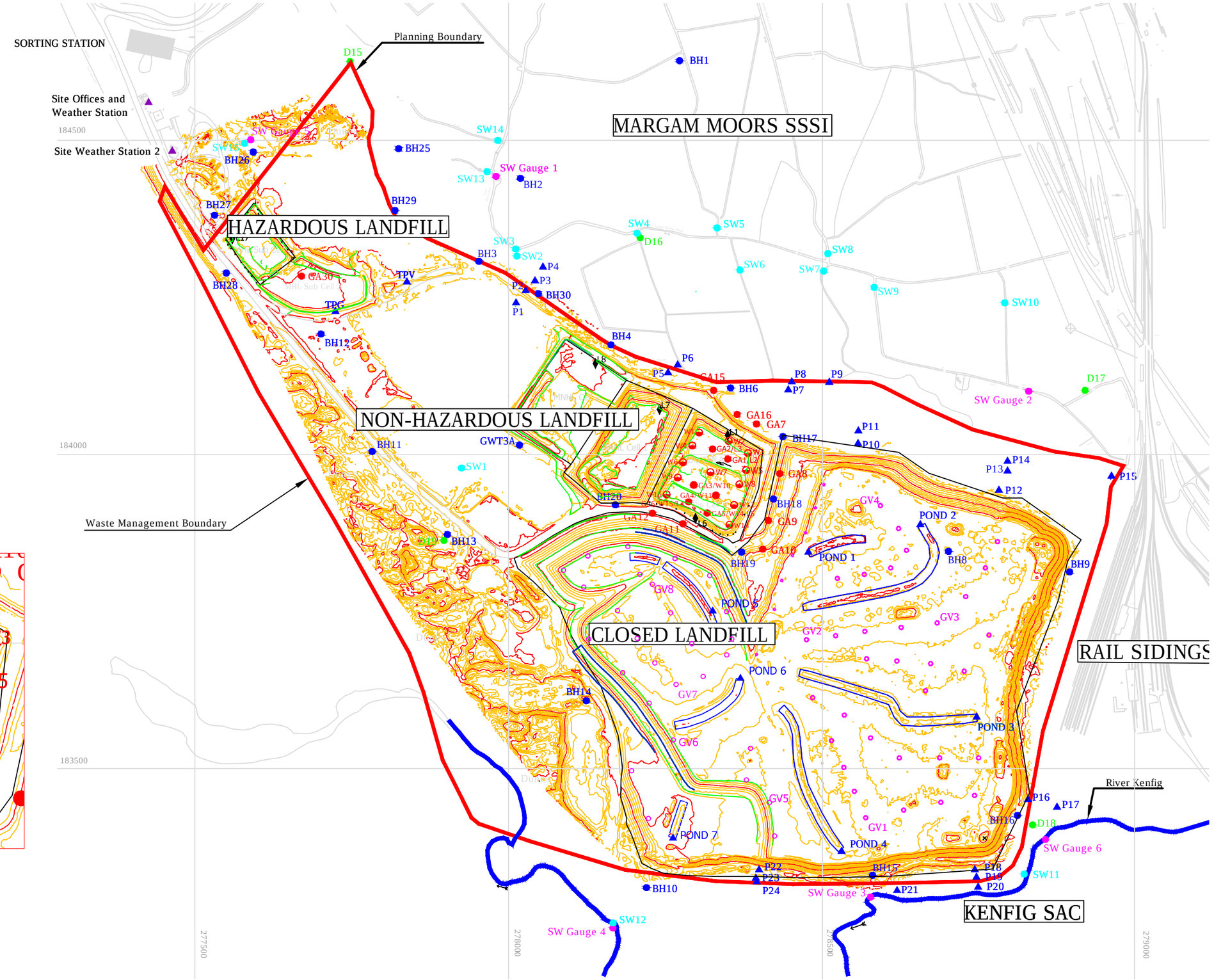
To better understand the processes occurring within River Kenfig, Geotechnology suggests that the frequency of sampling surface water should be increased to monthly. Consideration should also be given to sampling and testing any surface runoff that could be flowing towards the river from the recently capped landfill.

Figure 1 Site Location Plan

Figure 2 Available Monitoring Network

LEGEND

- Gas Vent
- Leachate Collection Sump
- Weather Station
- Groundwater Well
- Surface Water Sample Point
- Dust Monitor
- Gas and GW Well
- Gas Vent
- Surface Water Gauge Boards
- Pond Gauging and Sampling Point



GAS MONITORING IN BIO CELL

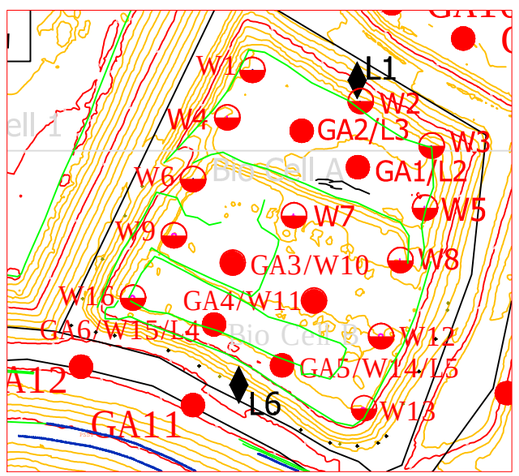
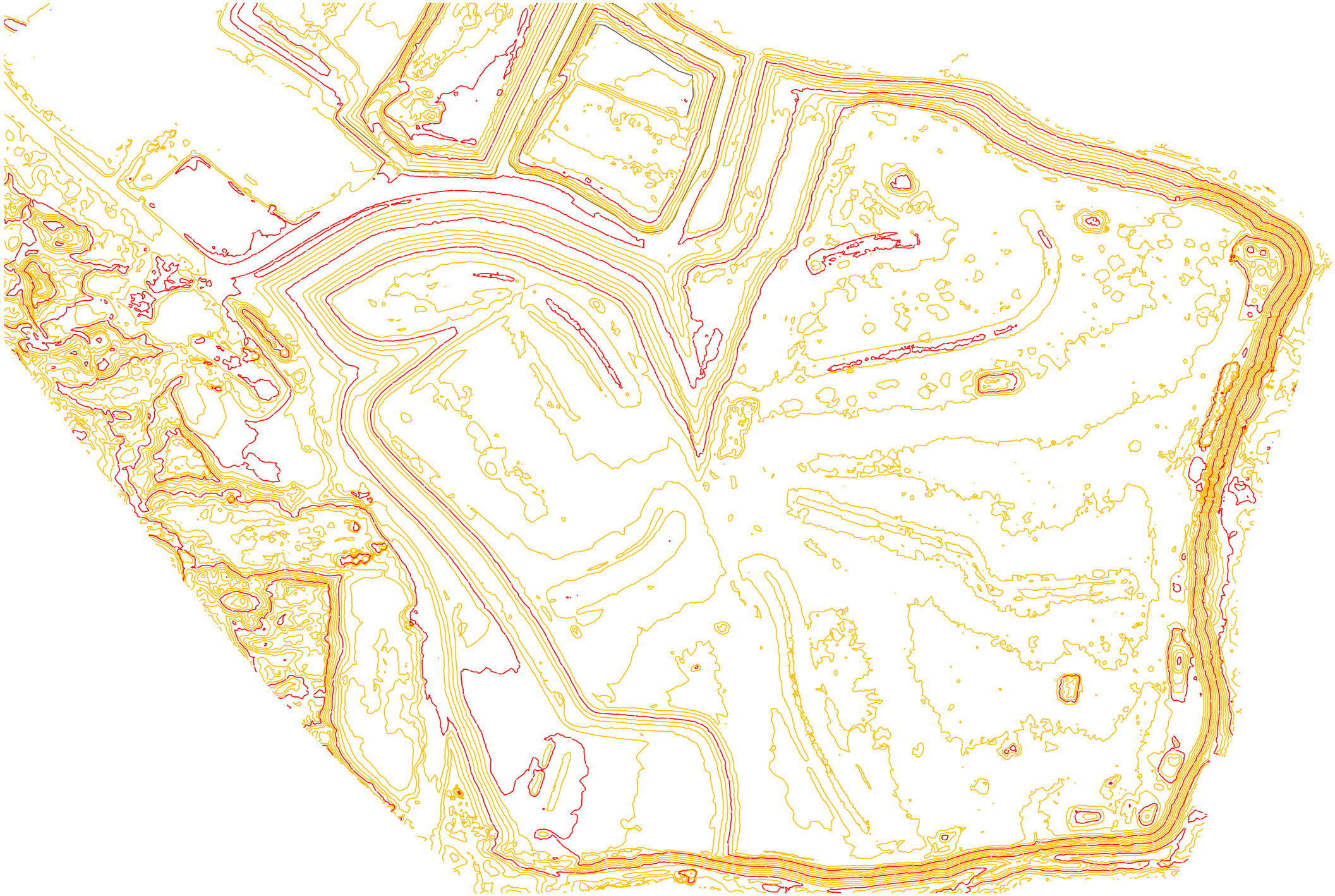


Figure 3 Current Topographic Plan of Landfill



Revision 0

1394r1v1d0315 Figure 3

Scale 1:2000

Figure 4 Settlement Markers on Morfa Closed Landfill

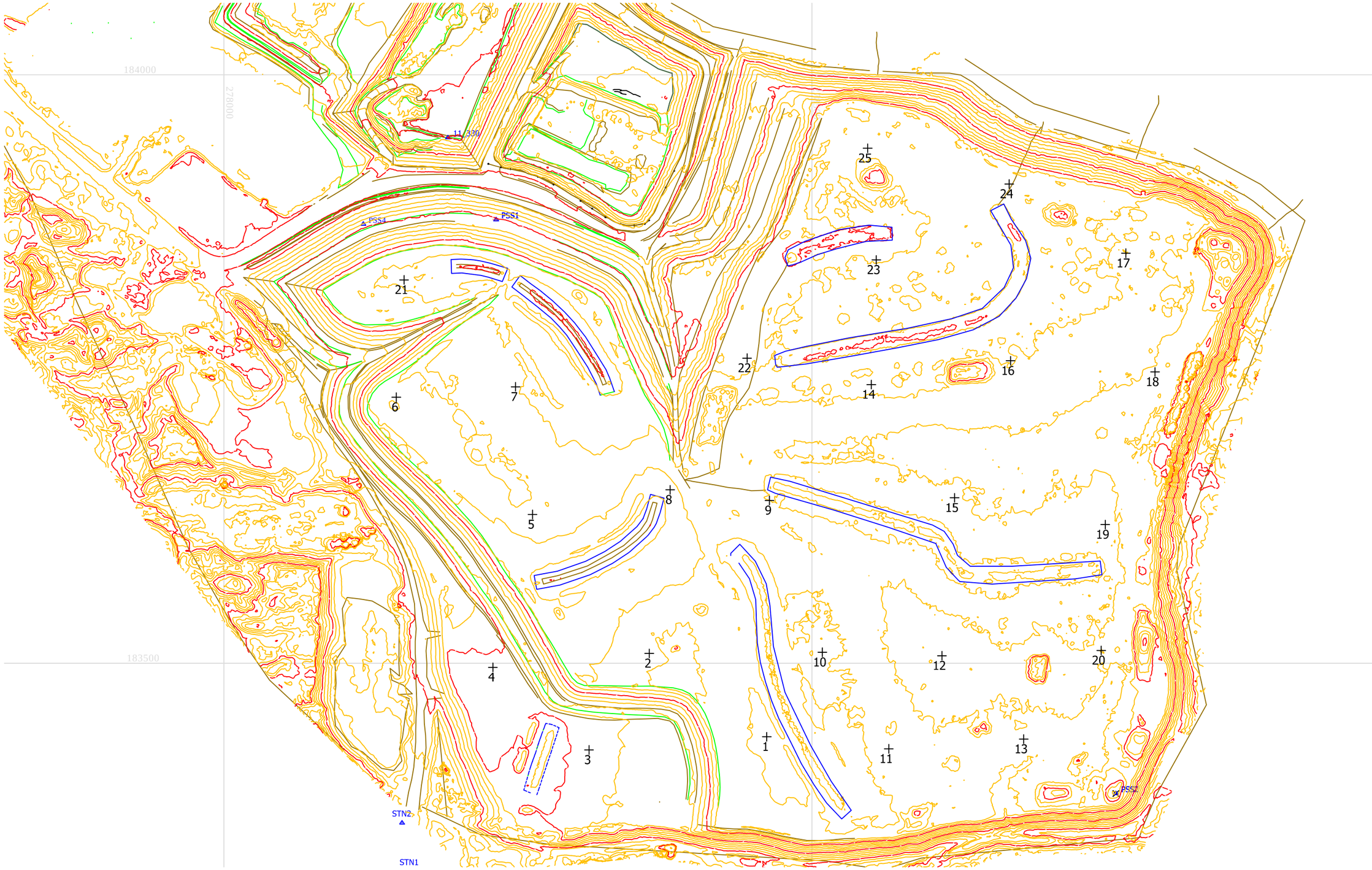
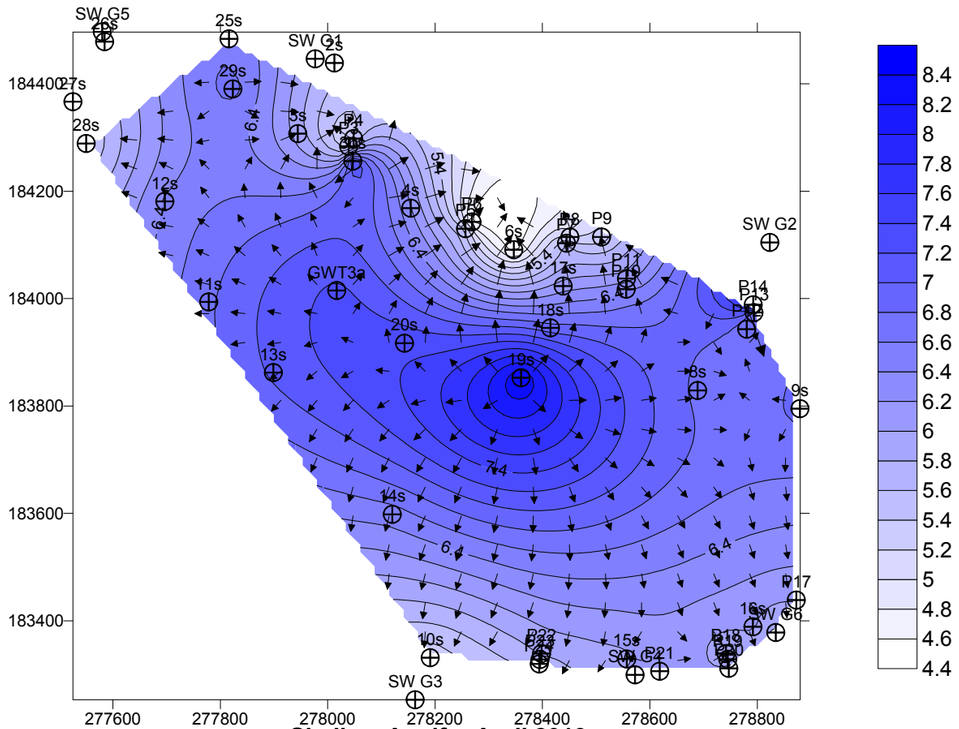
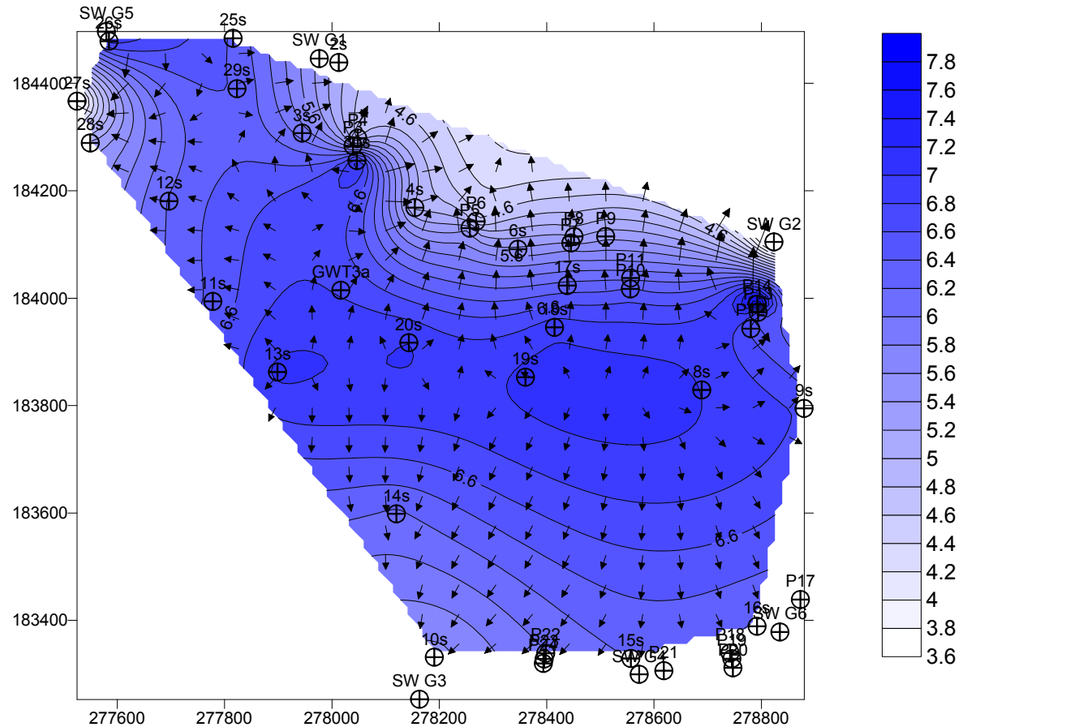


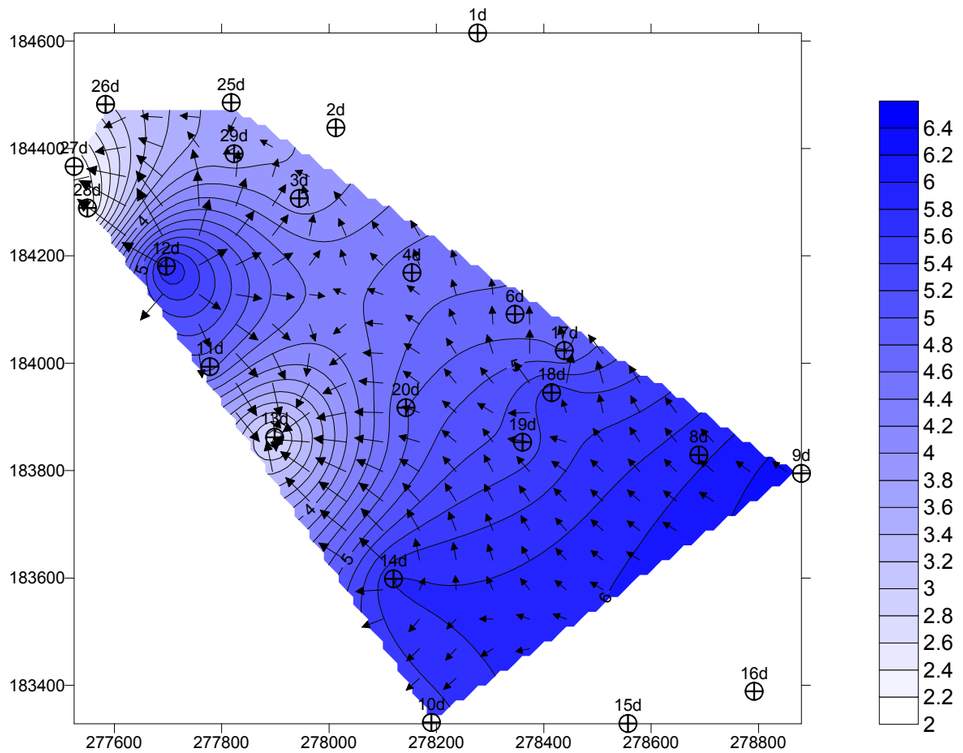
Figure 5 Selected Groundwater Levels in Shallow and Deep Aquifer During 2013



Shallow Aquifer April 2013

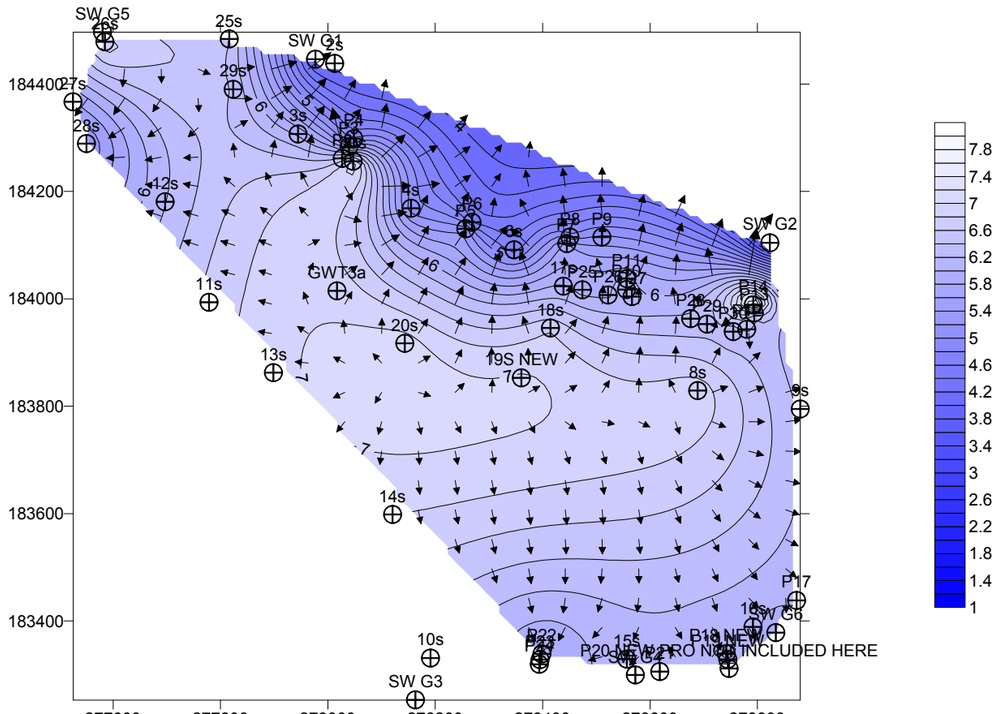


Shallow Aquifer November 2013

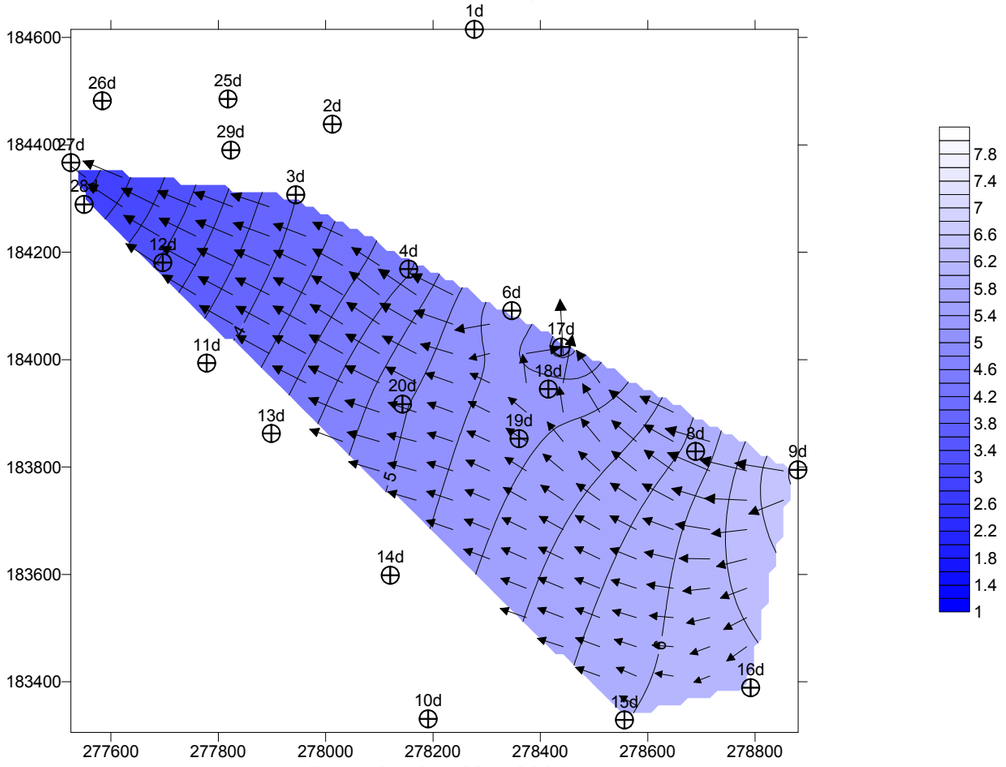


Deep Aquifer November 2013

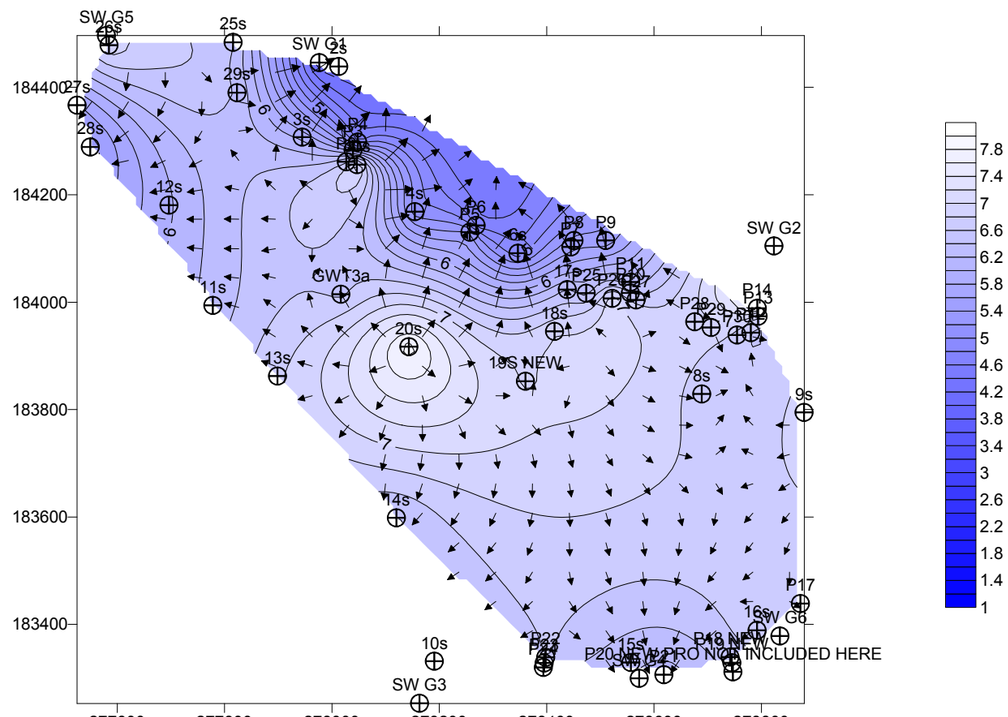
Figure 6 Groundwater Levels in Shallow and Deep Aquifer During 2014



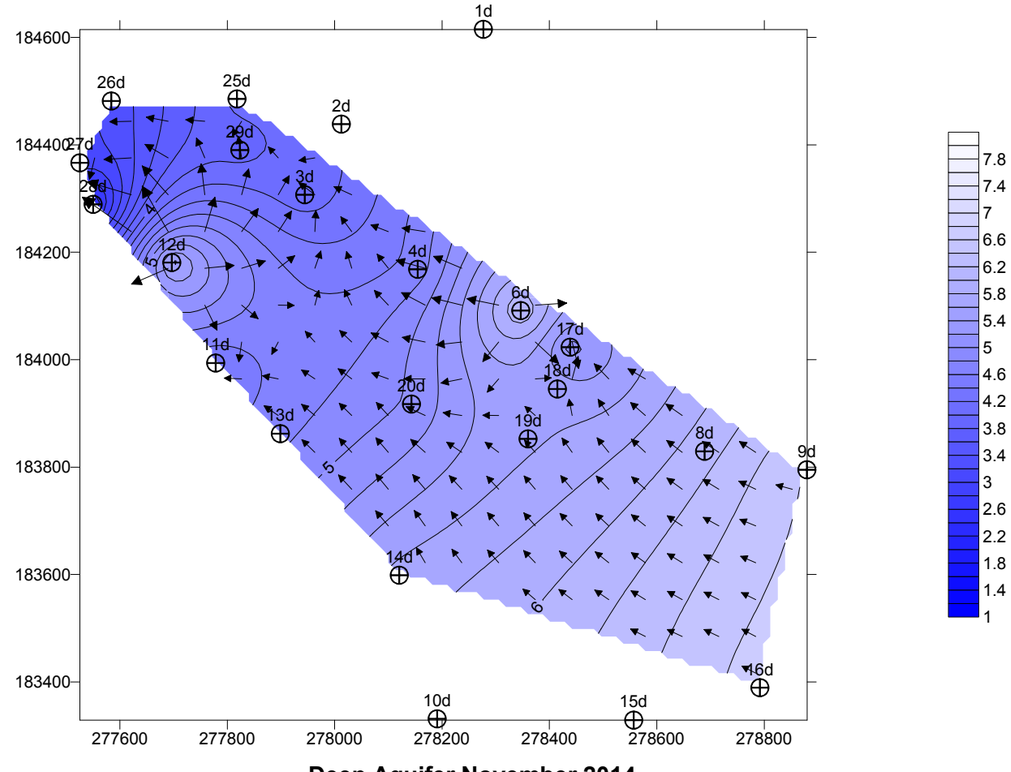
Shallow Aquifer May 2014



Deep Aquifer May 2014



Shallow Aquifer November 2014



Deep Aquifer November 2014

MORFA CLOSED LANDFILL, PORT TALBOT

PERMIT EPR/AP3292LT

2014 Annual Review of Environmental Monitoring Results

Appendix 1
CAR 5623 Morfa Closed Landfill Final Inspection

Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	Report ID: 5623

This form will report compliance with your permit as determined by an NRW officer

Site	Tata Landfill			Permit Ref	EAWML 34000		
Operator/ Permit holder	Tata Steel						
Date	15/04/14			Time in	10:00	Out	12:30
What parts of the permit were assessed	See agenda. Closure.						
Assessment	Choose an item.	EPR Activity:	Installation	Waste Op	X	Water Discharge	
Recipient's name/position	Stephen Thomas,						
Officer's name	Ffion Thomas			Date issued	10/7/14		

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit Conditions and Compliance Summary				Condition(s) breached
a) Permitted activities	**1**. Specified by permit	N		
b) Infrastructure	**1.** Engineering for prevention & control of pollution	N		
	2. Closure & decommissioning	A		
	3. Site drainage engineering (clean & foul)	N		
	4. Containment of stored materials	N		
	5. Plant and equipment	N		
c) General management	**1**. Staff competency/ training	N		
	2. Management system & operating procedures	N		
	3. Materials acceptance	N		
	4. Storage handling, labelling, segregation	N		
d) Incident management	**1**. Site security	N		
	2. Accident, emergency & incident planning	N		
e) Emissions	**1.** Air	N		
	2. Land & Groundwater	N		
	3. Surface water	N		
	4. Sewer	N		
	5. Waste	N		
f) Amenity	**1**. Odour	N		
	2. Noise	N		
	3. Dust/fibres/particulates	N		
	4. Pests, birds & scavengers	N		
	5. Deposits on road	N		
g) Monitoring and records, maintenance and reporting	**1**. Monitoring of emissions & environment	N		
	2. Records of activity, site diary, journal & events	N		
	3. Maintenance records	N		
	4. Reporting & notification	N		
h) Resource efficiency	**1**. Efficient use of raw materials	N		
	2. Energy	N		

KEY: **C1, C2, C3, C4** = CCS breach category **(* suspended scores are marked with an asterisk),**
A = Assessed or assessed in part (no evidence of non-compliance), **N** = Not assessed, **NA** = Not Applicable

Number of breaches recorded	0	**Total compliance score** (see section 5 for scoring scheme)	0

If the Total No Breaches is greater than zero, then please see Section 3 for details of our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with directly applicable legislation
- details of any multiple non-compliances
- information on the compliance score accrued inc. details of suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

Scope of the inspection:

An introductory visit was undertaken as I (Ffion Thomas) have taken over the regulatory work for the site. The visit provided an opportunity to meet with Stephen Thomas of Tata who has also recently taken over monitoring and operational management roles of the Tata landfills at Port Talbot.

The visit to the Tata closed landfill EAWML 34000 was undertaken with the purpose of meeting the objectives of a final inspection and to complete the final steps of moving the site into Definitive Closure.

This report will act as the final inspection and act to confirm that the site is in a suitable condition to enter the aftercare phase. The inspection has been undertaken with reference to the Operational Instruction Closing landfill sites 300_05.

Audit Findings:

This Compliance Assessment Report (CAR) was completed as part of the closure process, under Article 13b of the Landfill Directive, to confirm that the measures set out in the Closure Report and Aftercare Plan are in place at the landfill.

The Closure report and Aftercare plan was previously assessed and accepted and is now included in schedule 1 table 1.2 Operating Techniques of the EPR permit EPR/AP3292LT/V009 (*Geotechnology report 498.1/0/1106. Closure Report. 7 December 2006, Geotechnology letter response (ref: 498 letter response/BR/kp). 6 June 2007, Geotechnology letter response (ref: 498lt1/ET/kp). 16 February 2007, Geotechnology report Aftercare Monitoring Plan Report Number 498.1/1/0907 Appendix 2 (Revision 1), Geotechnology report Identification of new monitoring locations Report Number 651.1/0/0408 April 08))*

For the purposes of site closure confirmation is given that:

- Waste for disposal has ceased at the landfill site.

- The area of the site entering closure is detailed in section 2.5 and figure 2 in the Closure report. *Geotechnology report 498.1/0/1106*

- A network of settlement monitoring markers will be monitored annually. The location of the markers is included in the 2013 annual report and satisfies condition 4.2.2 of the permit. At the time of site inspection no dips and hollows were noted and no standing water was seen, other than where recharge ponds have been engineered in accordance with the permit to allow recharge of groundwater.

- The site is restored. There was no evidence of instability of the slopes at the time of this inspection. The works to re-profile the Southern flanks has been completed. At the time of inspection there was no evidence of bulging at the base or cracking at the crest of slopes.

- Bore holes and monitoring wells are located as per the monitoring plan drawing. Wells and boreholes inspected at the time of the visit were in a good state of repair. It is acknowledged that continued monitoring will be undertaken and where required repairs

will be undertaken as part of the aftercare management.

- Infrastructure for landfill gas control and monitoring is installed and operational. There is no active extraction of gas. There is no significant source of gas due to the lack of biodegradable waste.
- Infrastructure for monitoring of leachate is installed and operational. No formal leachate management system exists as there is no lining system in place.
- Infrastructure for the collection and discharge of surface water is installed and operational.
- Infrastructure to monitor groundwater is installed and operational.

Having completed the final on site inspection I confirm that the measures set out in the permit, closure and aftercare plan and closure report are in place. It is now confirmed that Morfa Closed landfill site is definitively closed and can move into aftercare.

This inspection does not remove the need for continued compliance with your permit and the conditions within.

Our Finance department have been informed of the above move to definitive closure (internal WASb form sent 8/7/14) and your subsistence fees will be reduced accordingly.

Note: Whilst this site is unlikely to be in a position to surrender for several years we need to highlight that the monitoring programme we have agreed is only appropriate for the aftercare phase. This aftercare monitoring programme may not be sufficient to demonstrate that the waste mass is stable for the purposes of permit surrender. Additional monitoring may be necessary to demonstrate surrender. When thinking of applying for permit surrender you should contact your regulatory officer well in advance to discuss likely monitoring required to support your surrender application.

Cyfoeth Naturiol Cymru Natural Resources Wales	**EPR Compliance Assessment Report**	Report ID**:** 5623

This form will report non-compliance with your permit as determined by an NRW officer

Site	Morfa closed landfill	Permit	EAWML 34000
Operator/ Permit	Tata Steel	Date	10/7/14

Section 3- Enforcement Response **Only one of the boxes below should be ticked**

You must take immediate action to rectify any non-compliance and prevent repetition.
Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.	NA
In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.	NA
We will now consider what enforcement action is appropriate and notify you, referencing this form.	NA

Section 4- Action(s)

Where a non - compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	**CCS Category**	**Action Required/Advised**	**Due Date**
See Section 1 above			
		NA	

Section 5 - Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- advise on corrective actions verbally or in writing
- require you to take specific actions in writing
- issue a notice
- require you to review your procedures or management system
- change some of the conditions of your permit
- decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you.

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- ensure you comply with other legislative provisions which may apply.

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance which could have a **major** environmental effect	60
C2	A non-compliance which could have a **significant** environmental effect	31
C3	A non-compliance which could have a **minor** environmental effect	4
C4	A non-compliance which has **no** potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General Information

Data protection notice

The information on this form will be processed by Natural Resources Wales (NRW) to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). NRW may also use and/or disclose it in connection with:

- offering/providing you with its literature/services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within twenty working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with the officer's line managers. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00–18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on (0845) 601 0987.

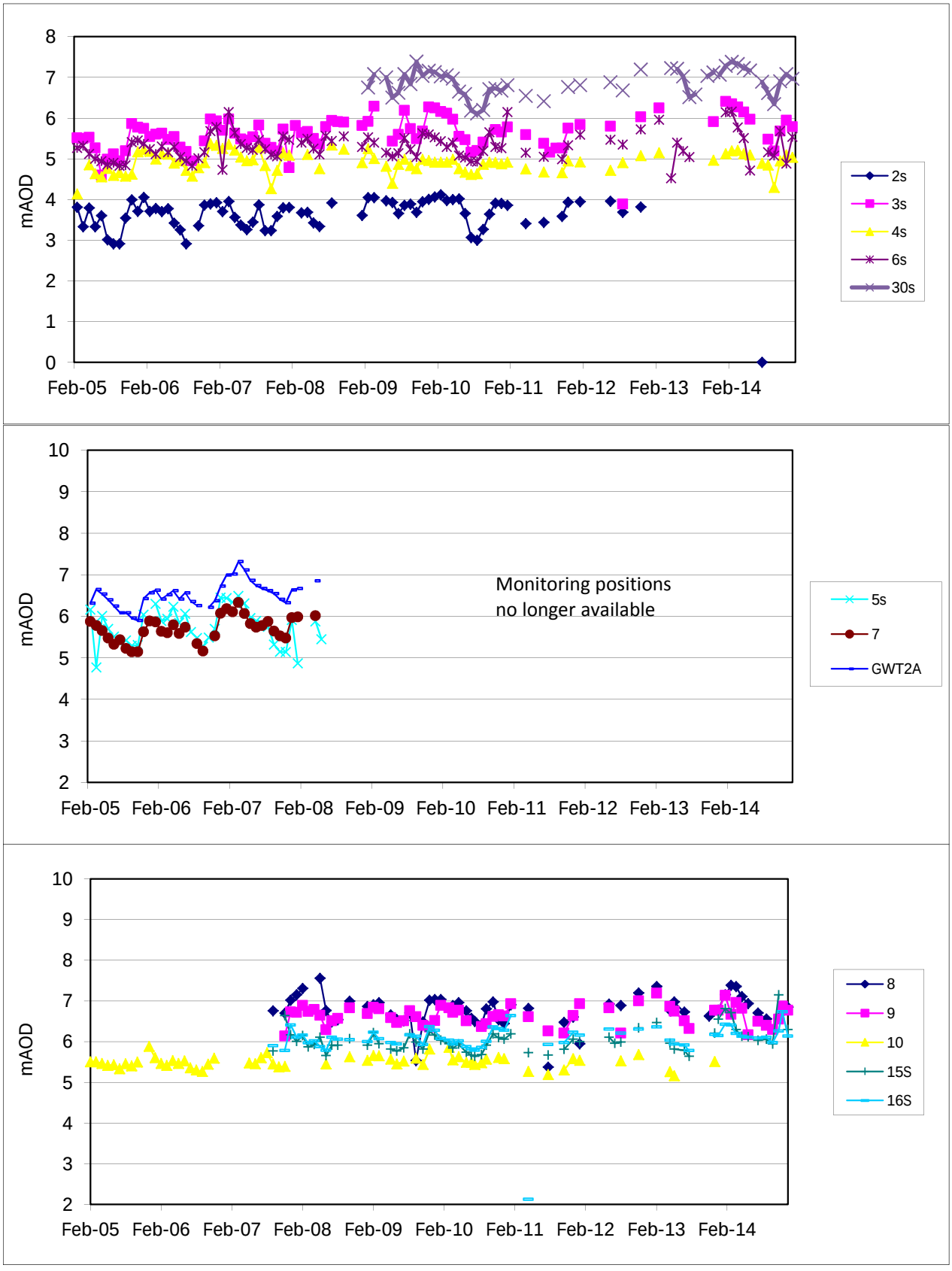
MORFA CLOSED LANDFILL, PORT TALBOT

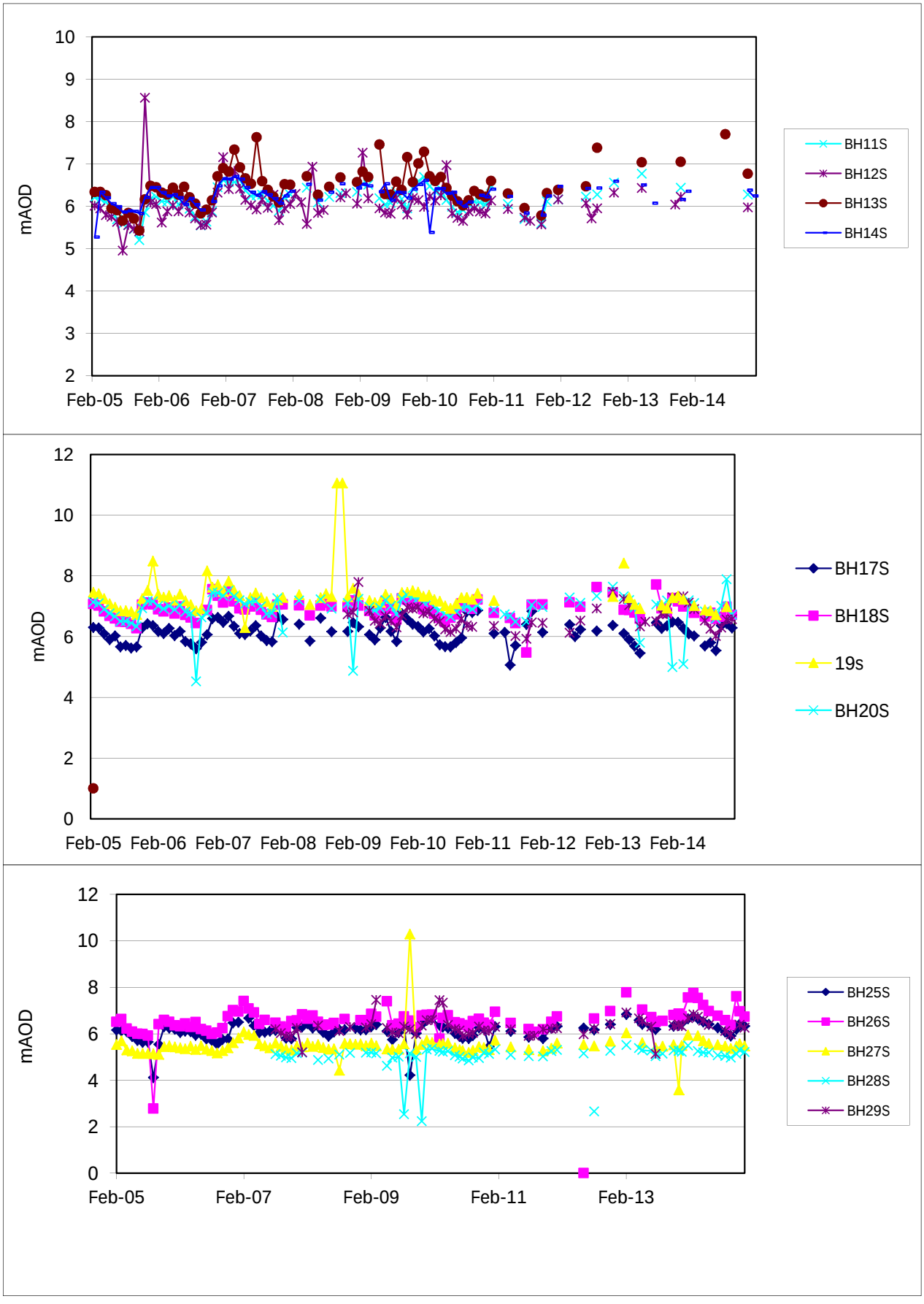
PERMIT EPR/AP3292LT

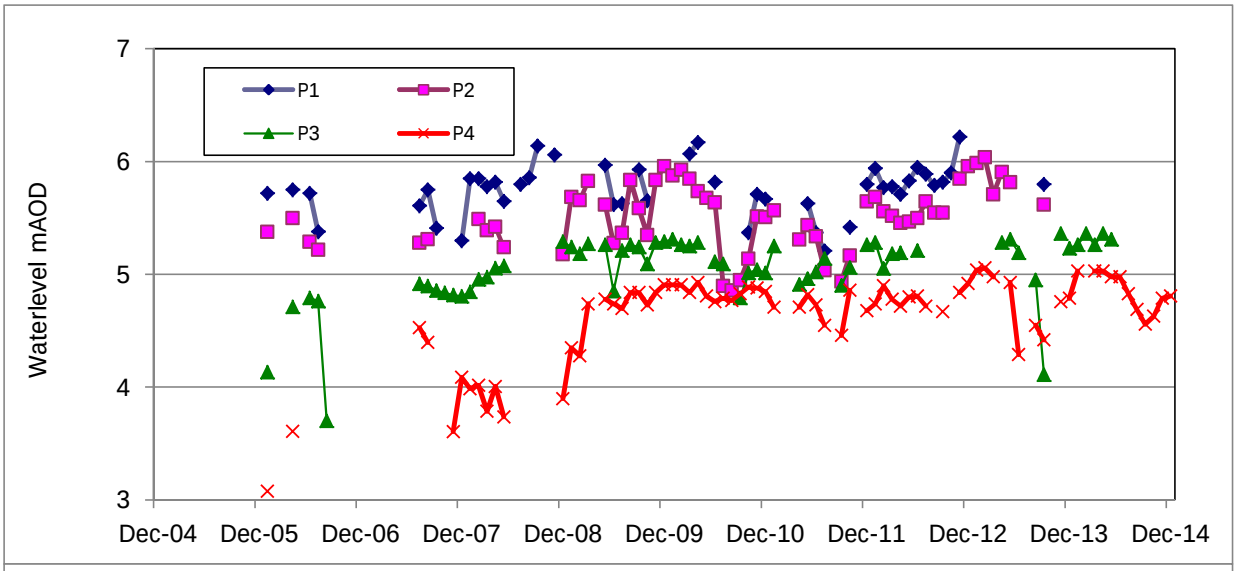
2014 Annual Review of Environmental Monitoring Results

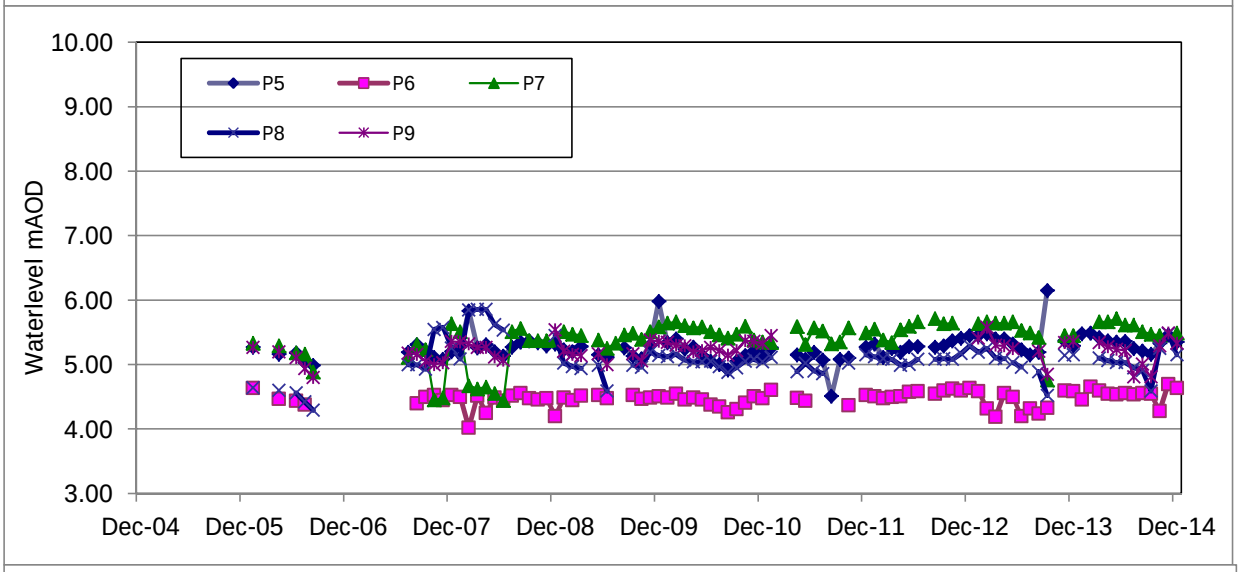
Appendix 2
Temporal variation of waterlevels in shallow and deep aquifer, River Kenfig and Mother Ditch

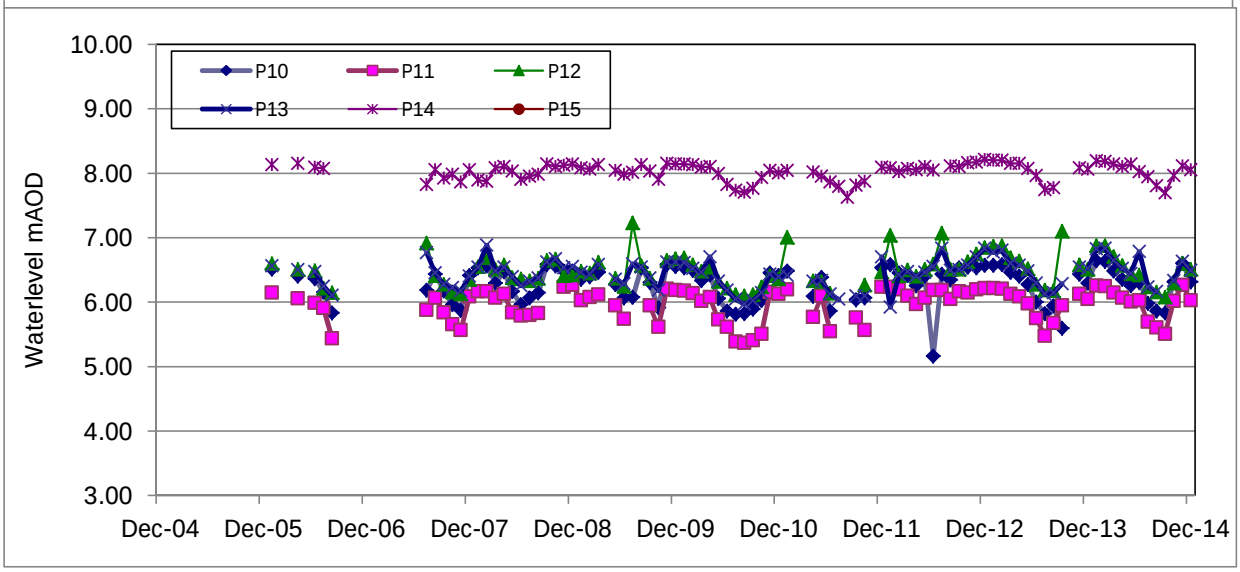
Report Number 1394r1v1d0315

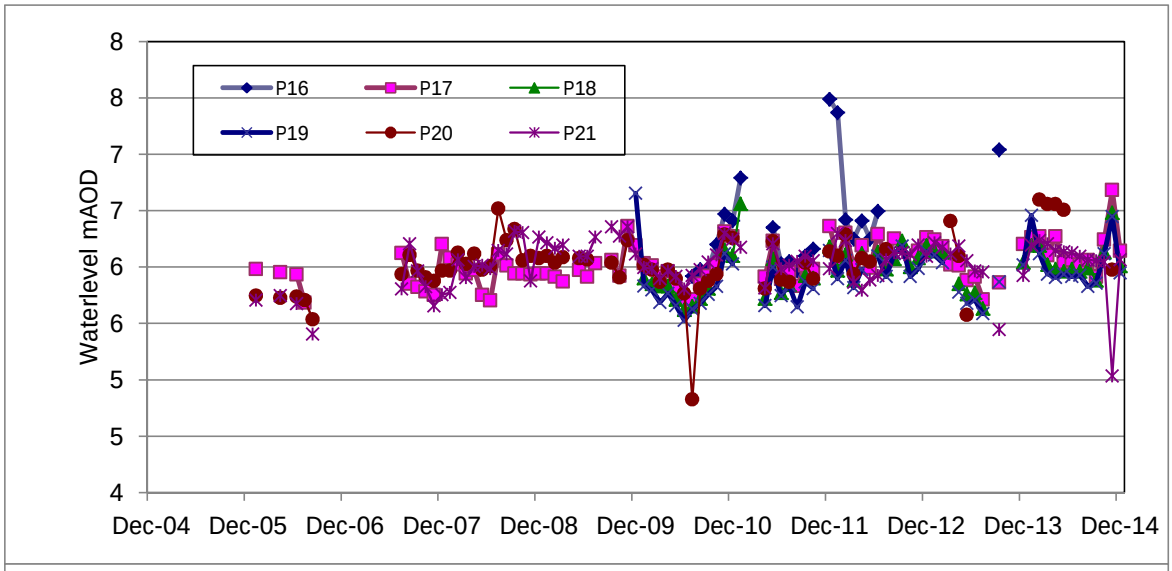

mAOD
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14
2s
3s
4s
6s
30s
Monitoring positions
no longer available
5s
7
GWT2A
8
9
10
15S
16S

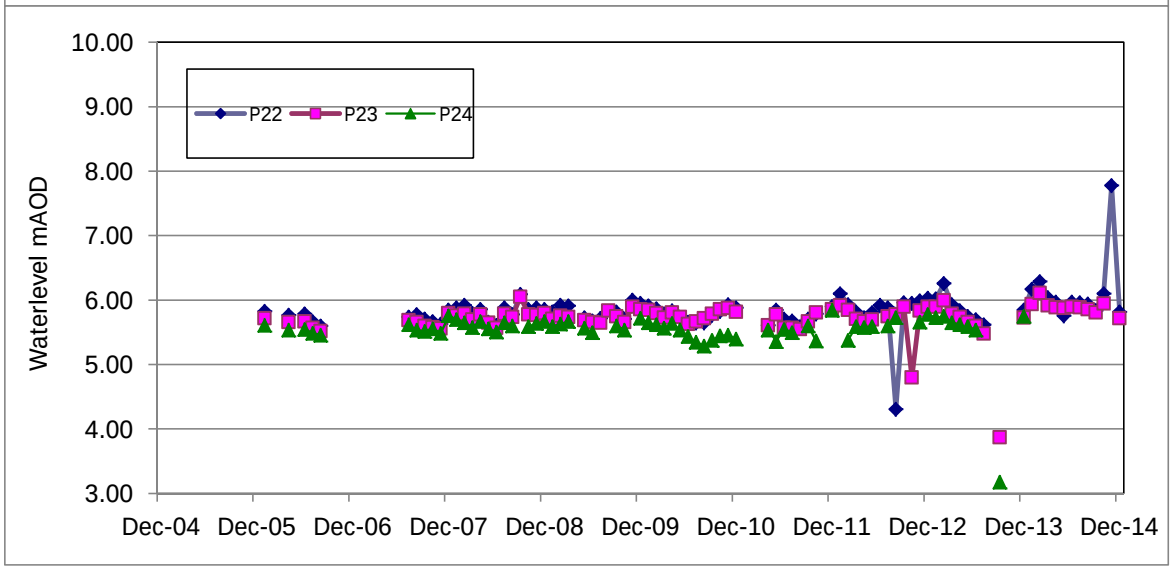

mAOD
10
9
8
7
6
5
4
3
2
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14
BH11S
BH12S
BH13S
BH14S
mAOD
12
10
8
6
4
2
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14
BH17S
BH18S
19s
BH20S
mAOD
12
10
8
6
4
2
0
Feb-05 Feb-07 Feb-09 Feb-11 Feb-13
BH25S
BH26S
BH27S
BH28S
BH29S

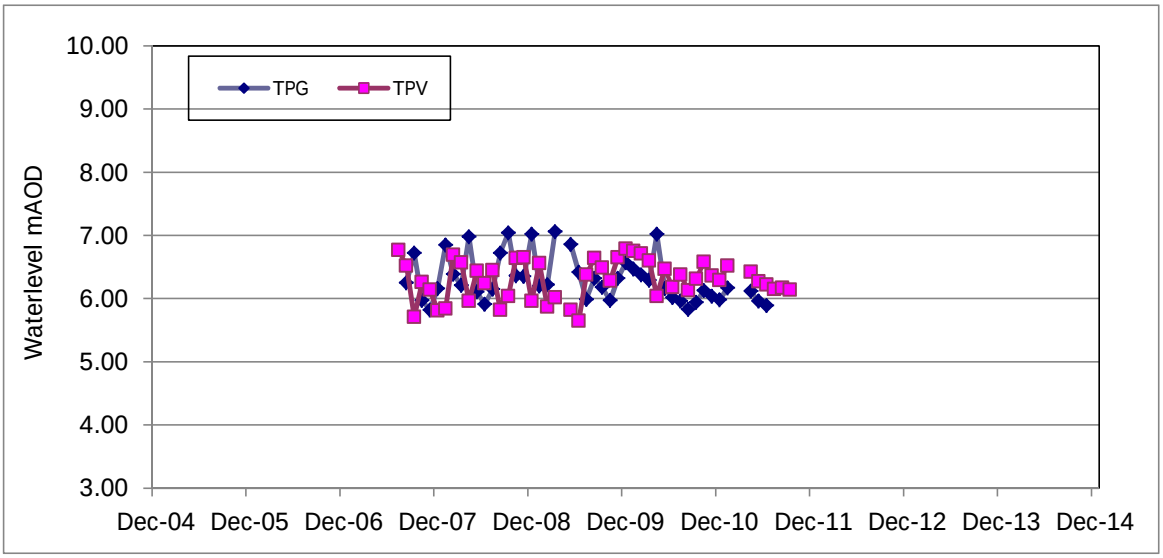

Waterlevel mAOD
7
6
5
4
3
P1
P2
P3
P4
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

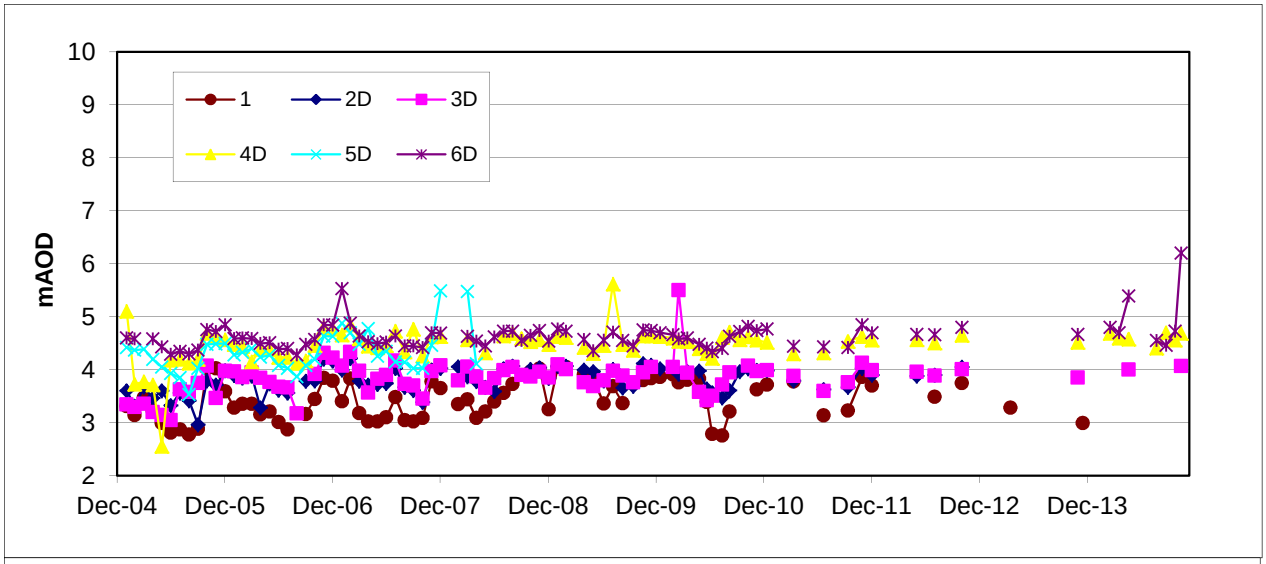

Waterlevel mAOD
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
P5
P6
P7
P8
P9
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

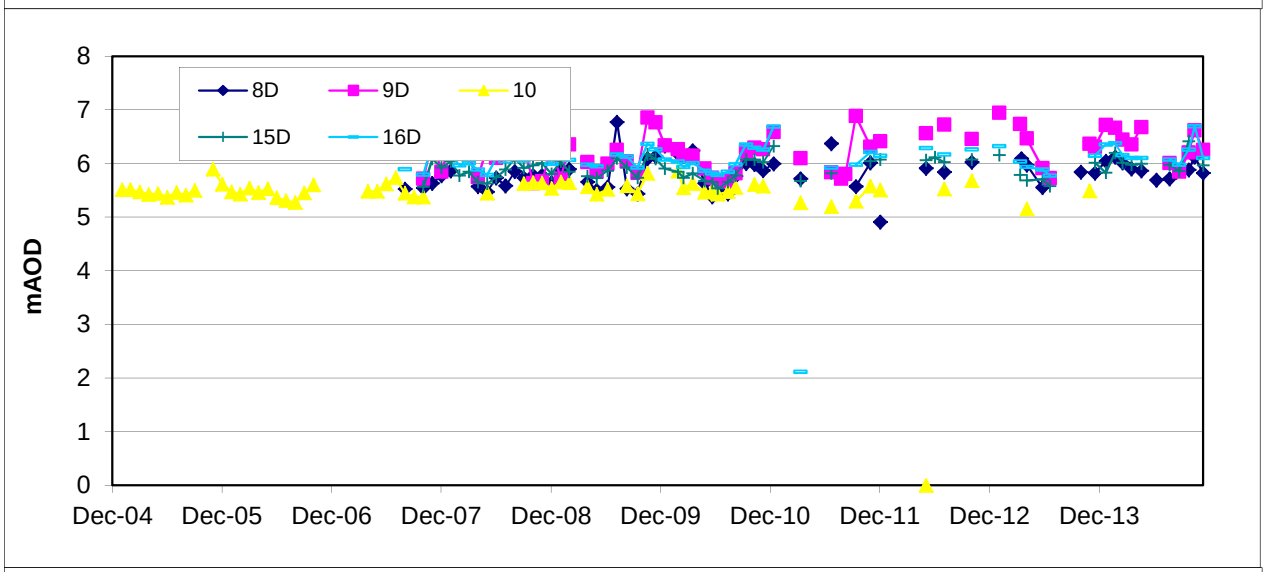

Waterlevel mAOD
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
P10
P11
P12
P13
P14
P15
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

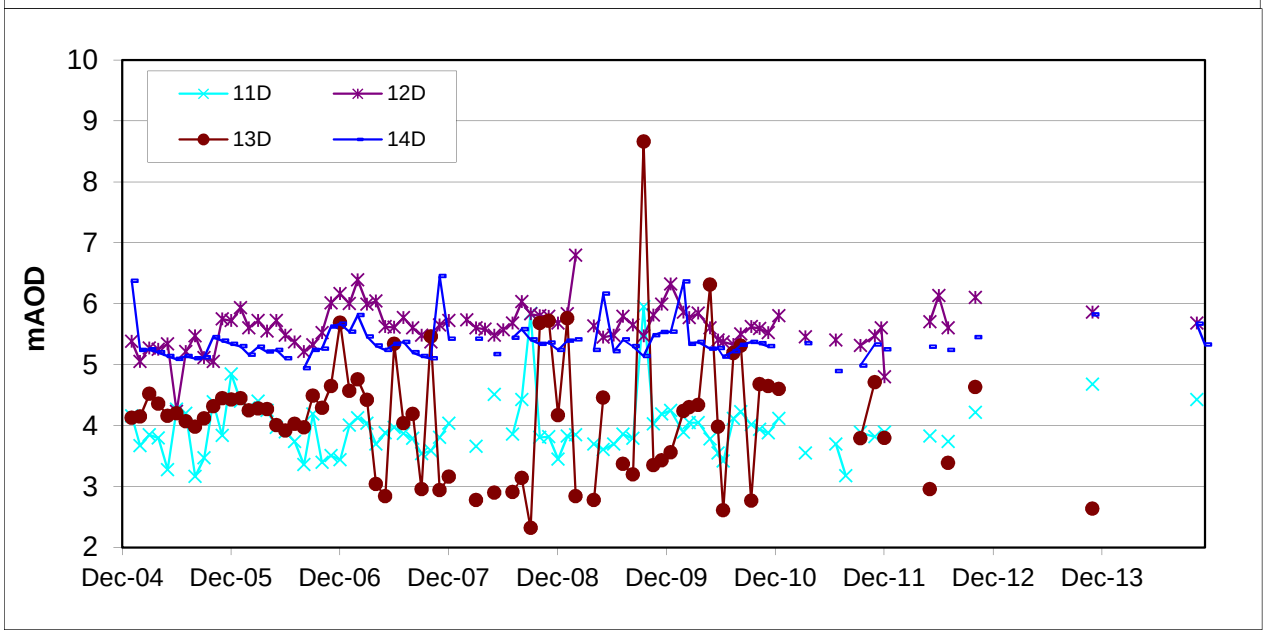

P16
P17
P18
P19
P20
P21
Waterlevel mAOD
8
8
7
7
6
6
5
5
4
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

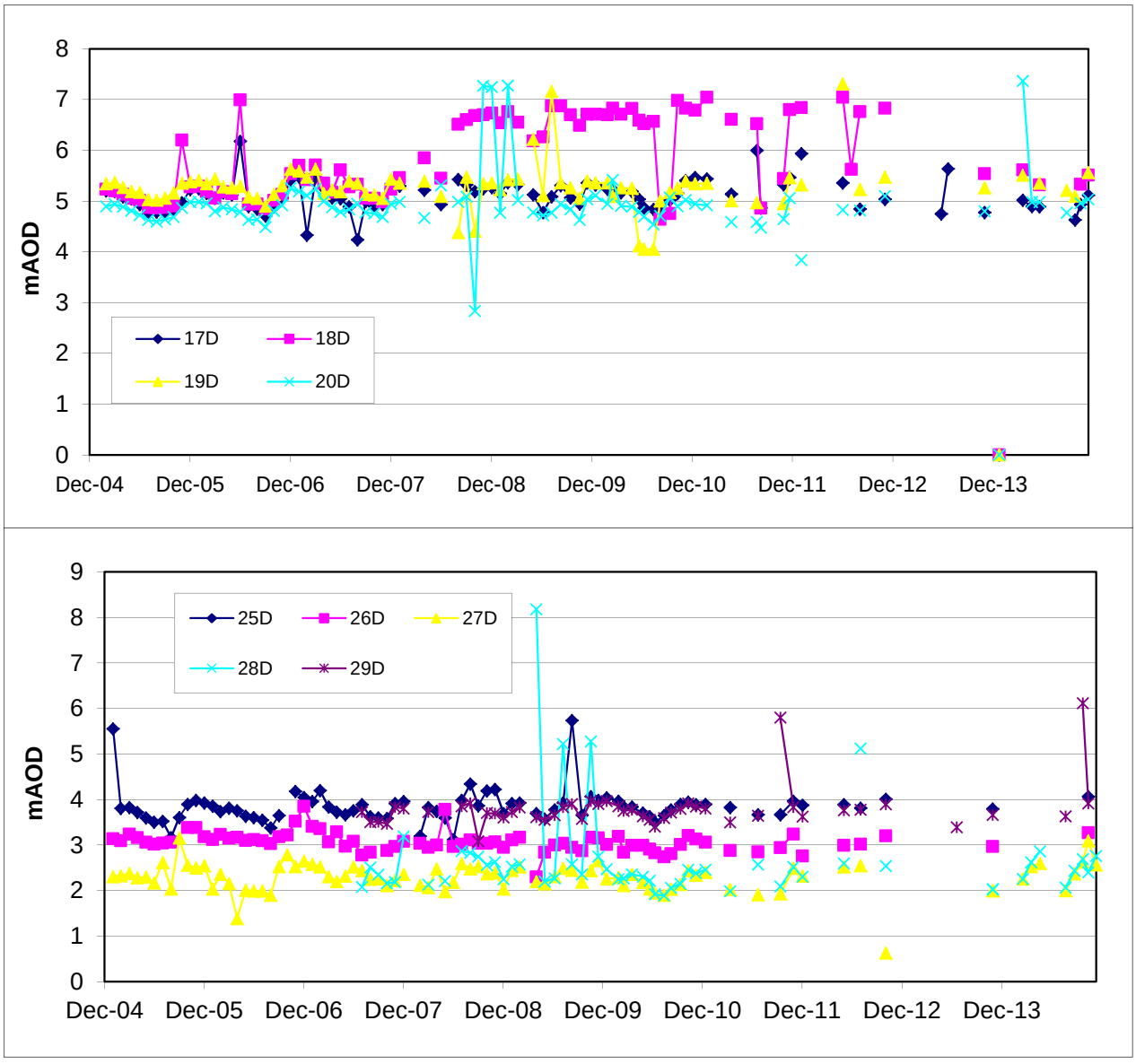

P22
P23
P24
Waterlevel mAOD
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

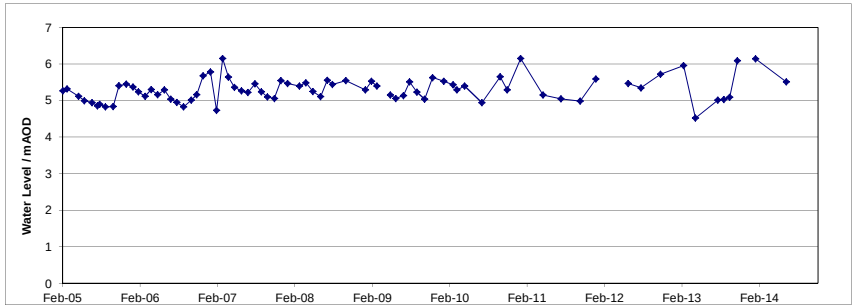

TPG
TPV
Waterlevel mAOD
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14

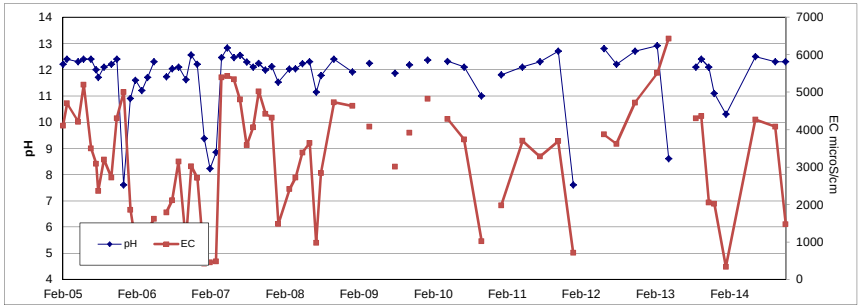

mAOD
10
9
8
7
6
5
4
3
2
1
2D
3D
4D
5D
6D
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

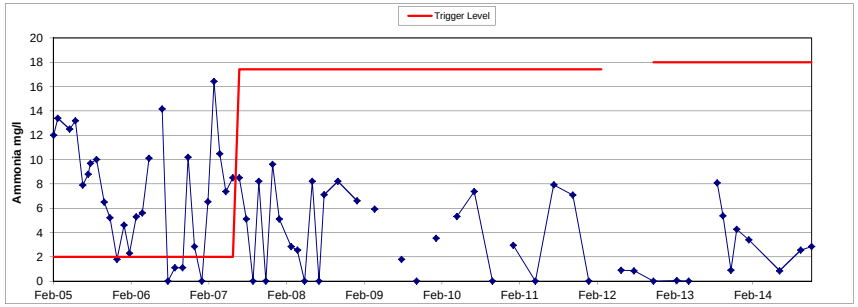

mAOD
8
7
6
5
4
3
2
1
0
8D
9D
10
15D
16D
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

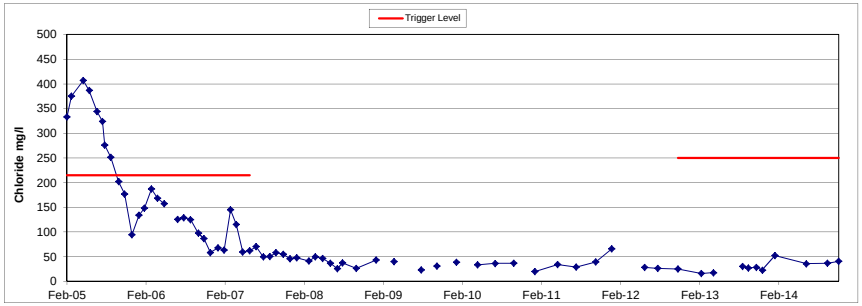

mAOD
10
9
8
7
6
5
4
3
2
11D
12D
13D
14D
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

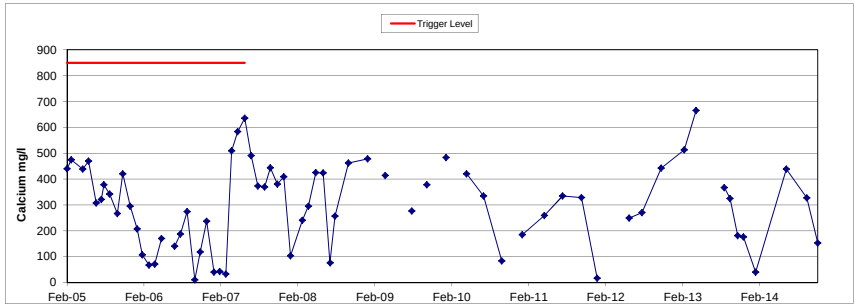

mAOD
0
1
2
3
4
5
6
7
8
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
17D
18D
19D
20D
mAOD
0
1
2
3
4
5
6
7
8
9
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
25D
26D
27D
28D
29D

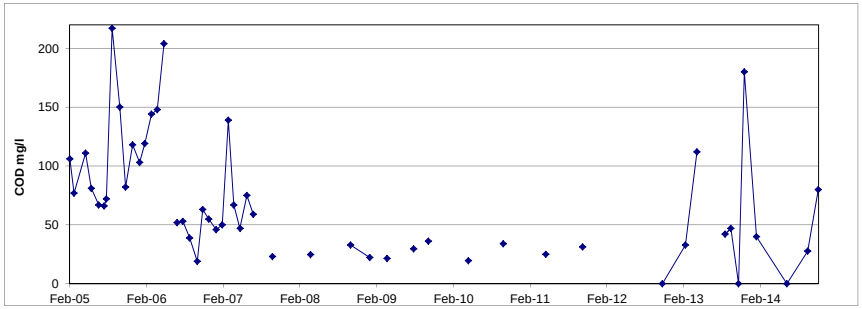

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

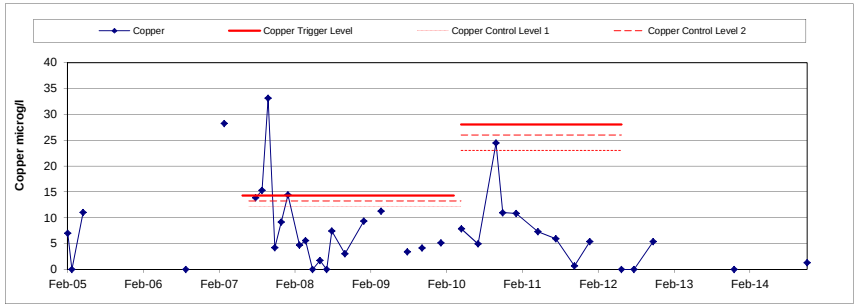

pH
EC microS/cm
pH
EC
4
5
6
7
8
9
10
11
12
13
14
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

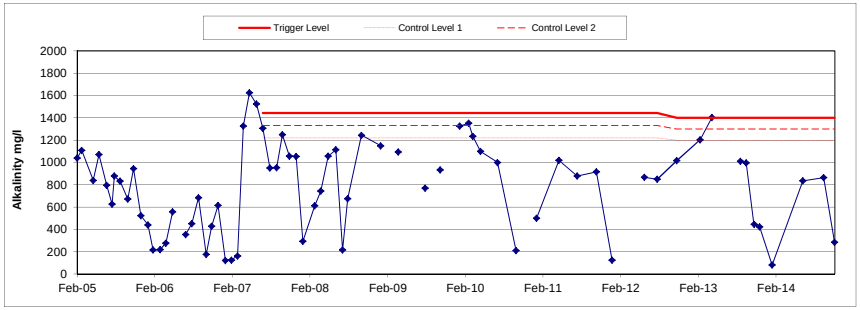

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

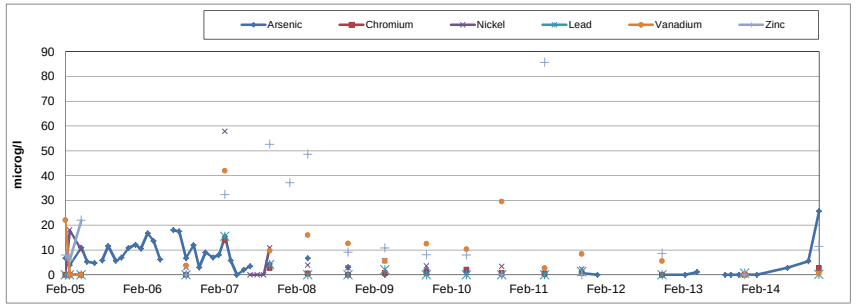

Trigger Level
Chloride mg/l
0
50
100
150
200
250
300
350
400
450
500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

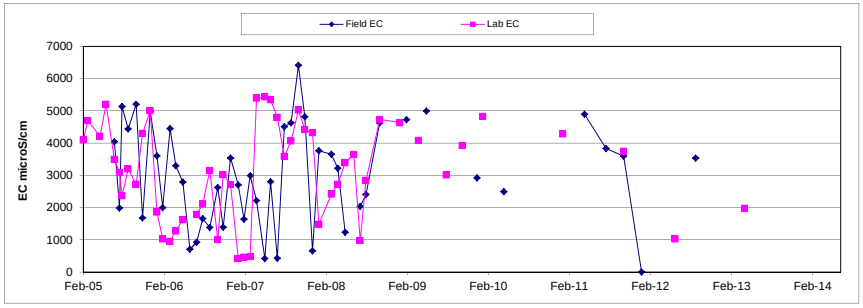

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

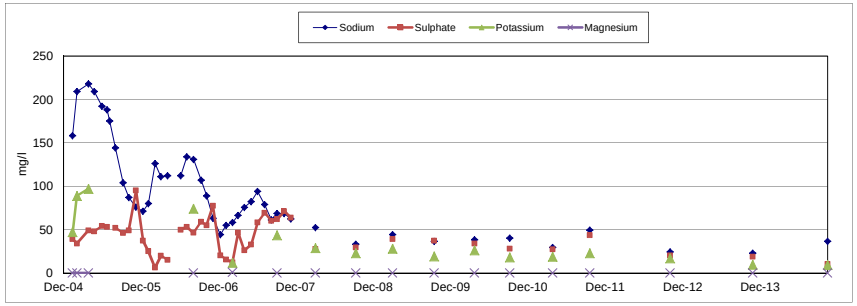

COD mg/l
0
50
100
150
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

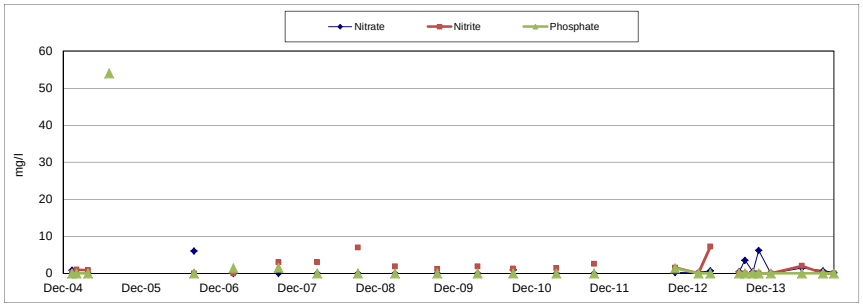

Copper
Copper Trigger Level
Copper Control Level 1
Copper Control Level 2
Copper microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

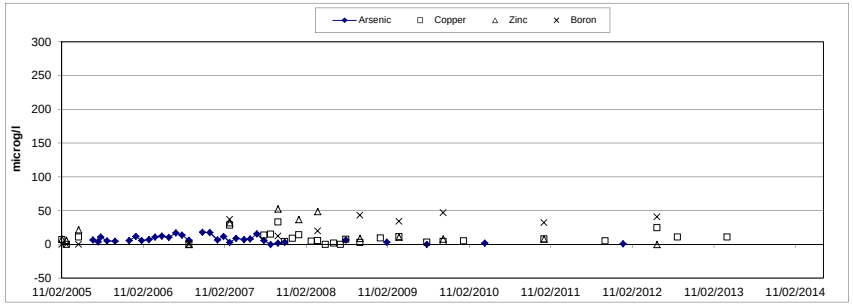

Trigger Level
Control Level 1
Control Level 2
Alkalinity mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

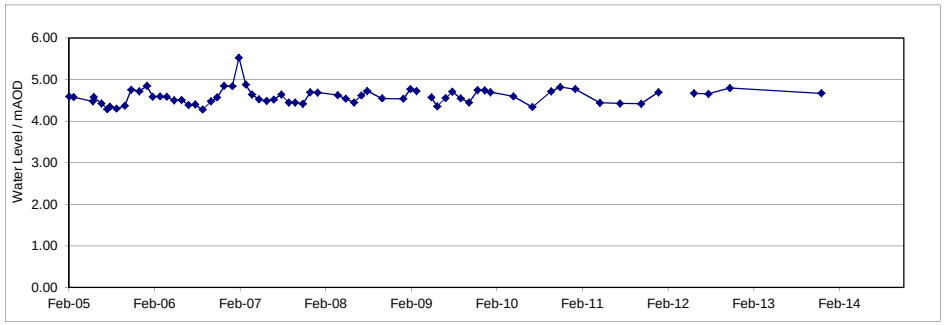

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

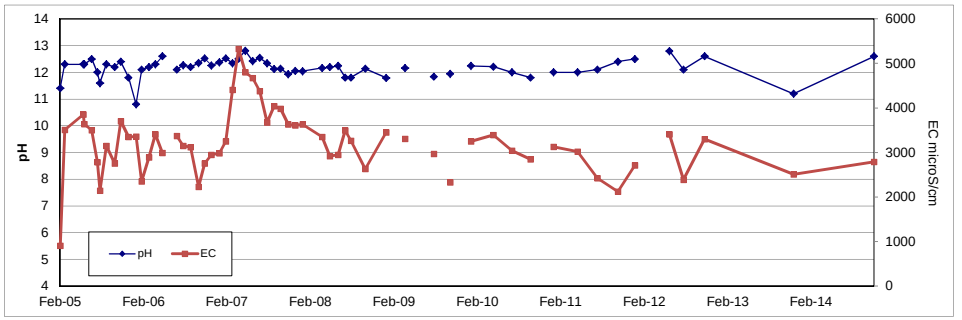

Field EC
Lab EC
EC microS/cm
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

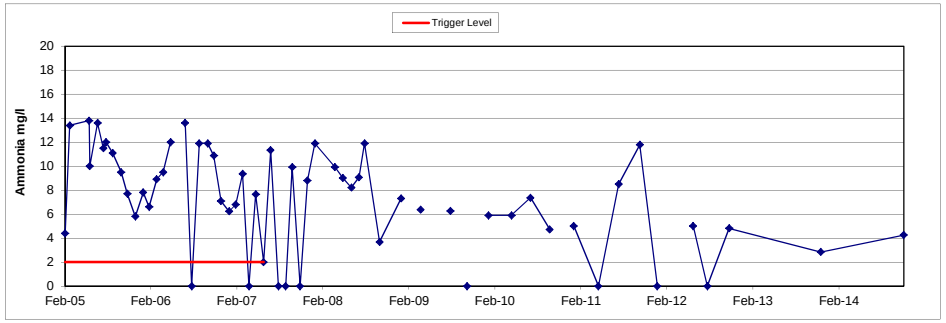

Sodium
Sulphate
Potassium
Magnesium
mg/l
250
200
150
100
50
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

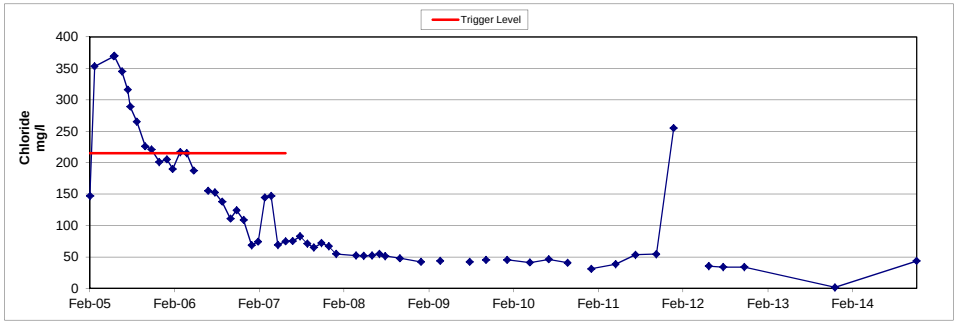

Nitrate
Nitrite
Phosphate
mg/l
60
50
40
30
20
10
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

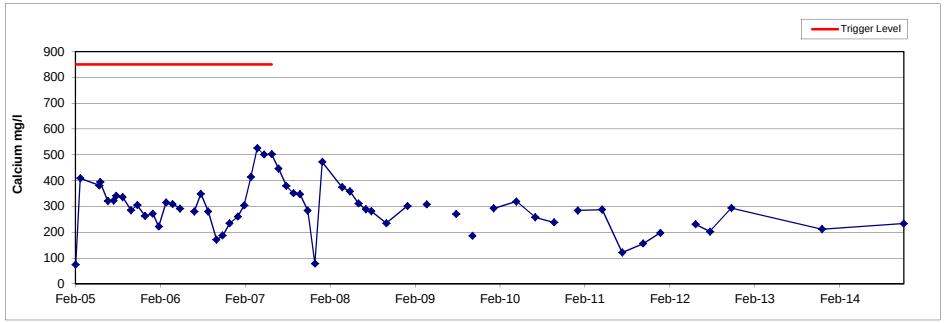

Arsenic
Copper
Zinc
Boron
microg/l
300
250
200
150
100
50
0
-50
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

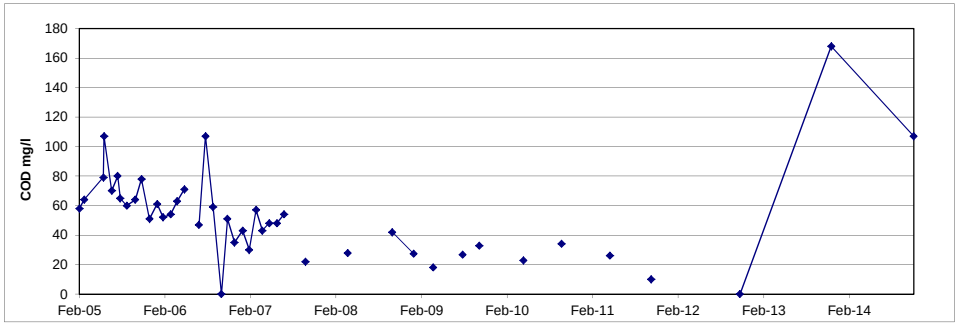

Water Level / mAOD
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

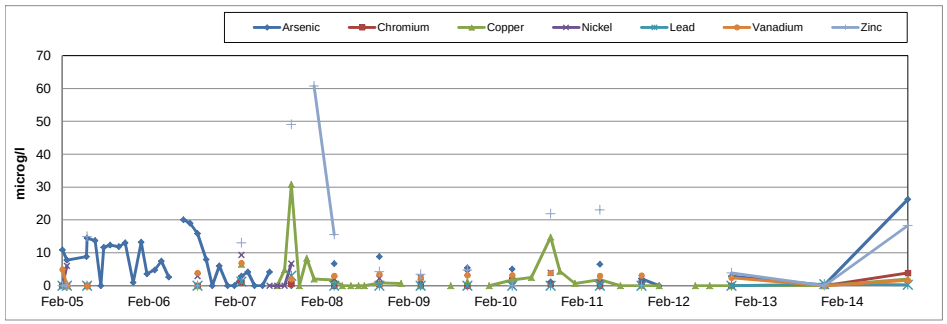

pH
EC microS/cm
pH
EC
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

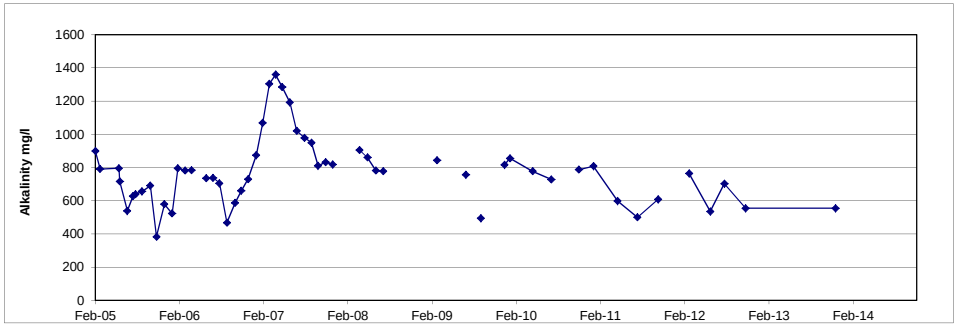

Trigger Level
Ammonia mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

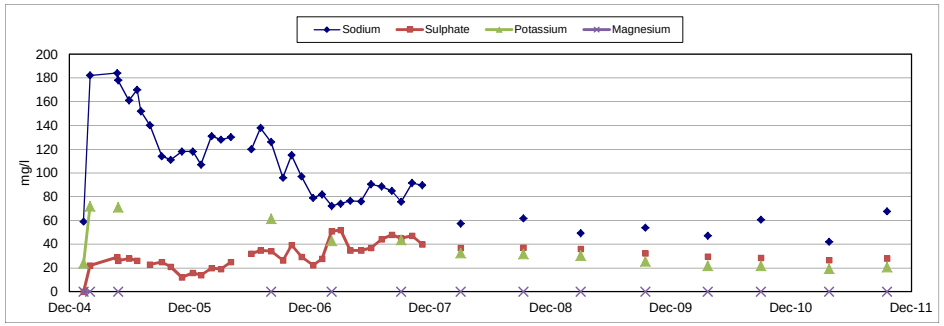

Trigger Level
Chloride mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

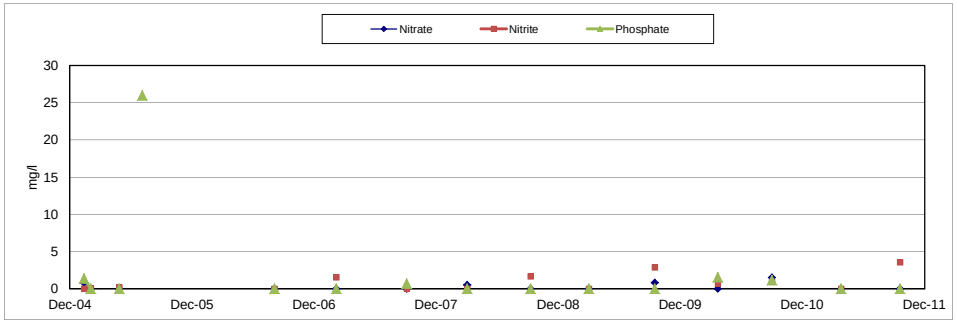

Trigger Level
Calcium mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

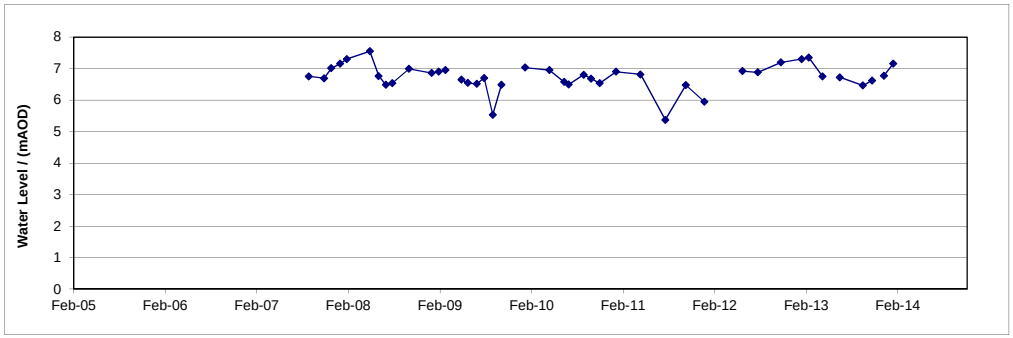

COD mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

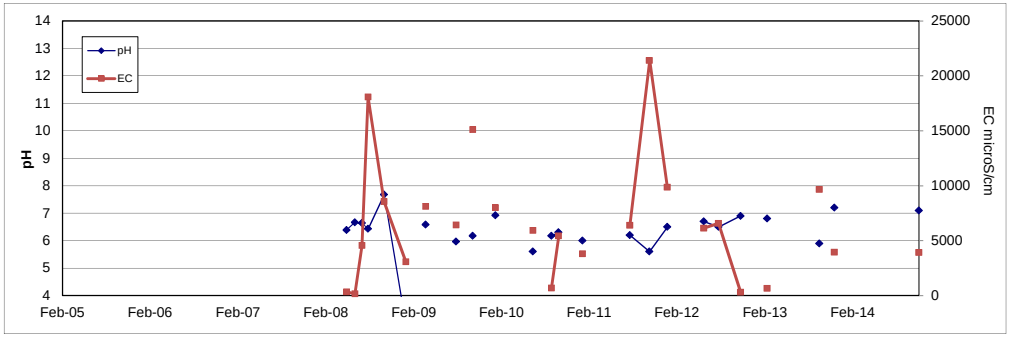

Arsenic
Chromium
Copper
Nickel
Lead
Vanadium
Zinc
microg/l
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

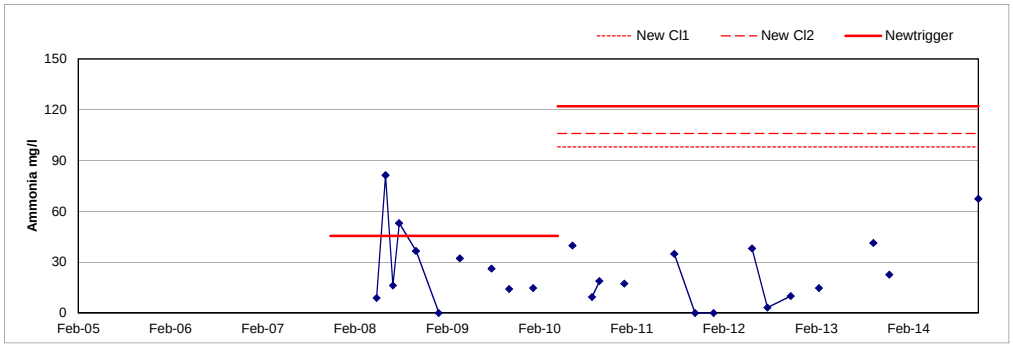

Alkalinity mg/l
1600
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

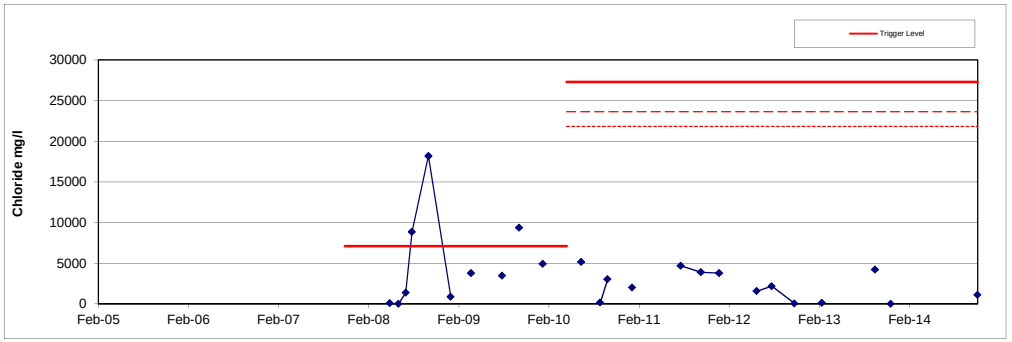

Sodium
Sulphate
Potassium
Magnesium
mg/l
200
180
160
140
120
100
80
60
40
20
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11

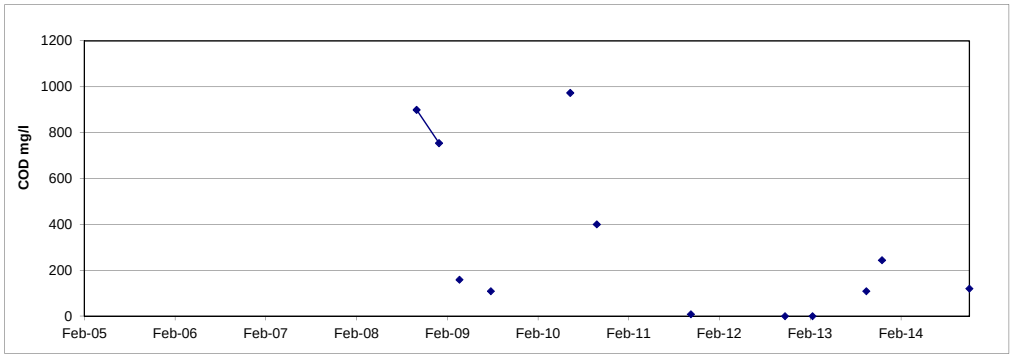

Nitrate
Nitrite
Phosphate
mg/l
30
25
20
15
10
5
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11

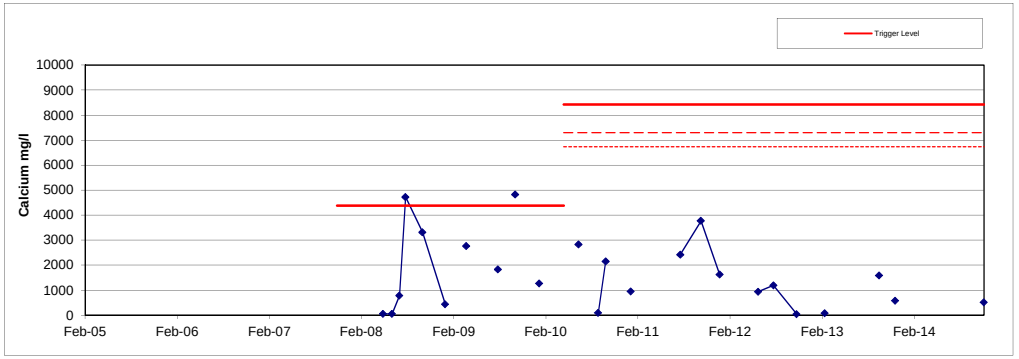

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

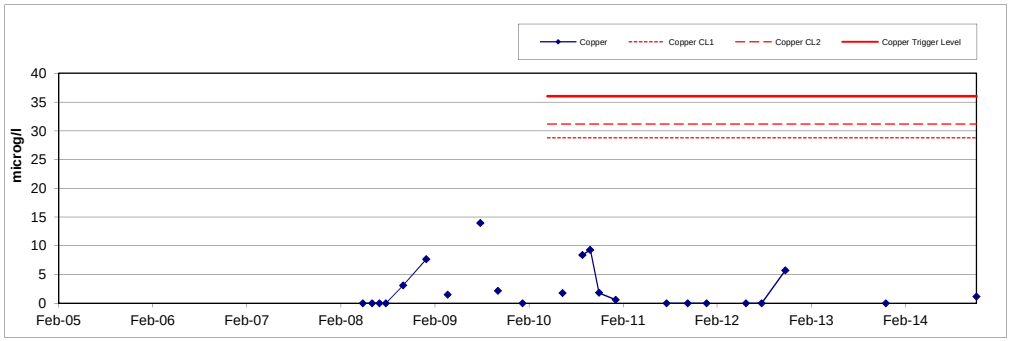

pH
EC
EC microS/cm
4
5
6
7
8
9
10
11
12
13
14
0
5000
10000
15000
20000
25000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

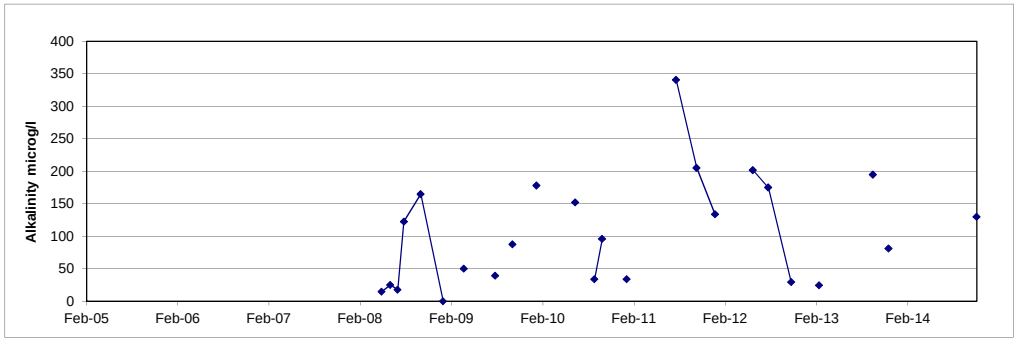

New Cl1
New Cl2
Newtrigger
Ammonia mg/l
0
30
60
90
120
150
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

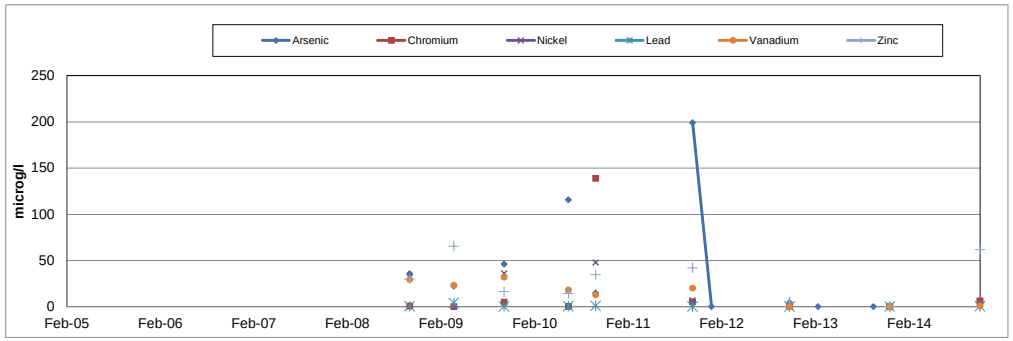

Trigger Level
Chloride mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

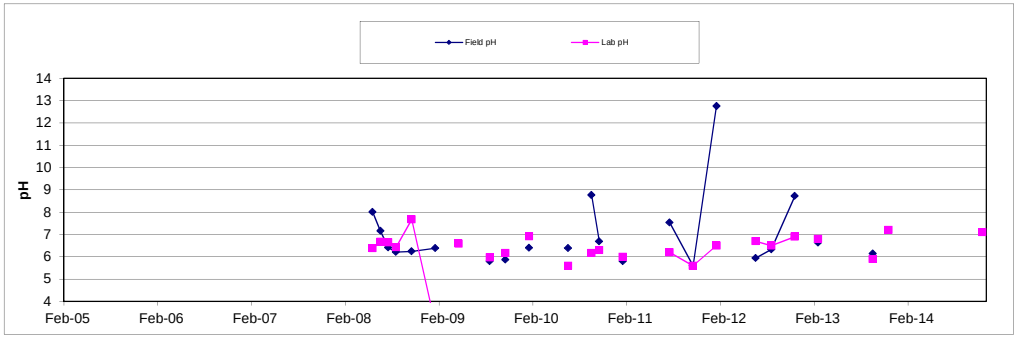

COD mg/l
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

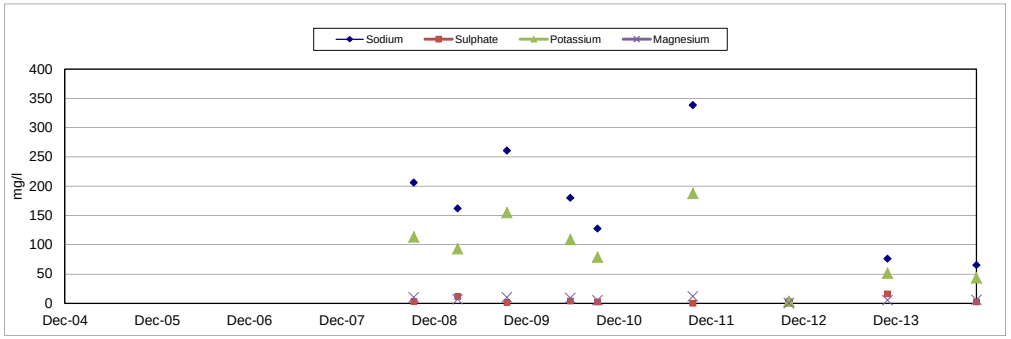

Trigger Level
Calcium mg/l
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

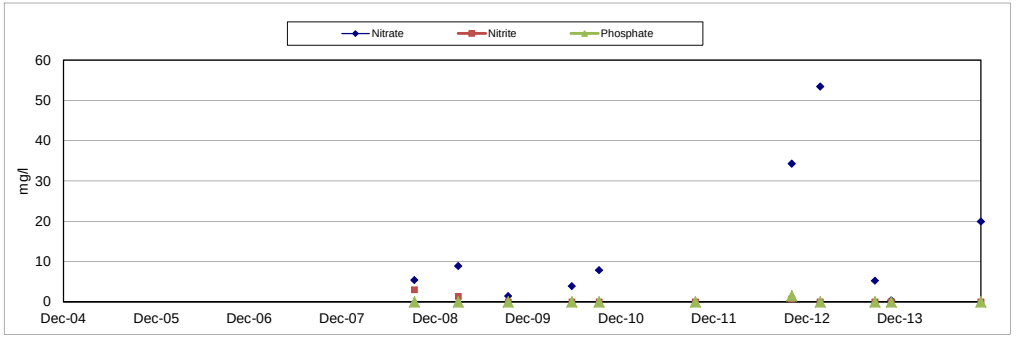

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

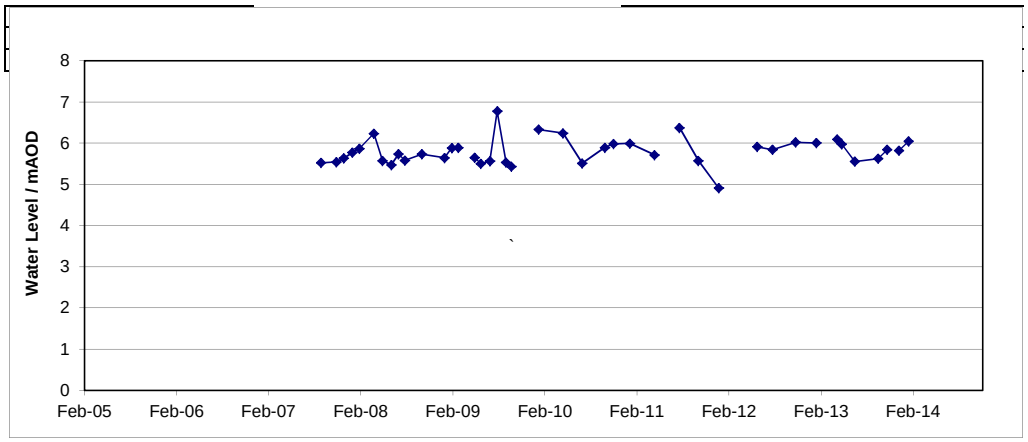

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

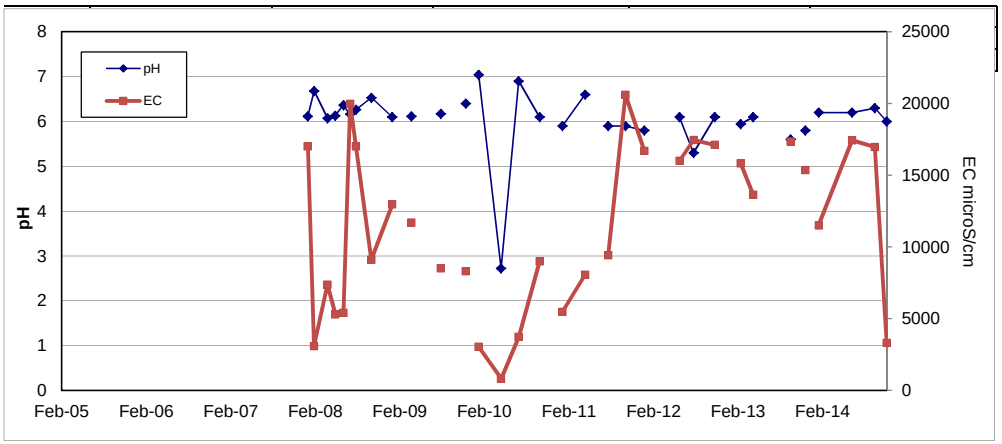

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

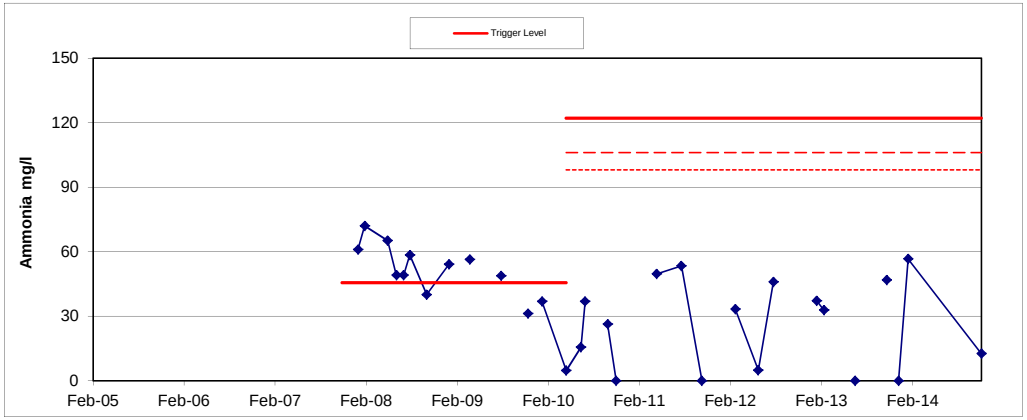

Field pH
Lab pH
pH
4
5
6
7
8
9
10
11
12
13
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

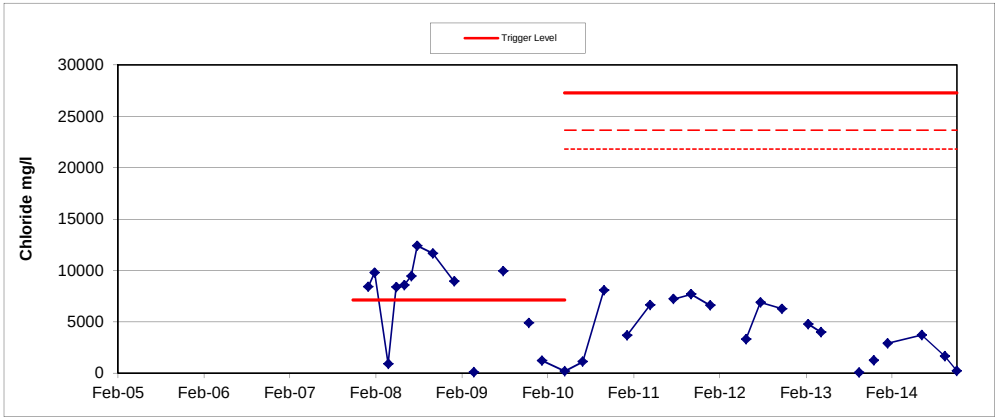

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
50
100
150
200
250
300
350
400
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

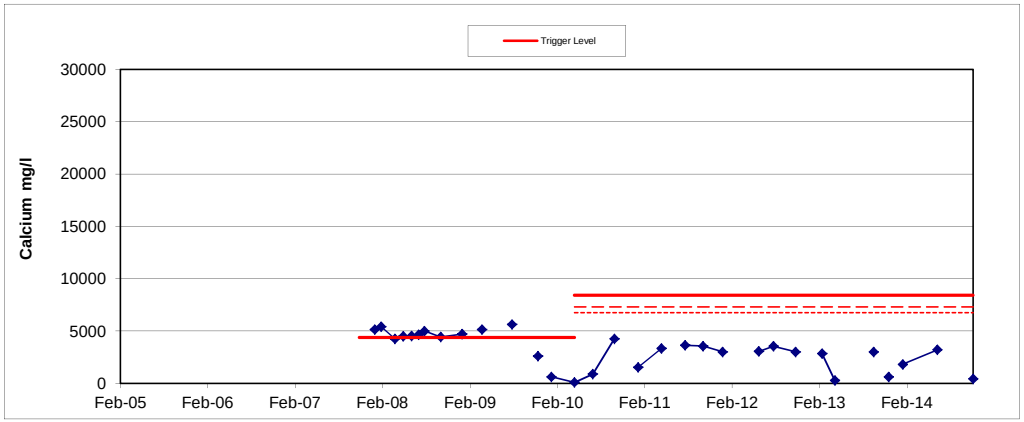

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

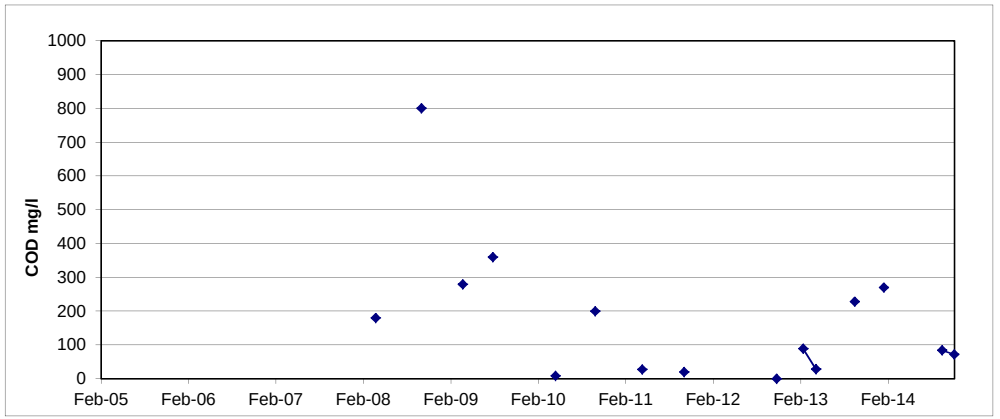

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

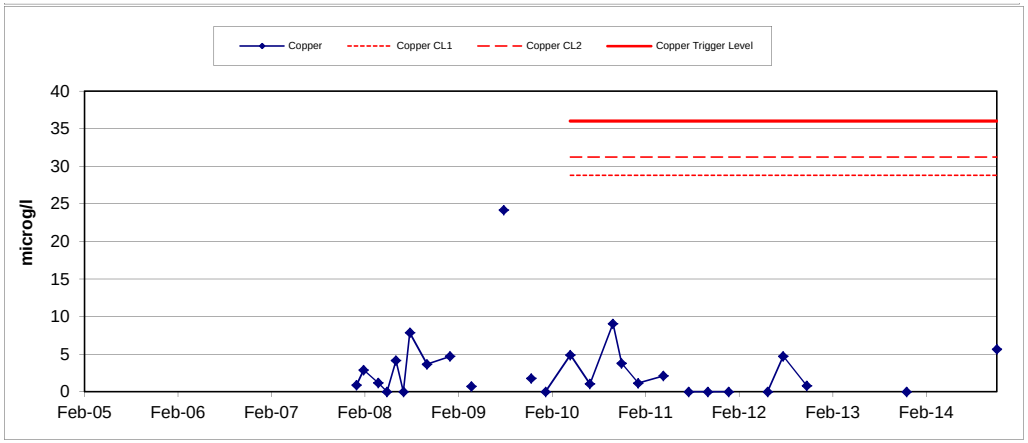

pH
EC
pH
EC microS/cm
0
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

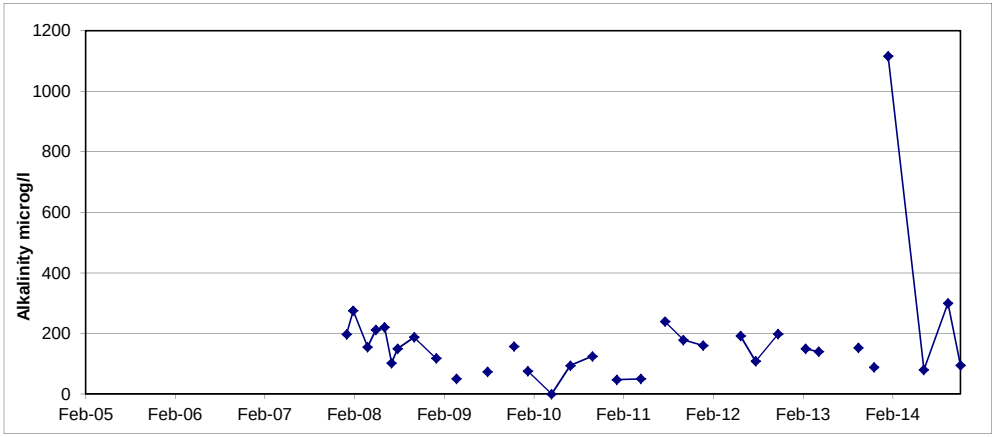

Trigger Level
Ammonia mg/l
0
30
60
90
120
150
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

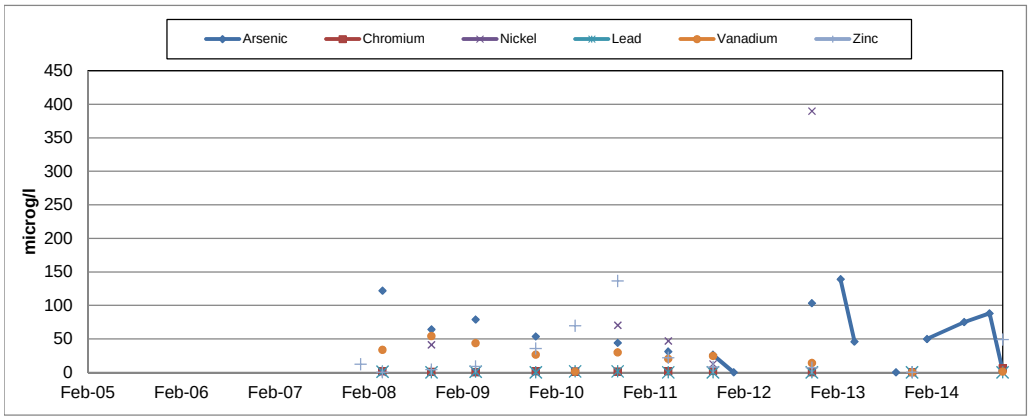

Trigger Level
Chloride mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

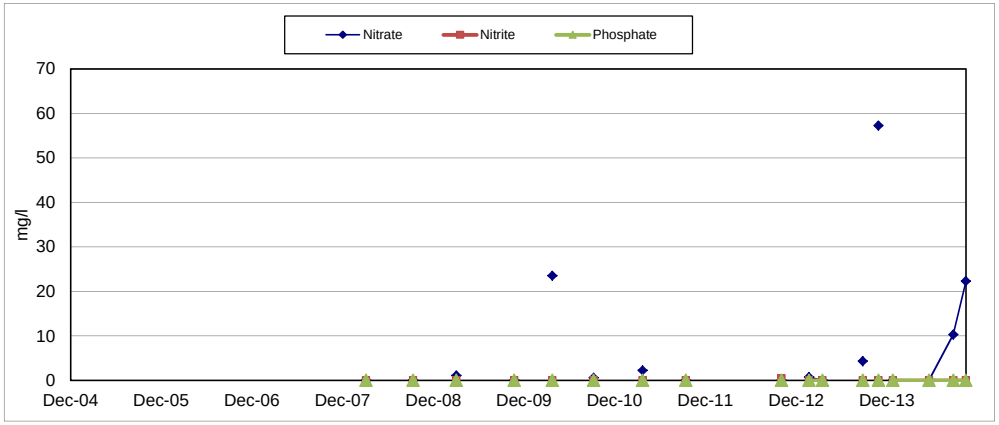

Trigger Level
Calcium mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

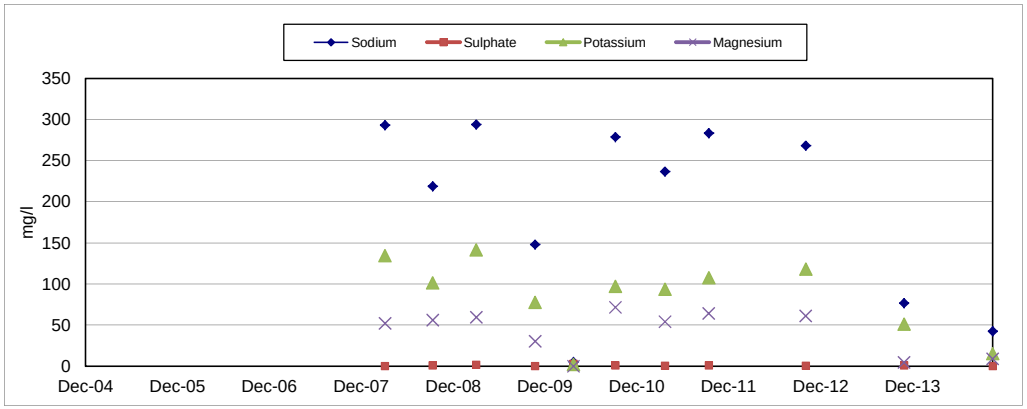

COD mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

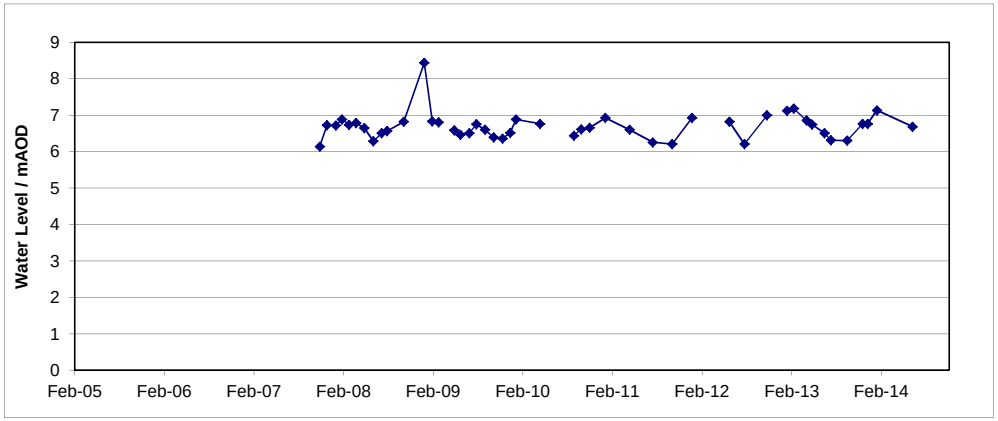

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

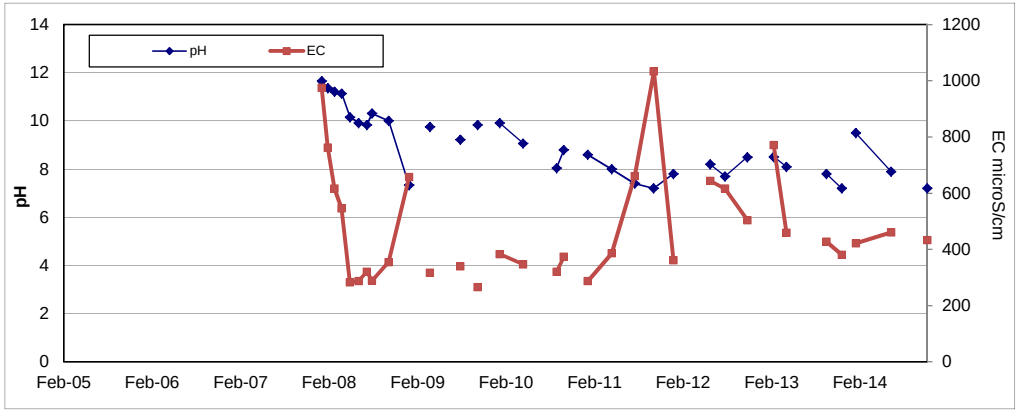

Alkalinity microg/l
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

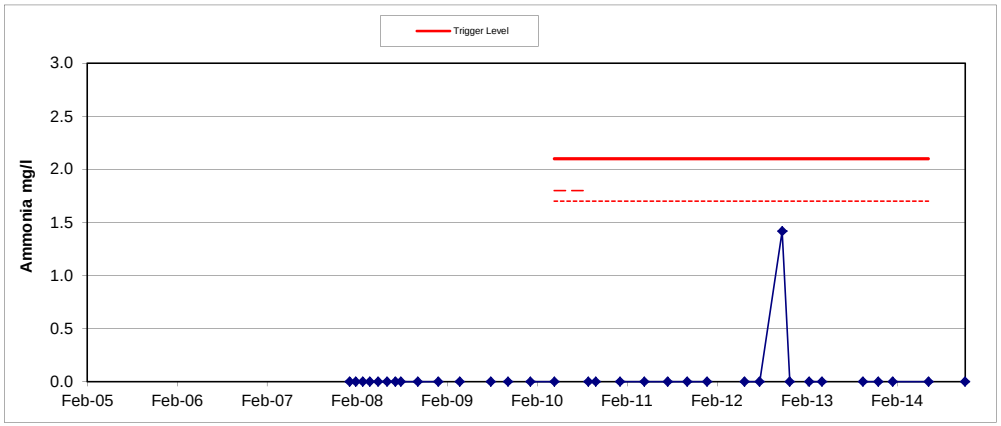

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

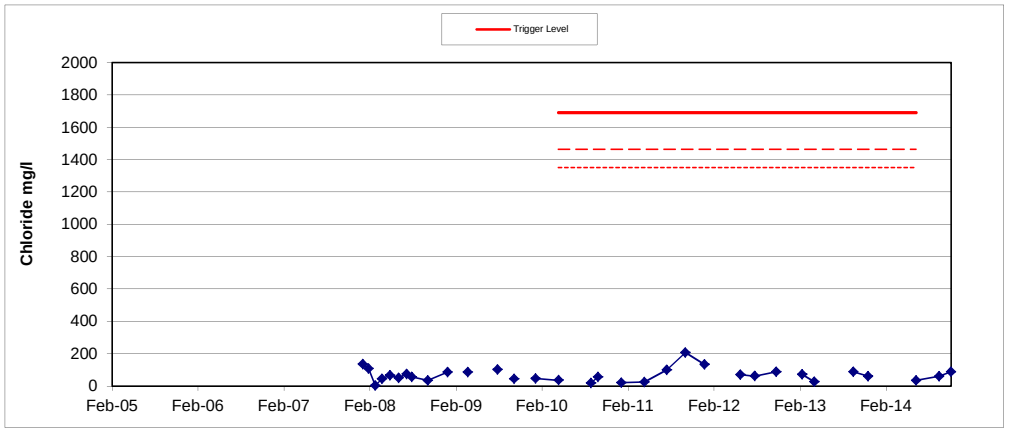

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

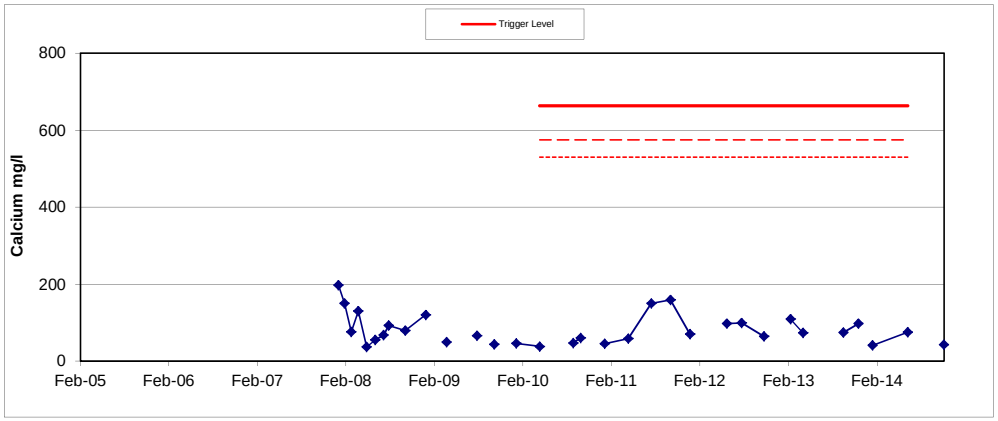

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
50
100
150
200
250
300
350
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

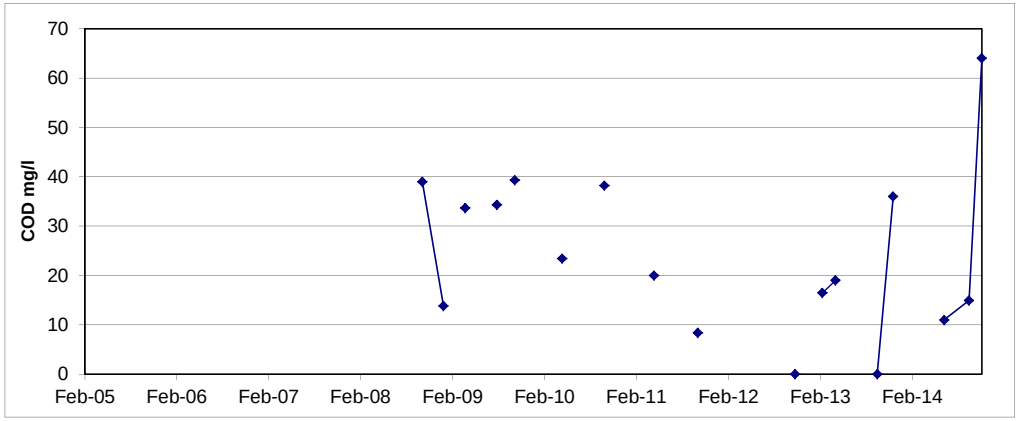

Water Level / mAOD
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

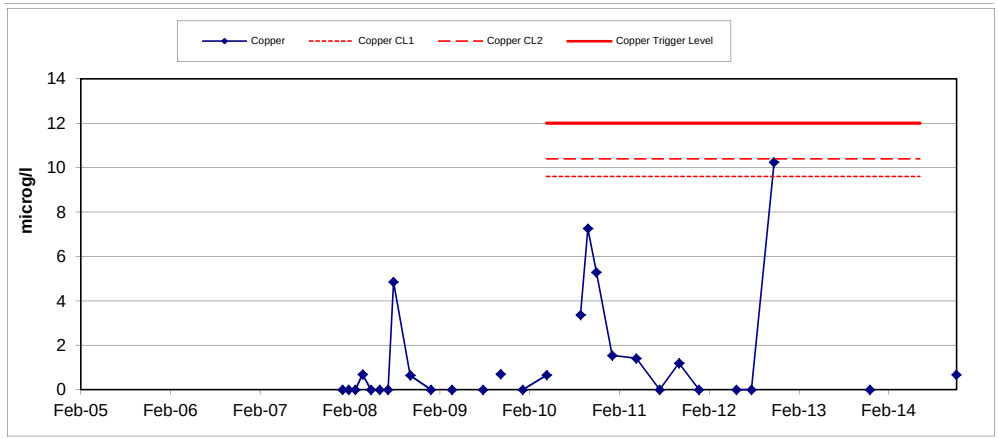

pH
EC
pH
EC microS/cm
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

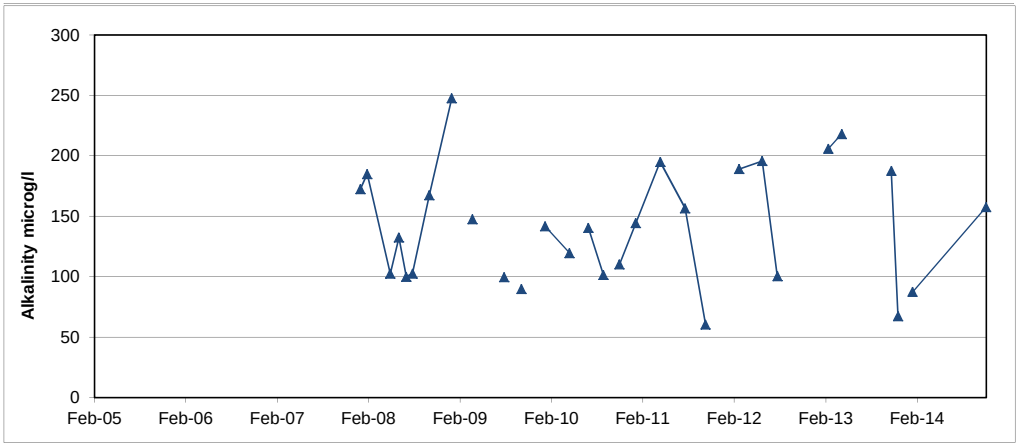

Trigger Level
Ammonia mg/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

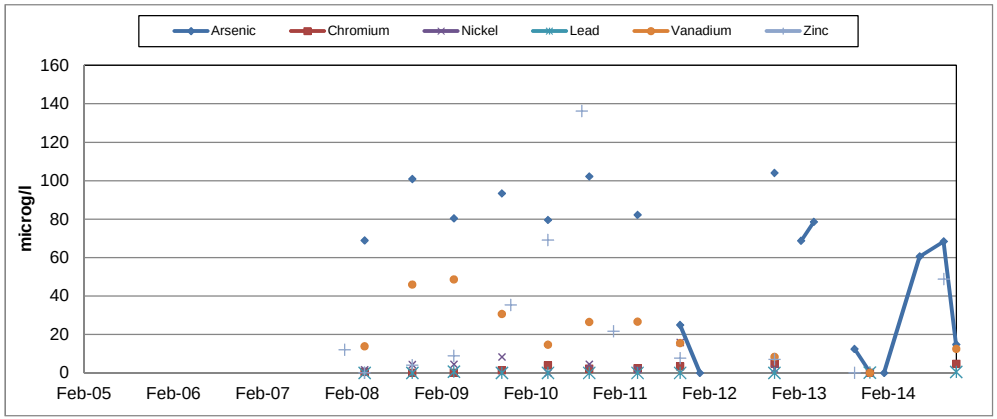

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

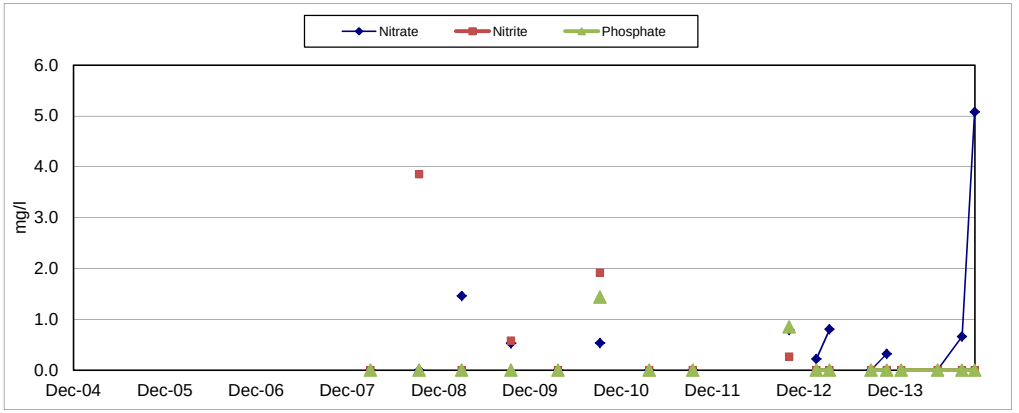

Trigger Level
Calcium mg/l
0
200
400
600
800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

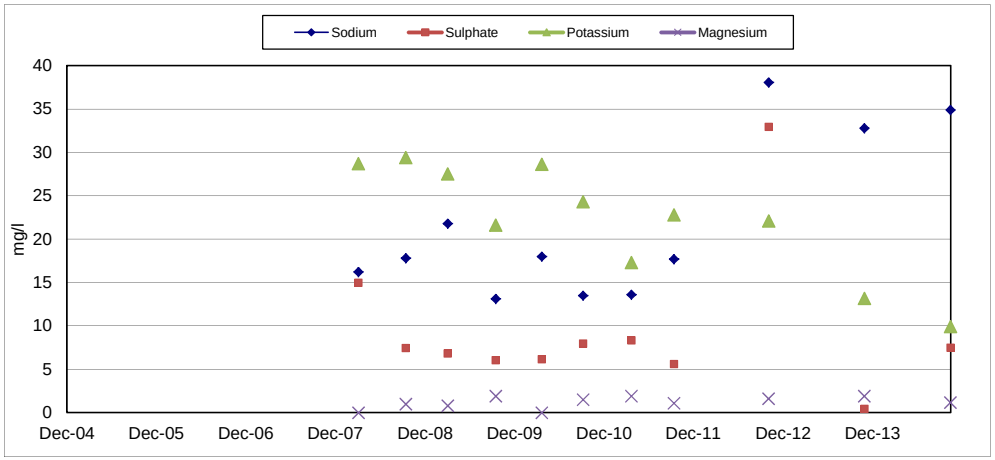

COD mg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

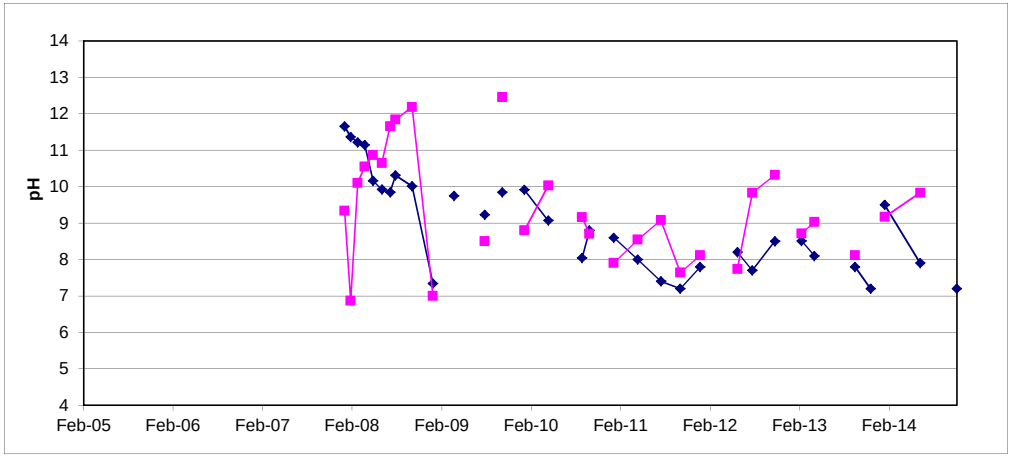

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

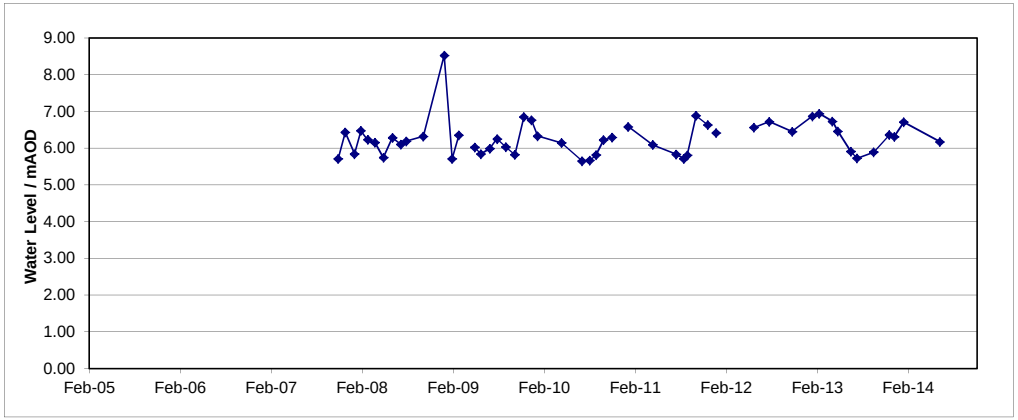

Alkalinity microg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

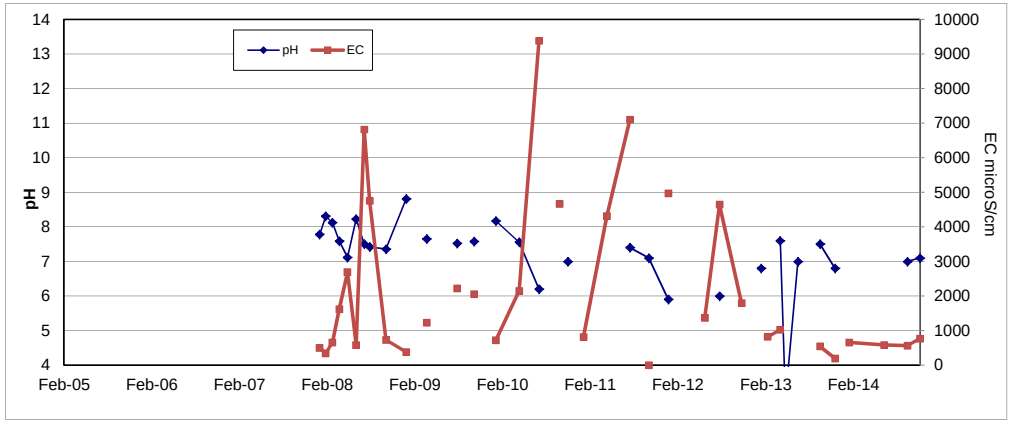

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
20
40
60
80
100
120
140
160
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

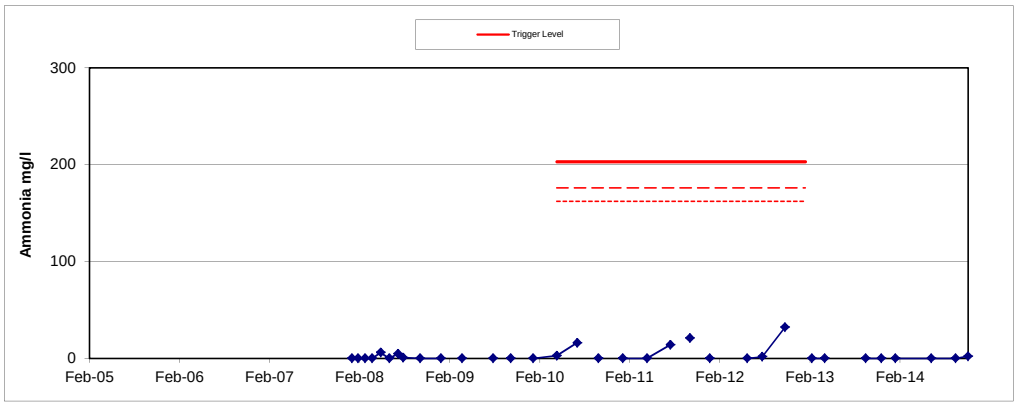

Nitrate
Nitrite
Phosphate
mg/l
0.0
1.0
2.0
3.0
4.0
5.0
6.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

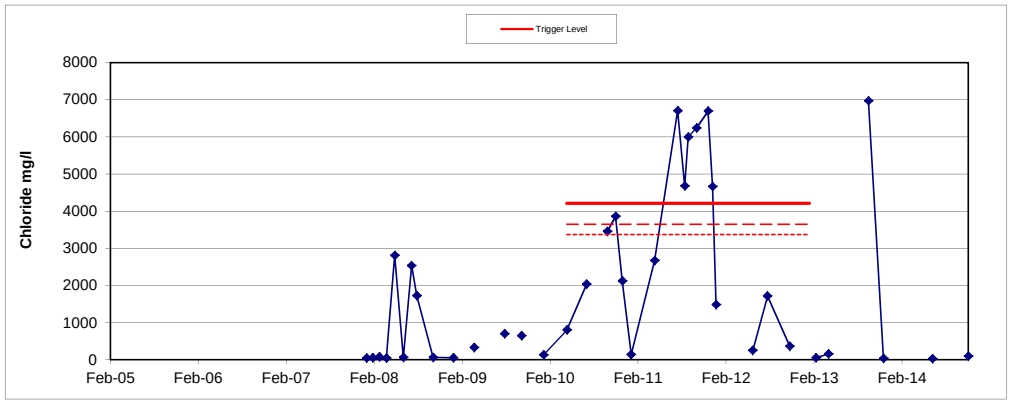

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
5
10
15
20
25
30
35
40
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

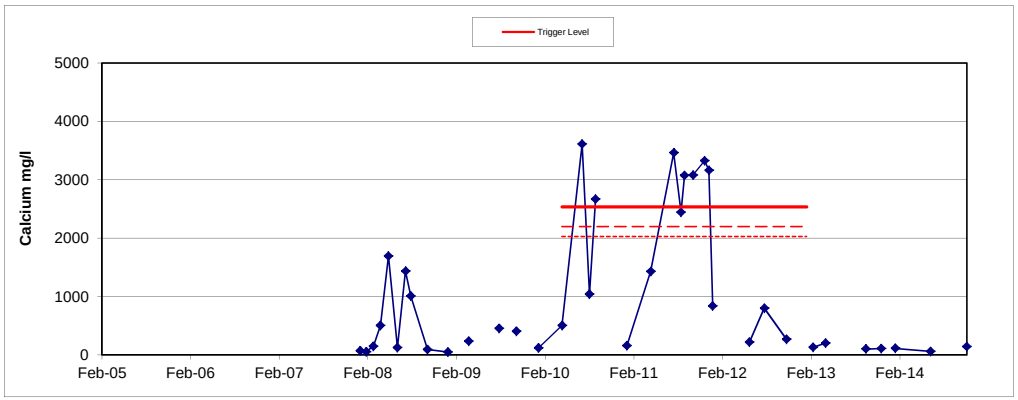

pH
4
5
6
7
8
9
10
11
12
13
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

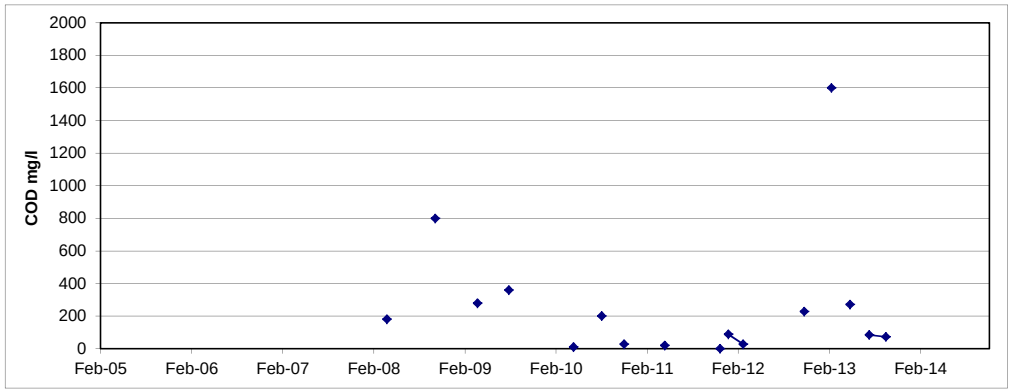

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

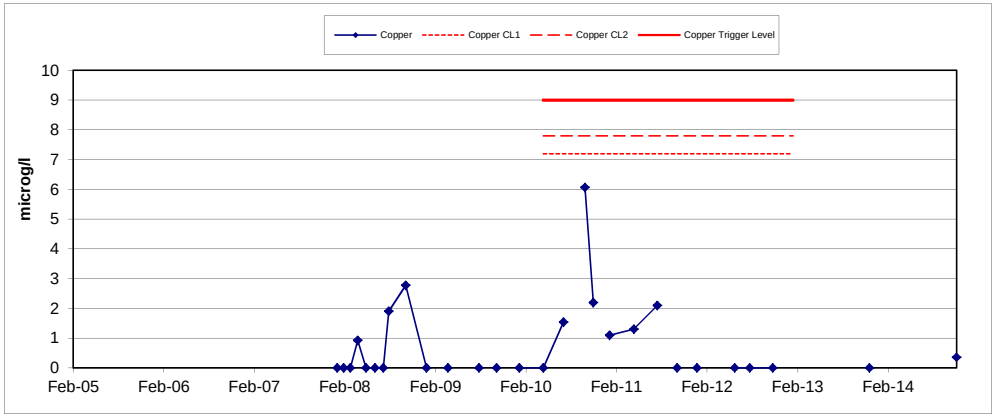

pH
EC
pH
EC micro S/cm
14 13 12 11 10 9 8 7 6 5 4
10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

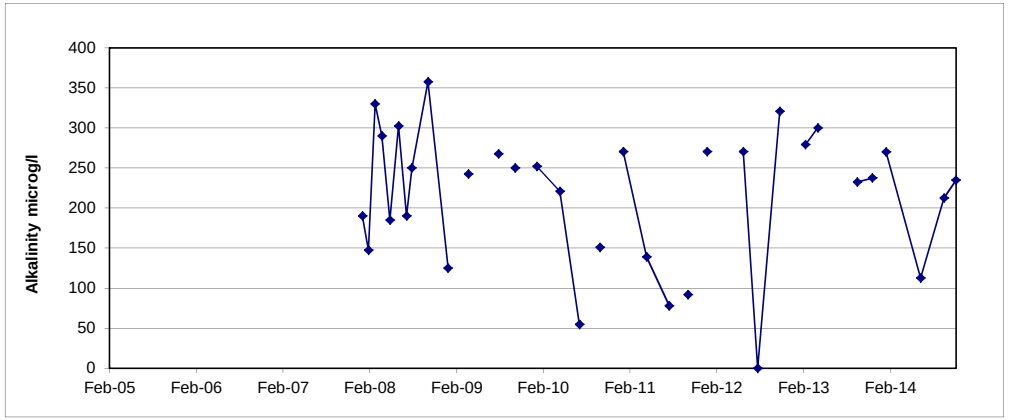

Trigger Level
Ammonia mg/l
300
200
100
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

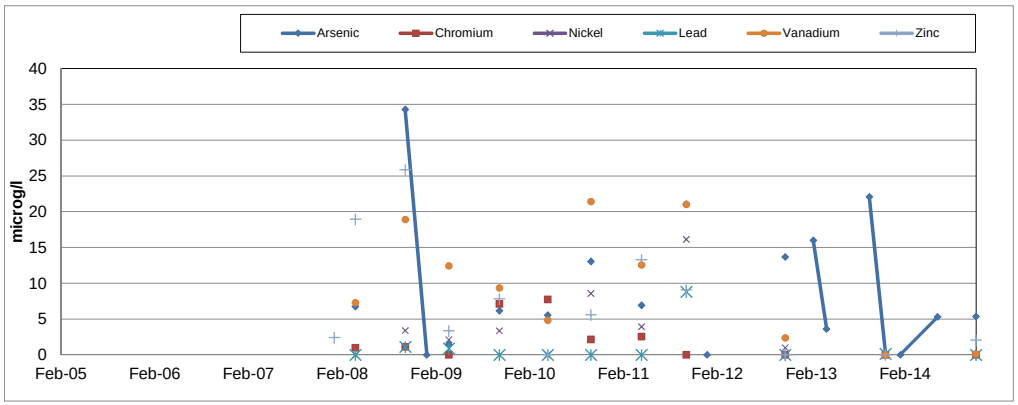

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

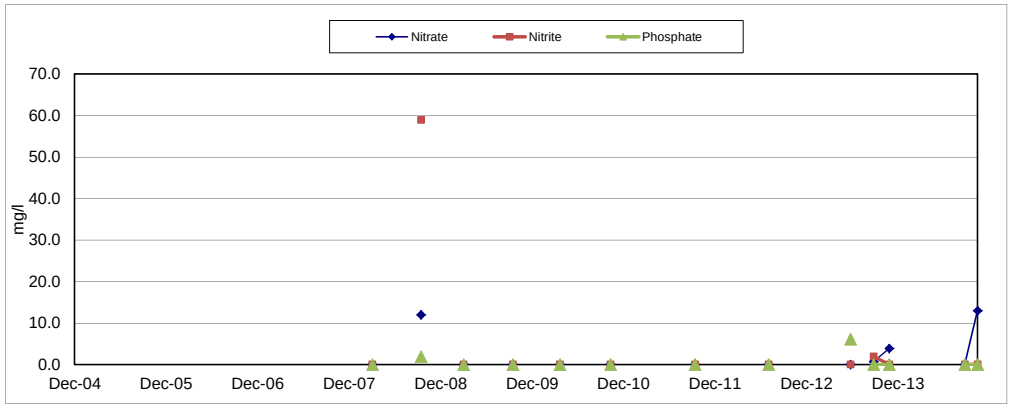

Trigger Level
Calcium mg/l
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

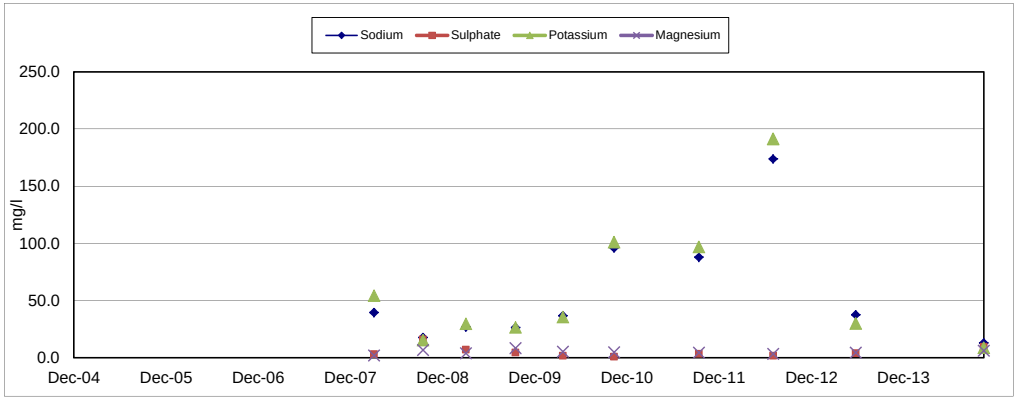

COD mg/l
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

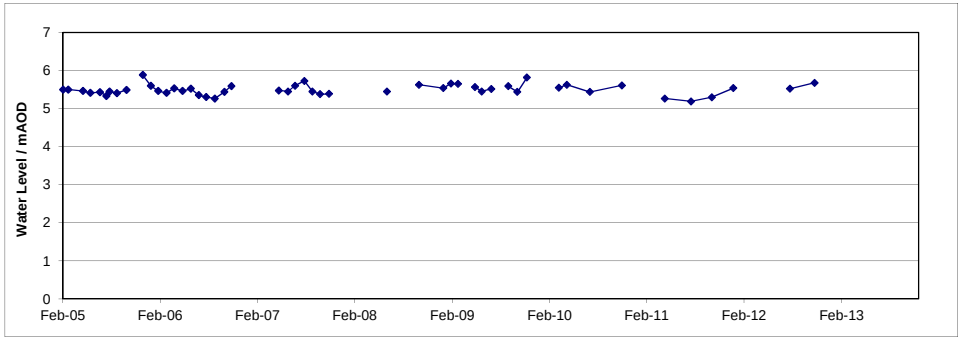

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
1
2
3
4
5
6
7
8
9
10
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

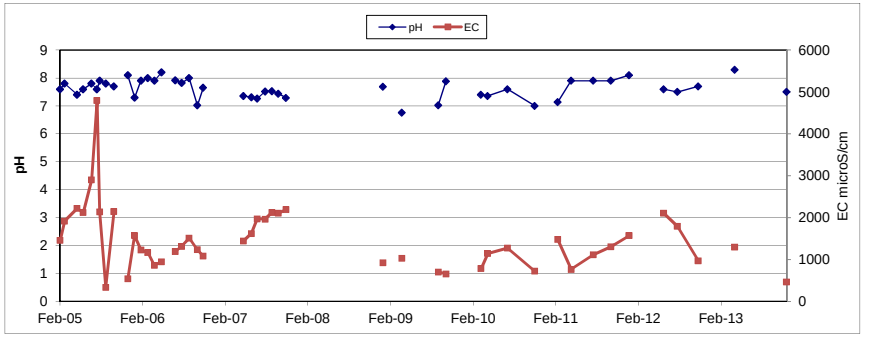

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

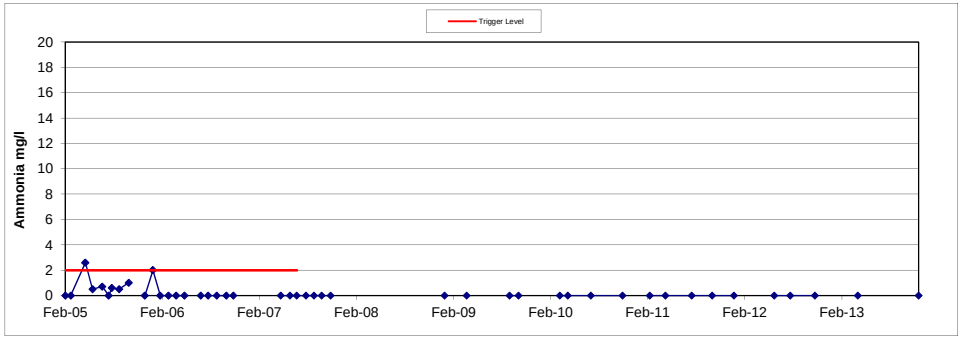

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

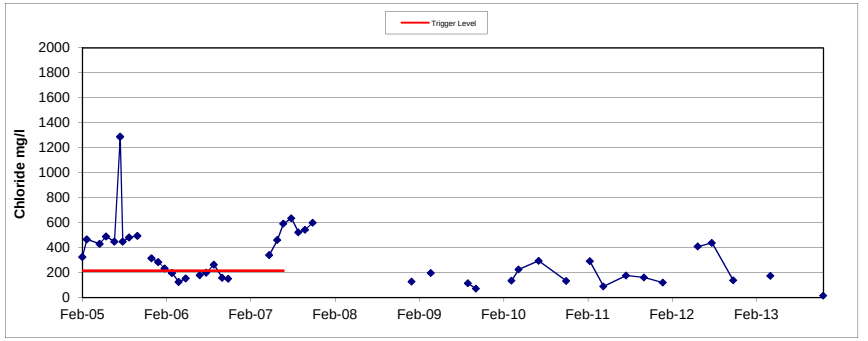

Nitrate
Nitrite
Phosphate
mg/l
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

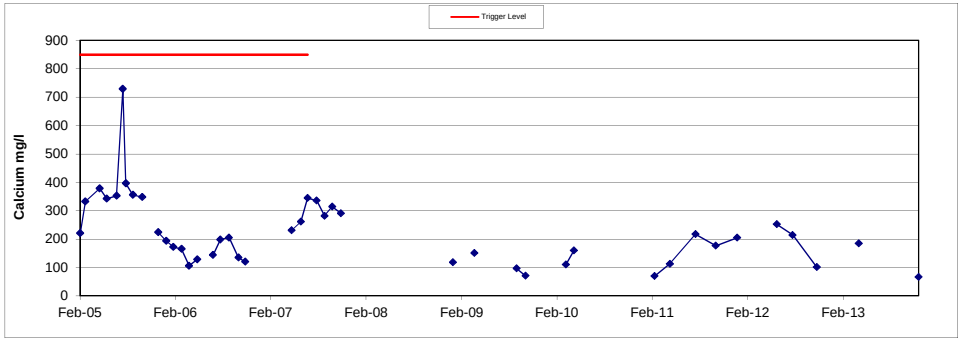

Sodium
Sulphate
Potassium
Magnesium
mg/l
0.0
50.0
100.0
150.0
200.0
250.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

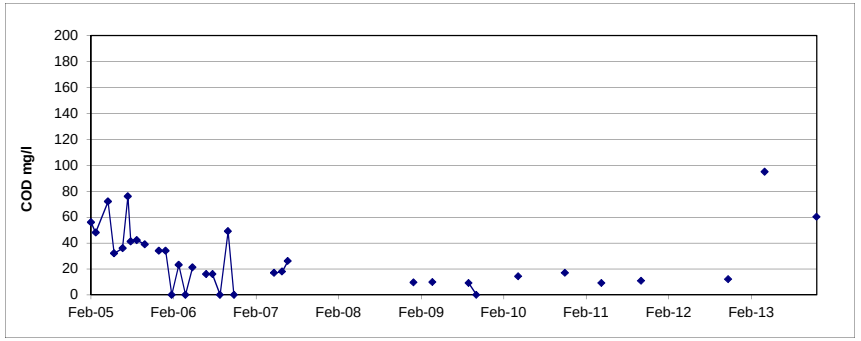

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

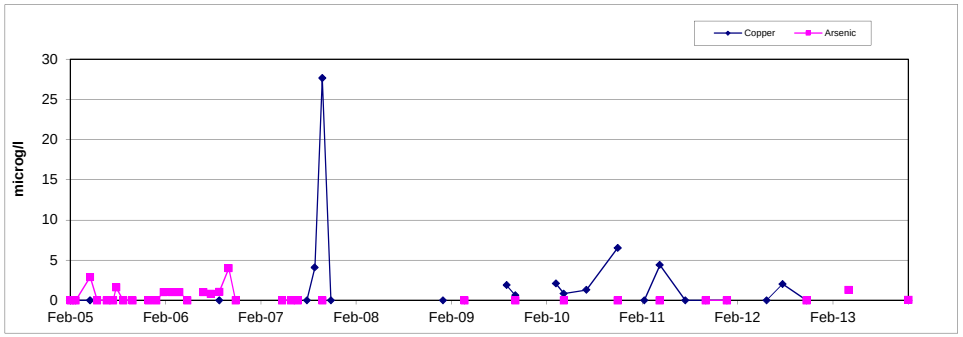

pH
EC
pH
EC microS/cm
0
1
2
3
4
5
6
7
8
9
0
1000
2000
3000
4000
5000
6000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

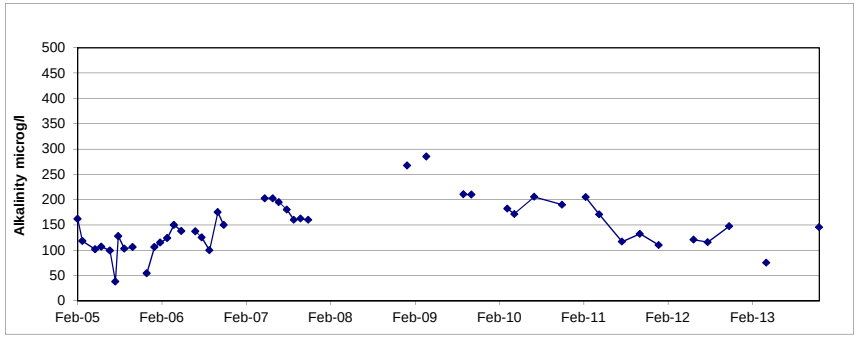

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

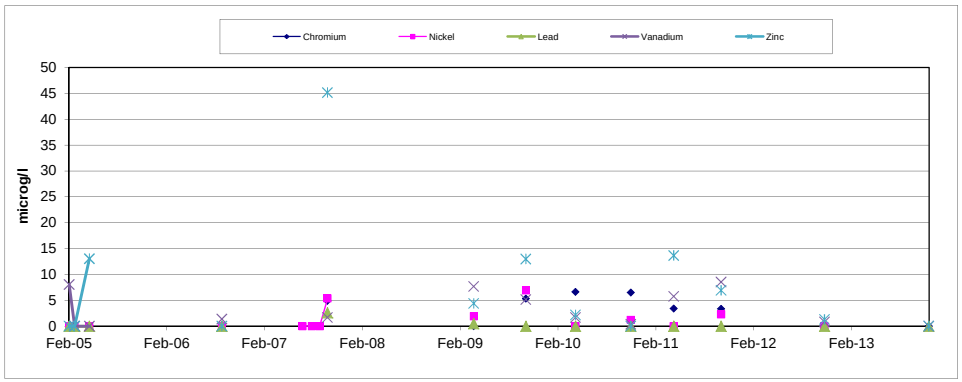

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

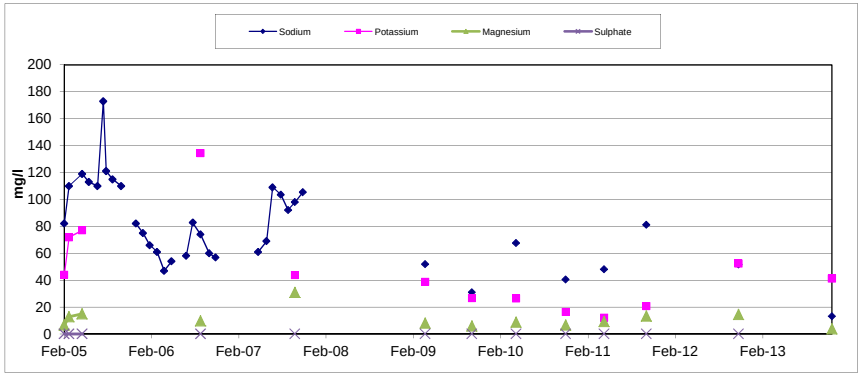

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

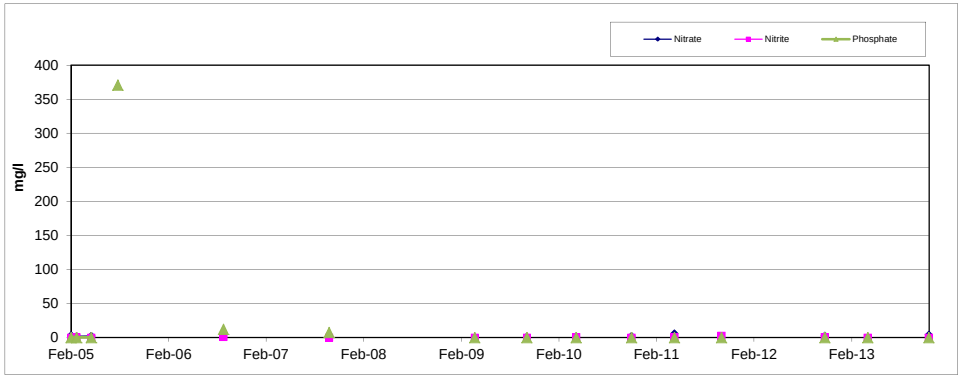

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

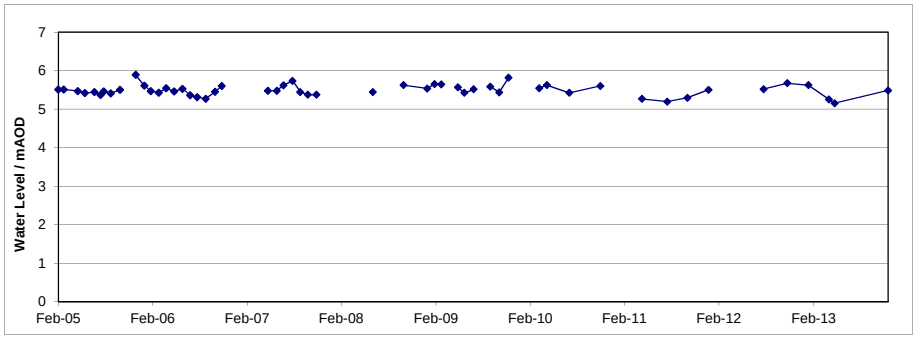

Copper
Arsenic
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

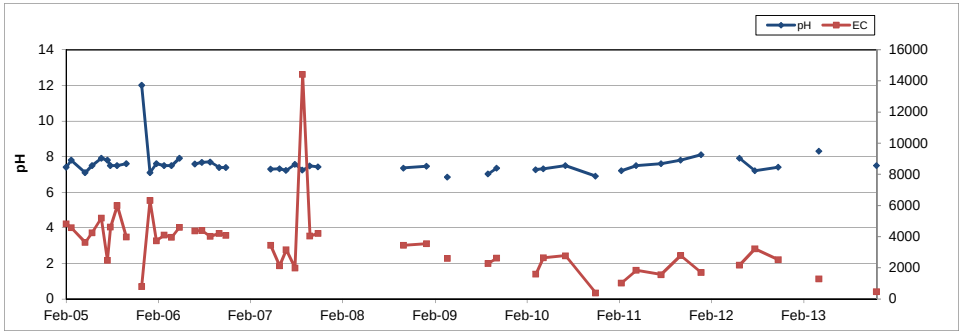

Alkalinity microg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

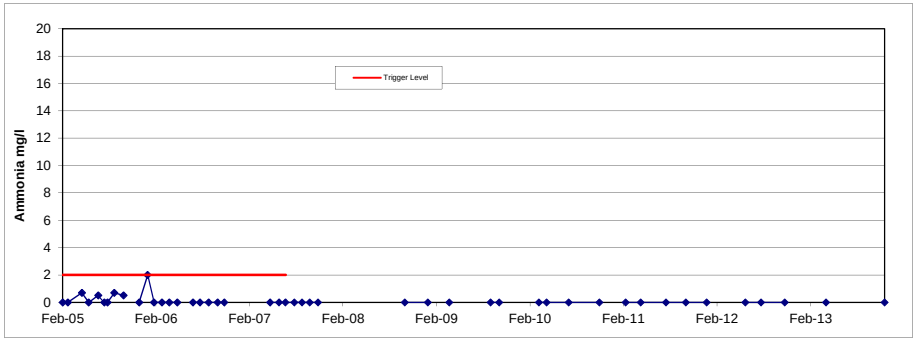

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

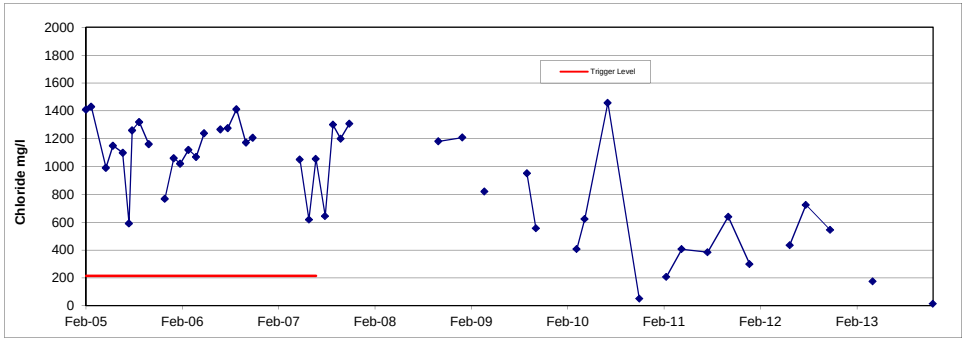

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

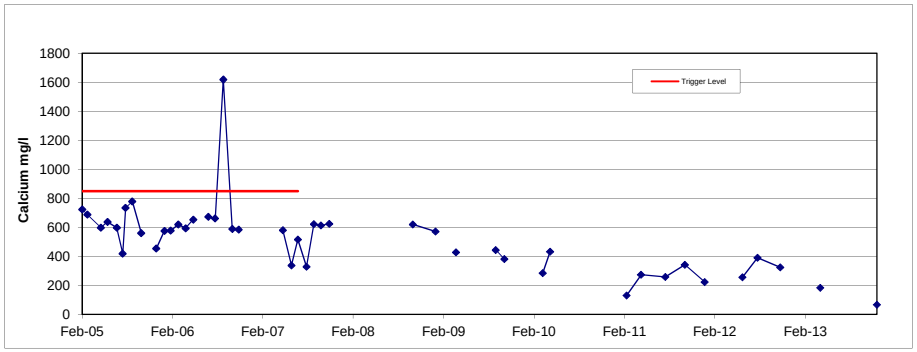

Nitrate
Nitrite
Phosphate
mg/l
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

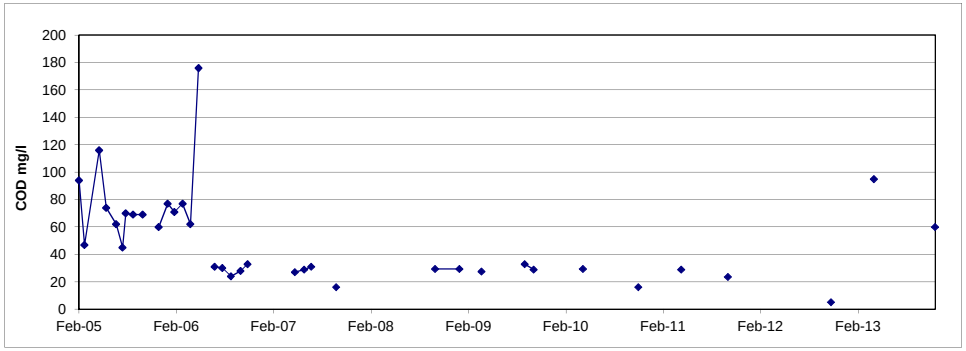

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

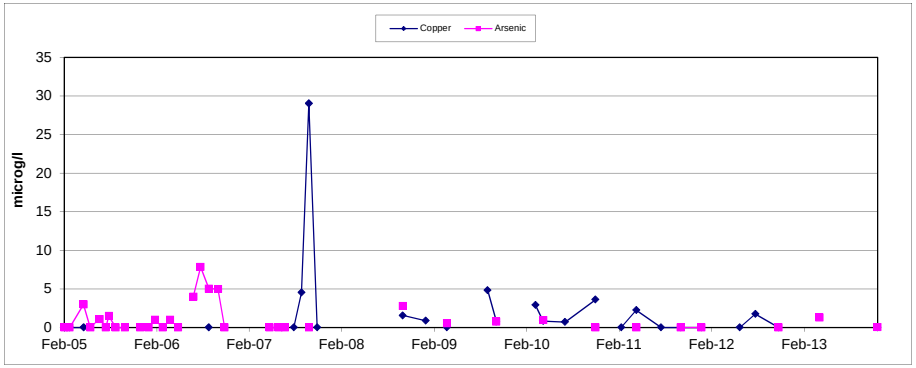

pH
EC
pH
0
2
4
6
8
10
12
14
0
2000
4000
6000
8000
10000
12000
14000
16000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

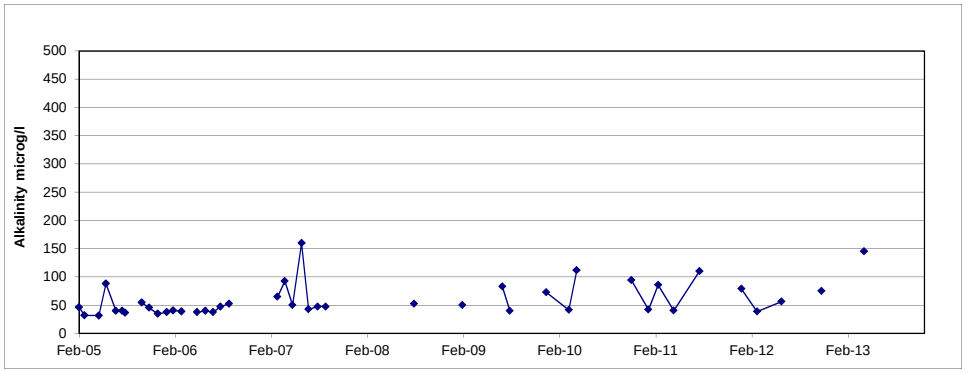

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

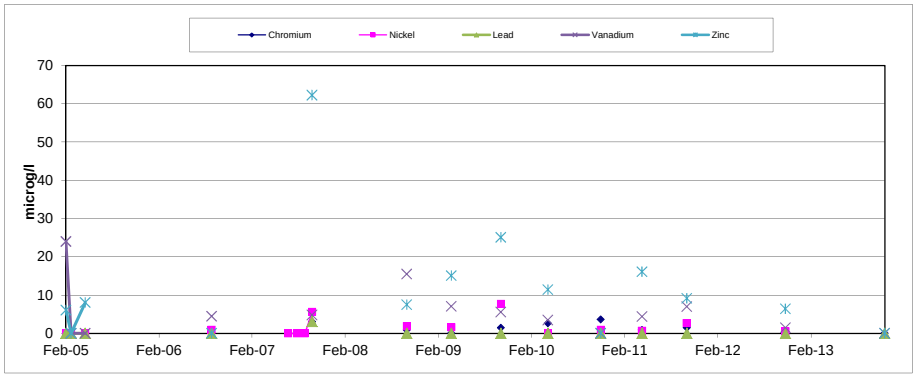

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

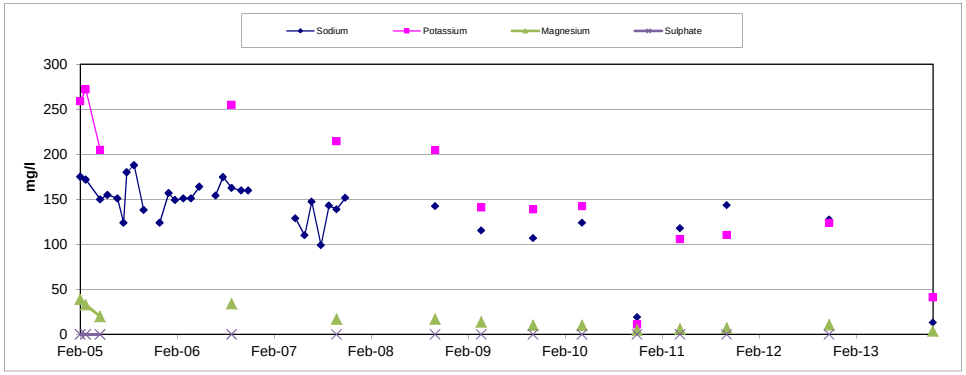

Trigger Level
Calcium mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

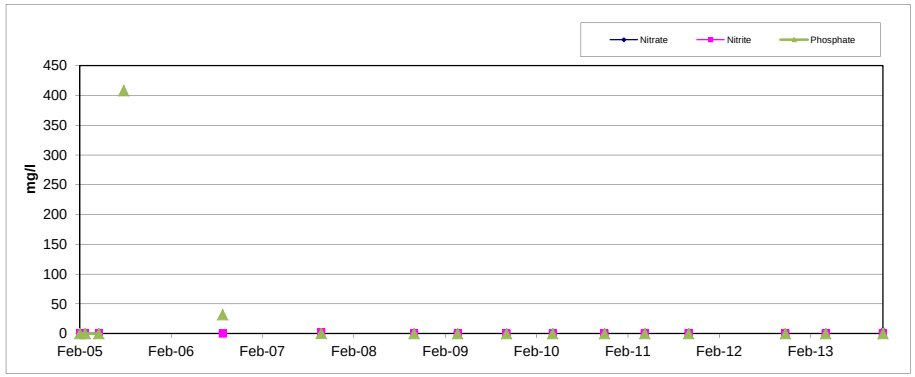

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

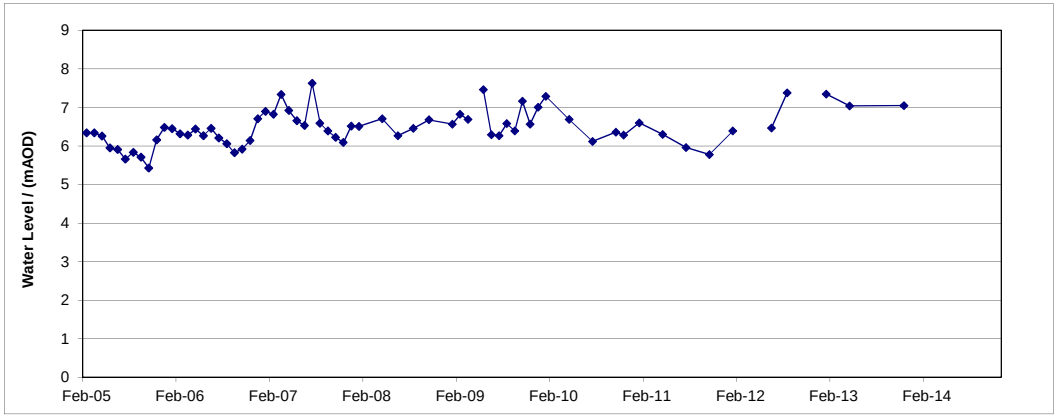

Copper
Arsenic
microg/l
0
5
10
15
20
25
30
35
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

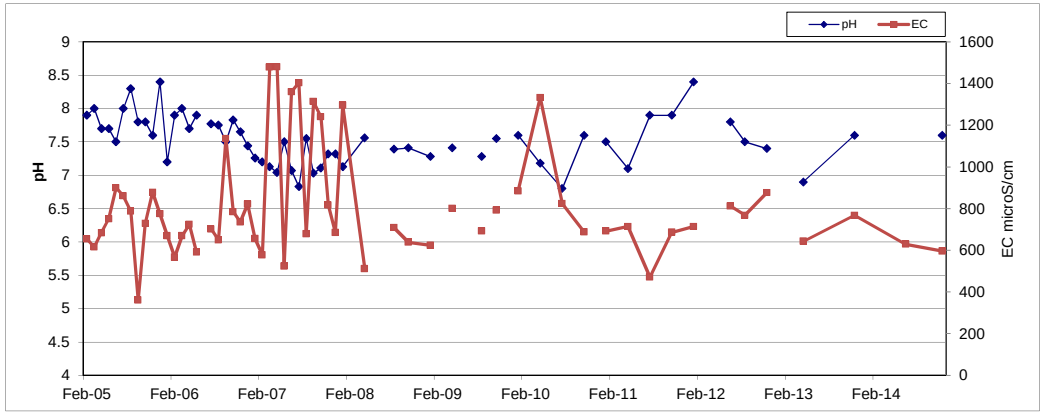

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
450
500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

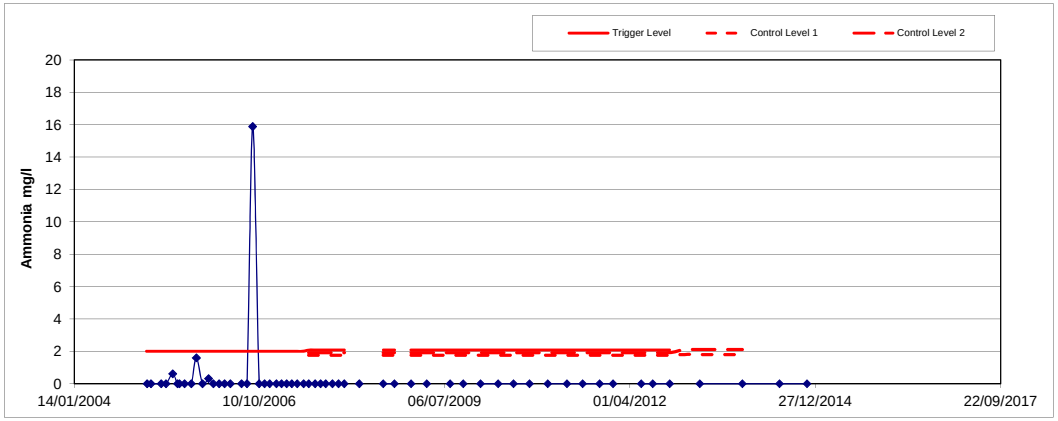

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

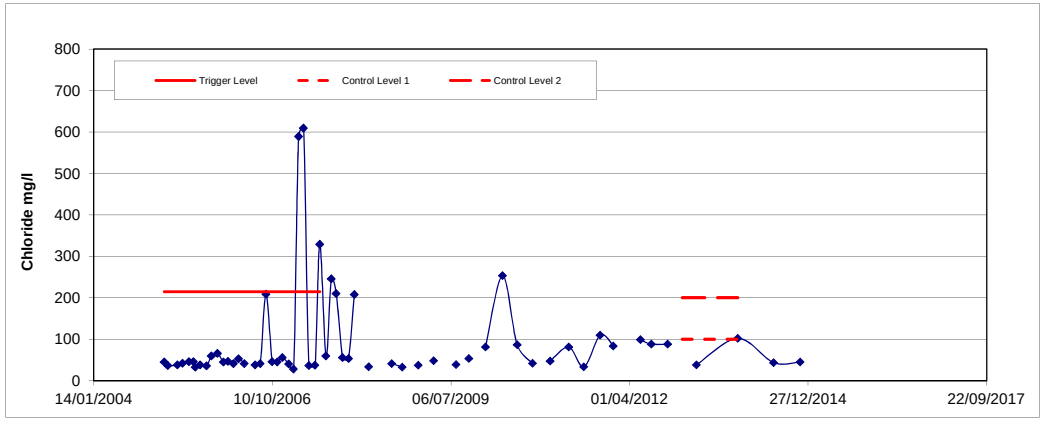

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

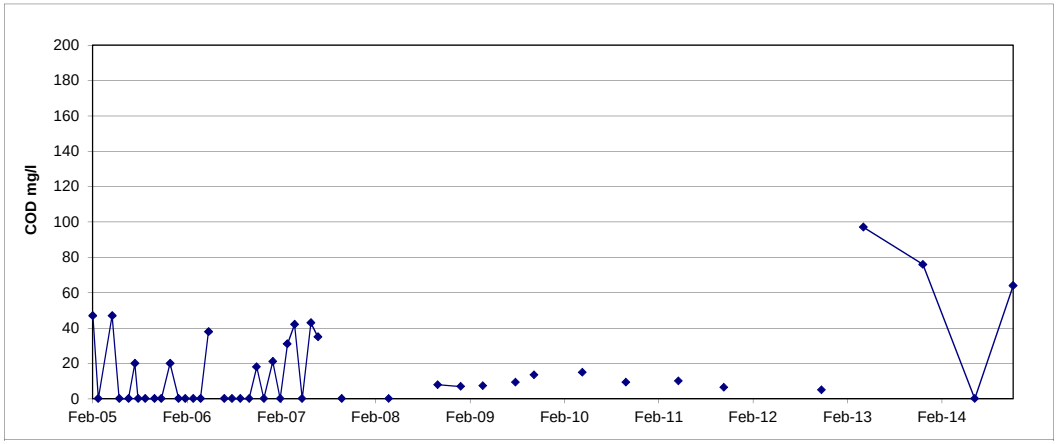

Nitrate
Nitrite
Phosphate
mg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

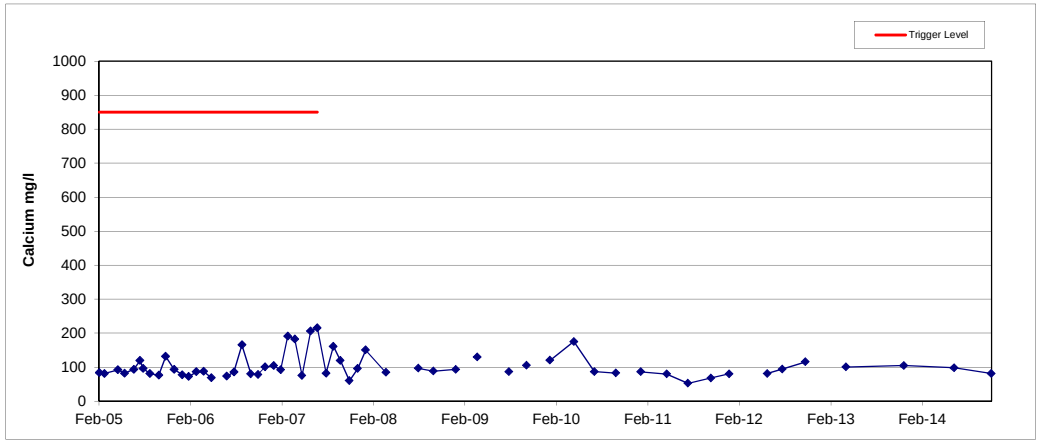

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

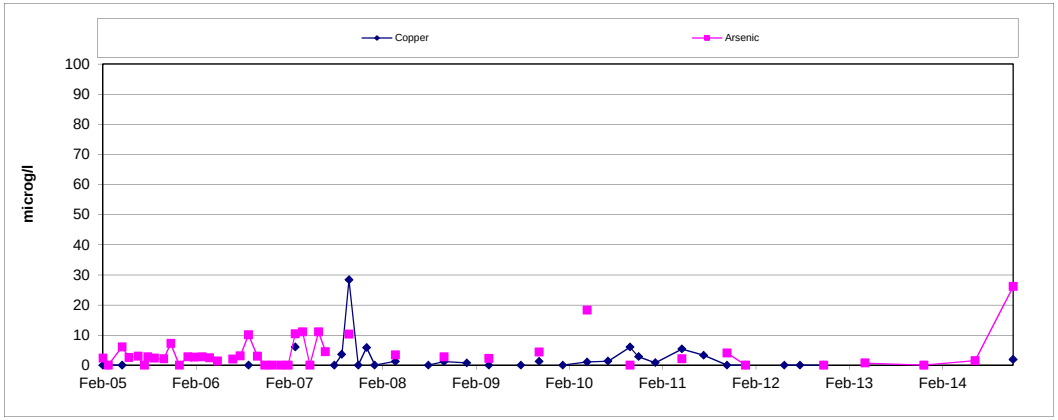

pH
EC
pH
EC micro S/cm
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
0
200
400
600
800
1000
1200
1400
1600
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

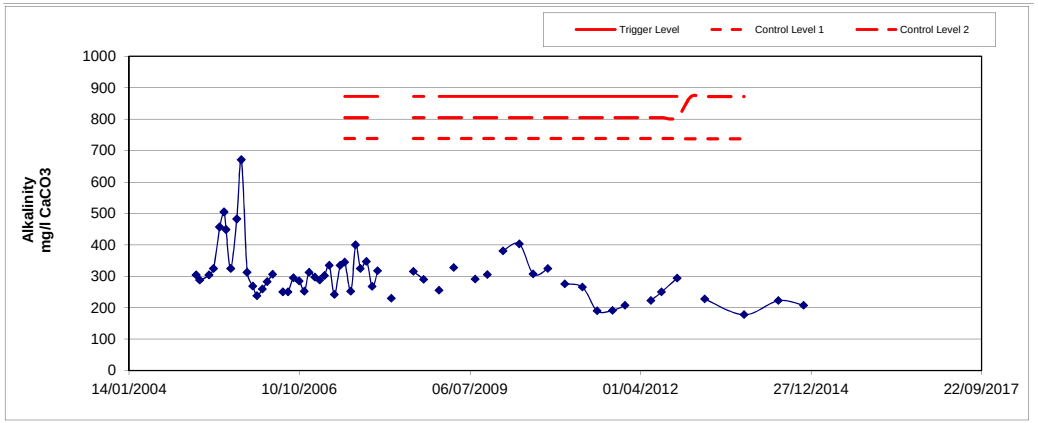

Trigger Level
Control Level 1
Control Level 2
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

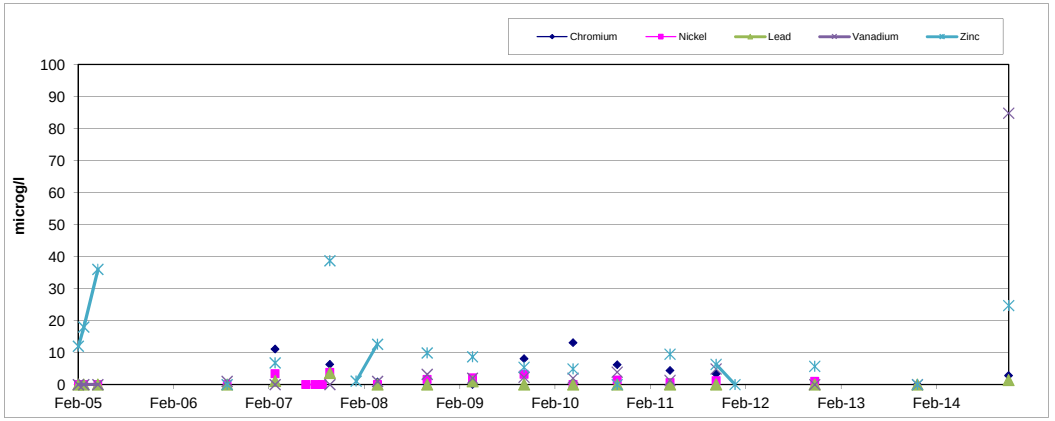

Trigger Level
Control Level 1
Control Level 2
Chloride mg/l
0
100
200
300
400
500
600
700
800
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

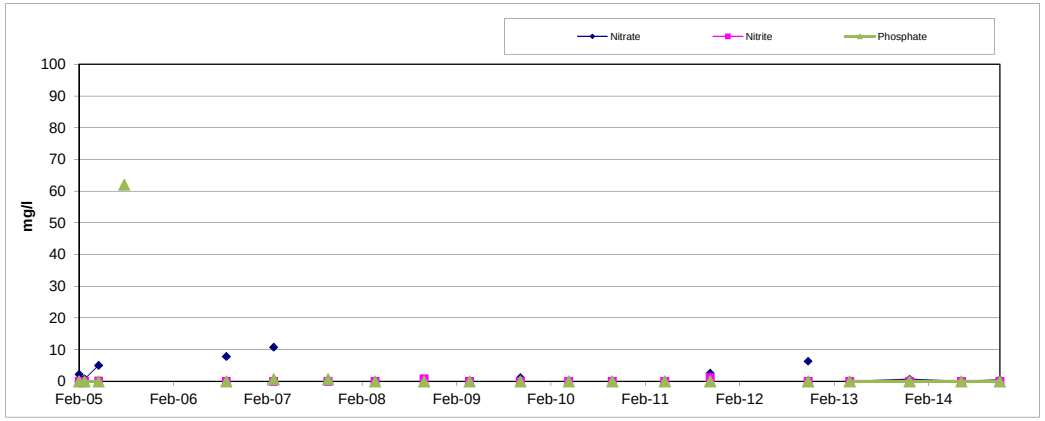

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

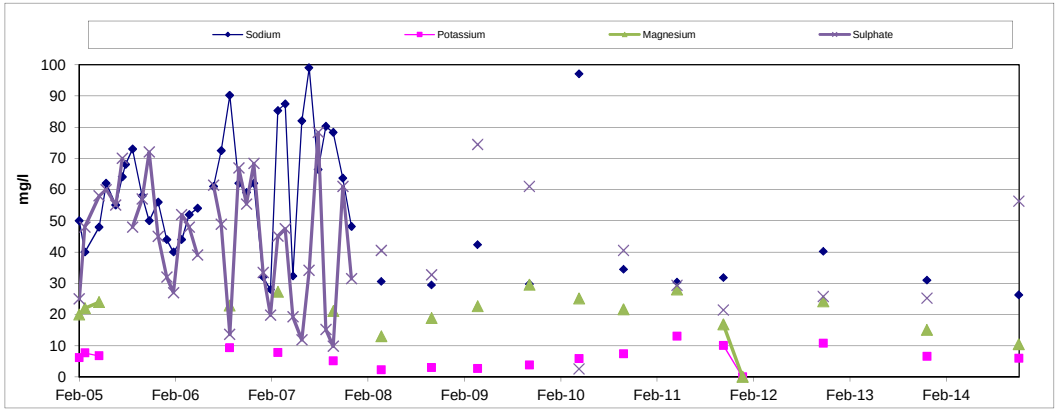

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

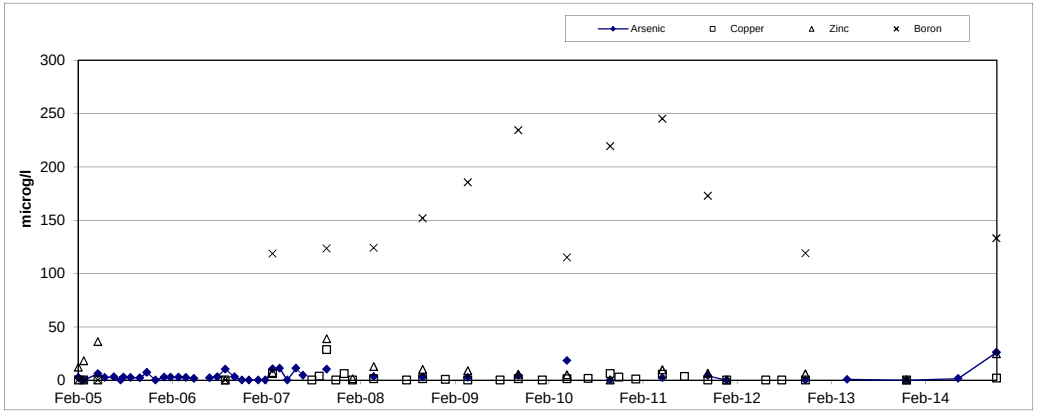

Copper
Arsenic
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

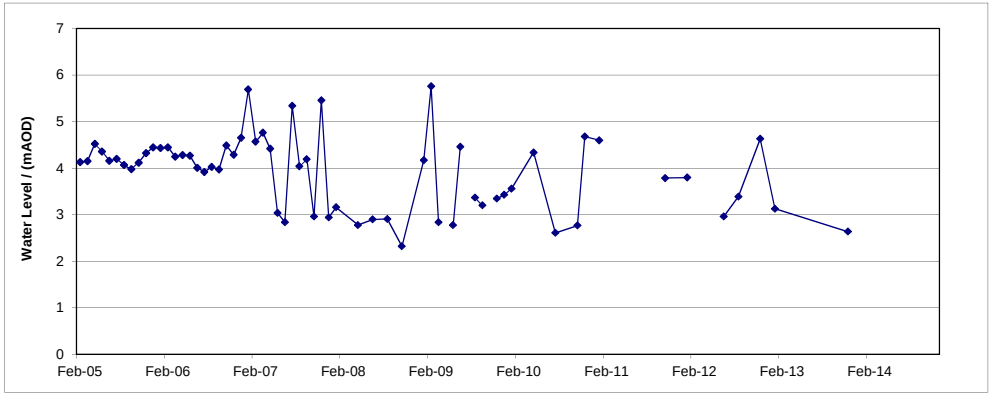

Trigger Level
Control Level 1
Control Level 2
Alkalinity
mg/l CaCO3
1000
900
800
700
600
500
400
300
200
100
0
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

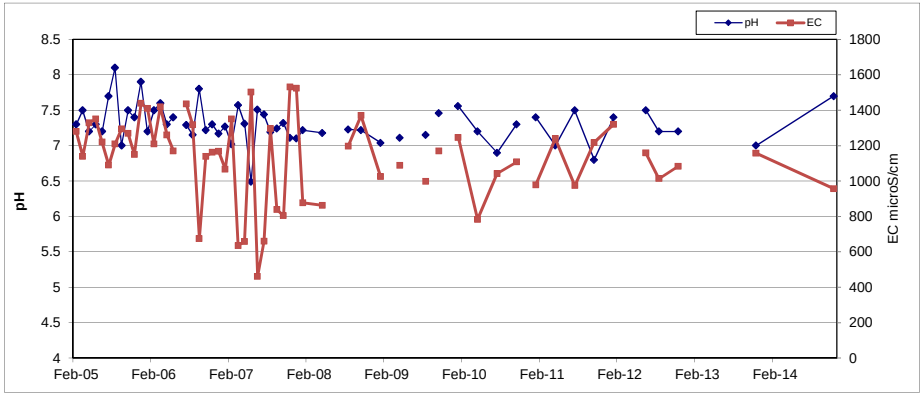

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

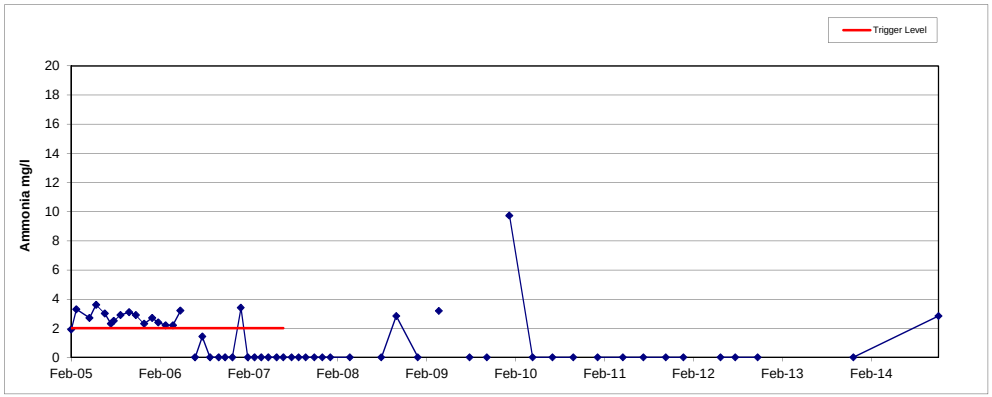

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

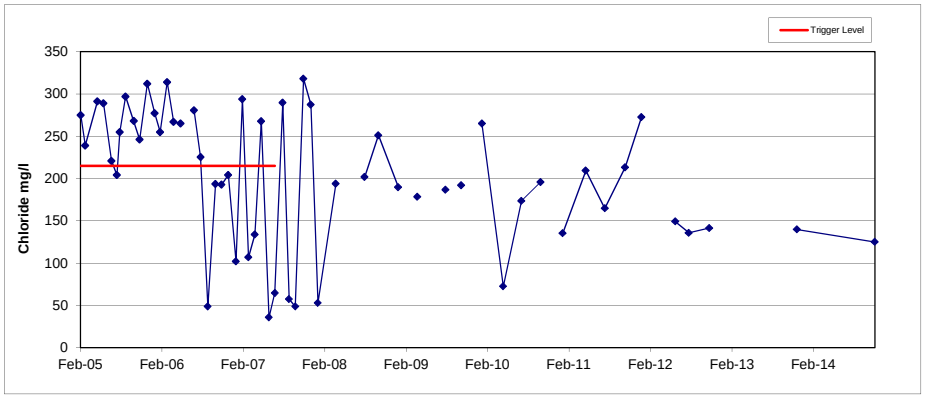

Sodium
Potassium
Magnesium
Sulphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

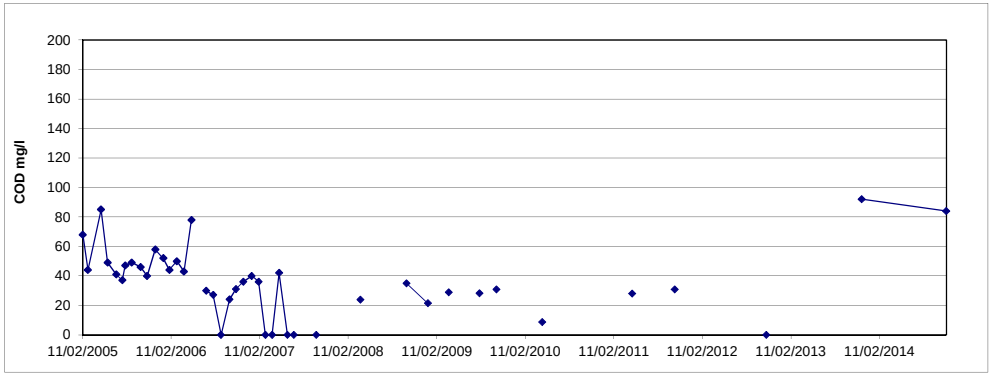

Arsenic
Copper
Zinc
Boron
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

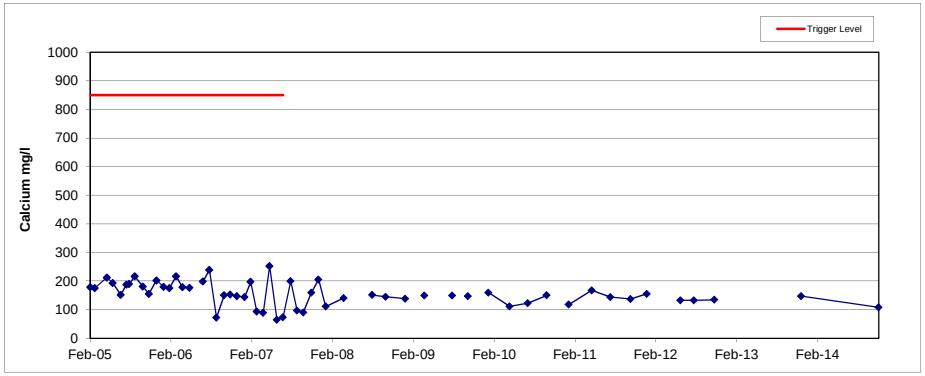

Water Level / (mAOD)
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

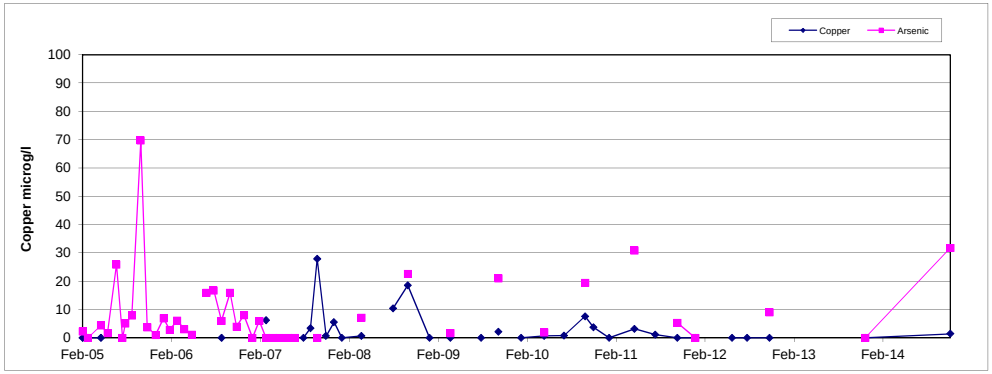

pH
EC
pH
EC microS/cm
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
0
200
400
600
800
1000
1200
1400
1600
1800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

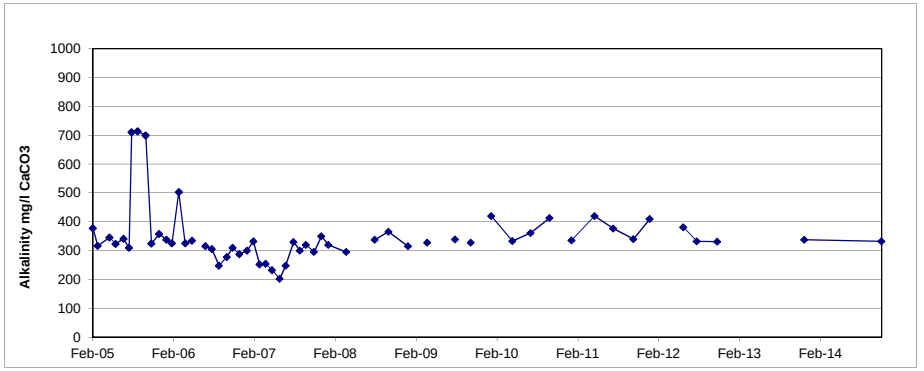

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

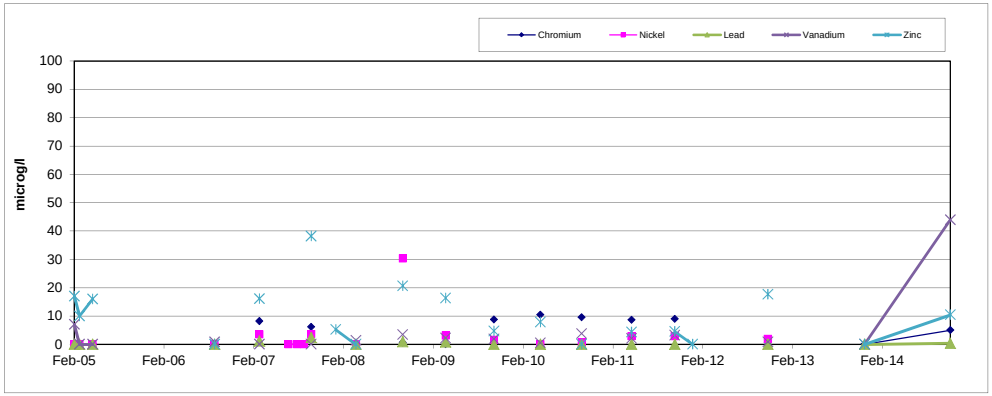

Trigger Level
Chloride mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

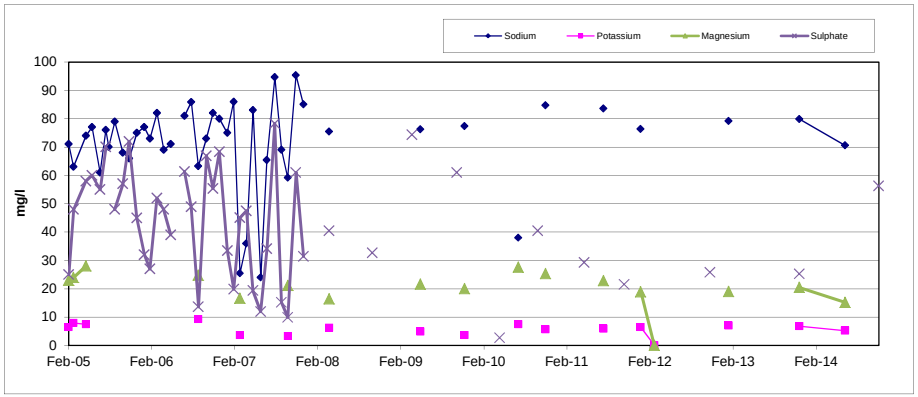

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

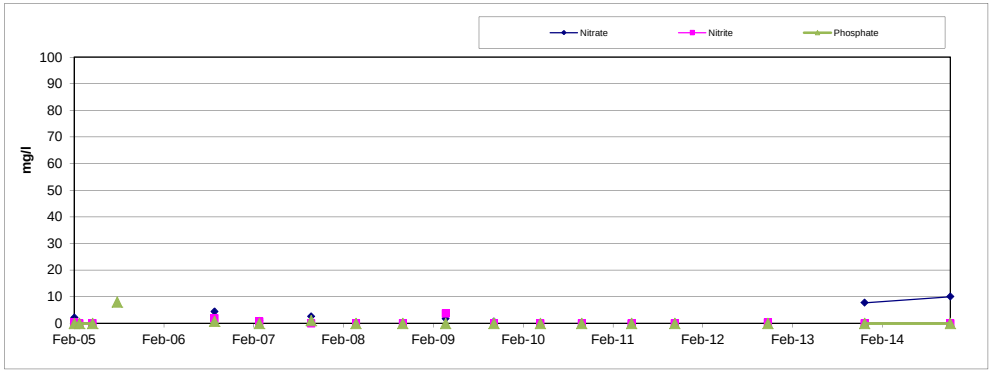

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

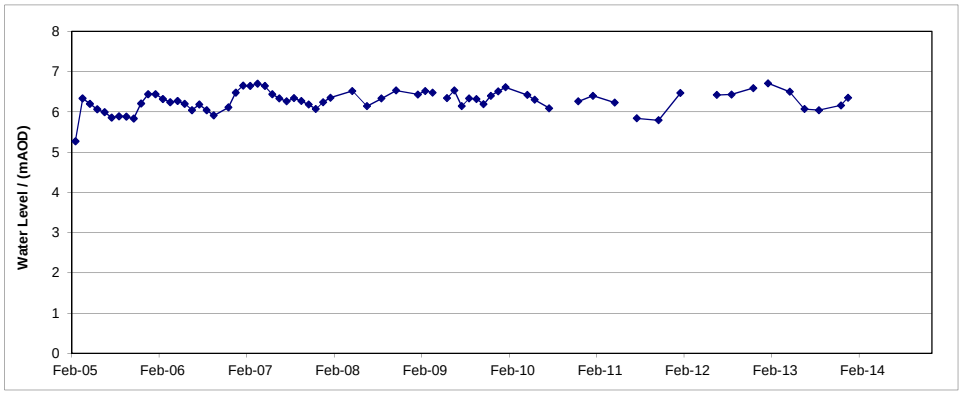

Copper
Arsenic
Copper microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

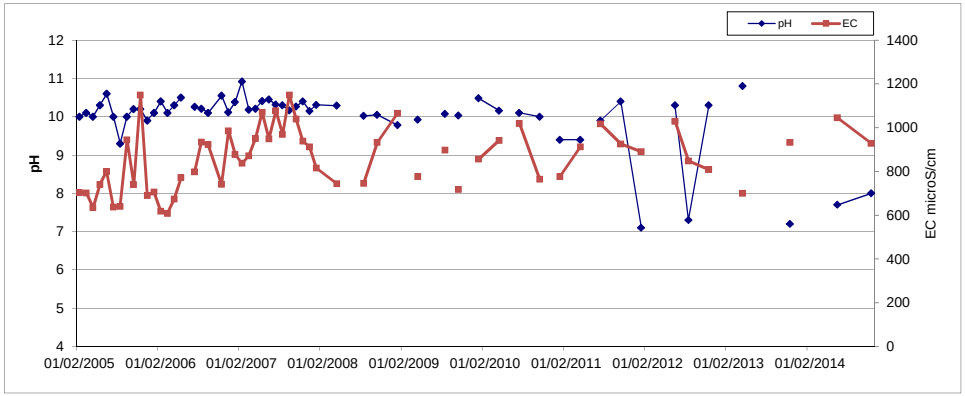

Alkalinity mg/l CaCO3
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

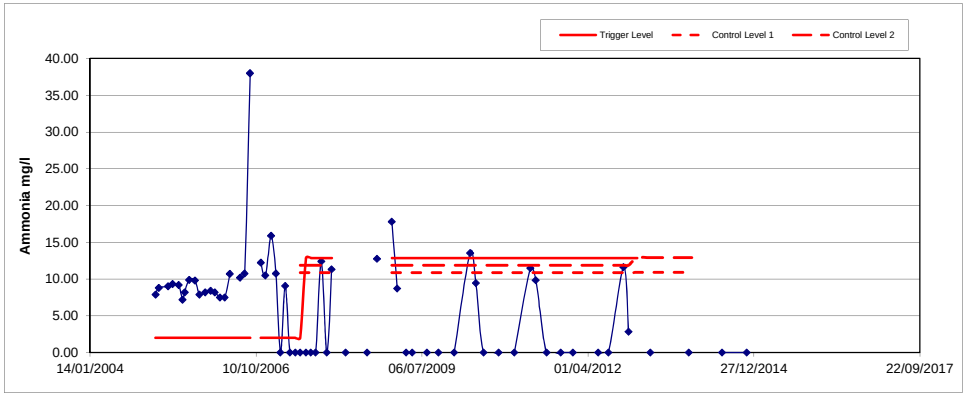

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

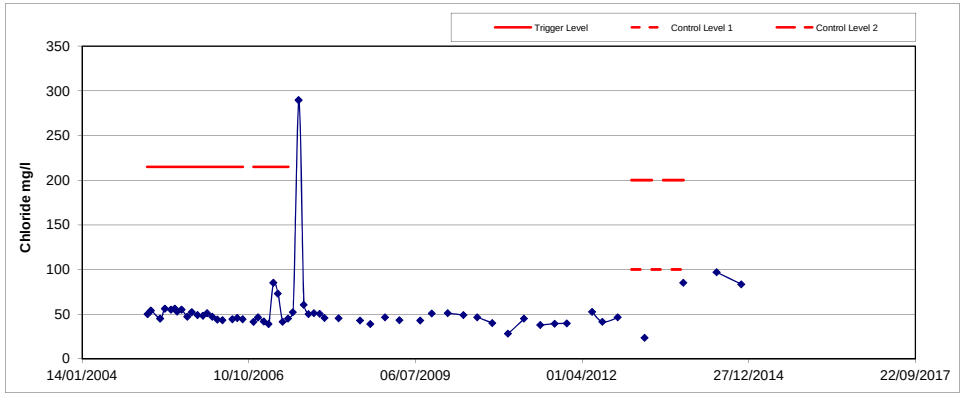

Sodium
Potassium
Magnesium
Sulphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

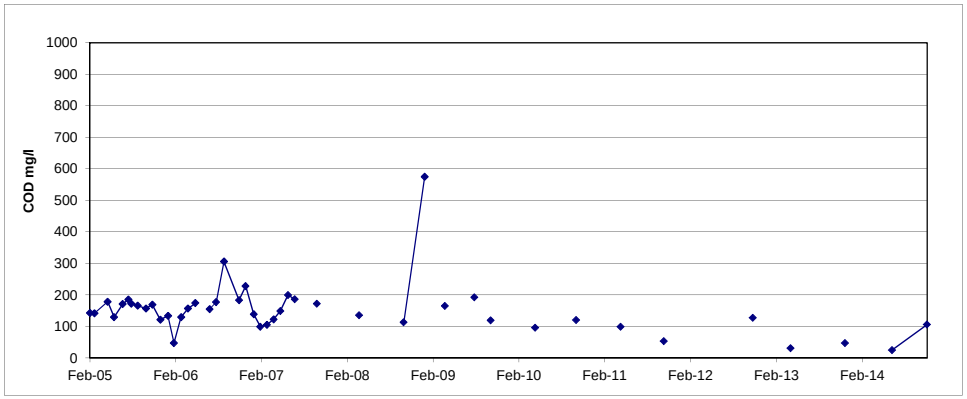

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

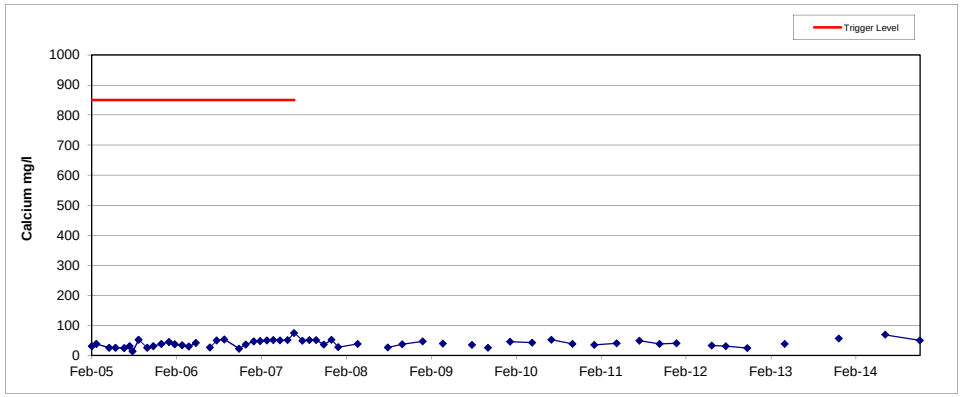

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

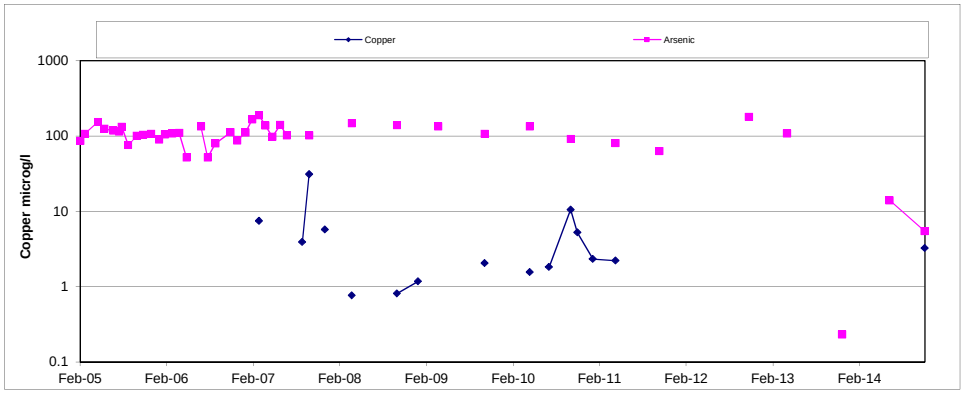

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
0
200
400
600
800
1000
1200
1400
01/02/2005
01/02/2006
01/02/2007
01/02/2008
01/02/2009
01/02/2010
01/02/2011
01/02/2012
01/02/2013
01/02/2014

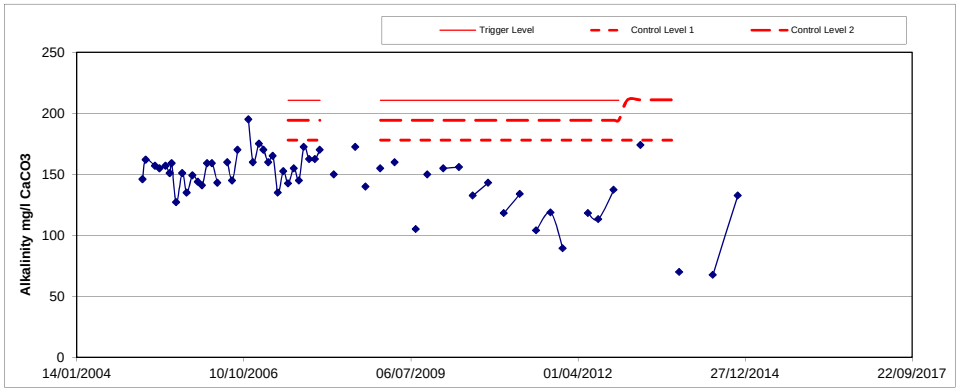

Trigger Level
Control Level 1
Control Level 2
Ammonia mg/l
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

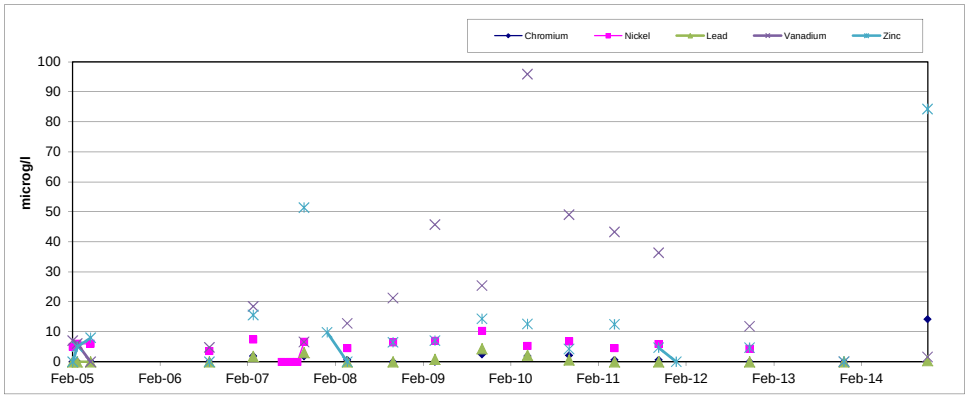

Trigger Level
Control Level 1
Control Level 2
Chloride mg/l
0
50
100
150
200
250
300
350
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

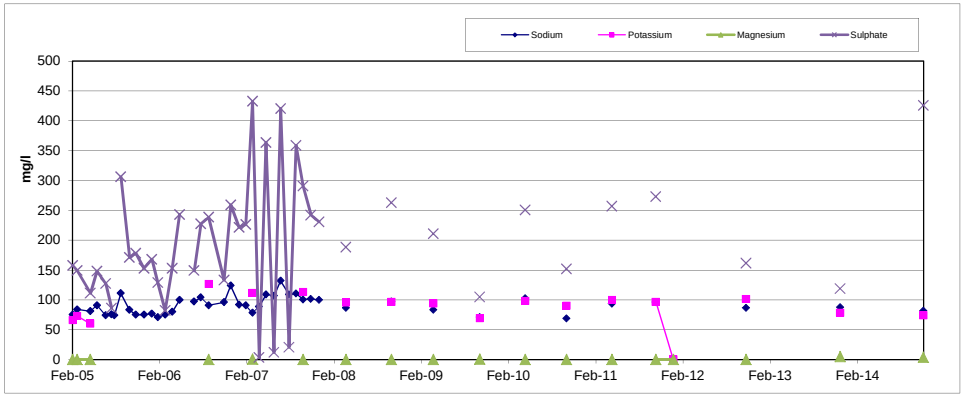

COD mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

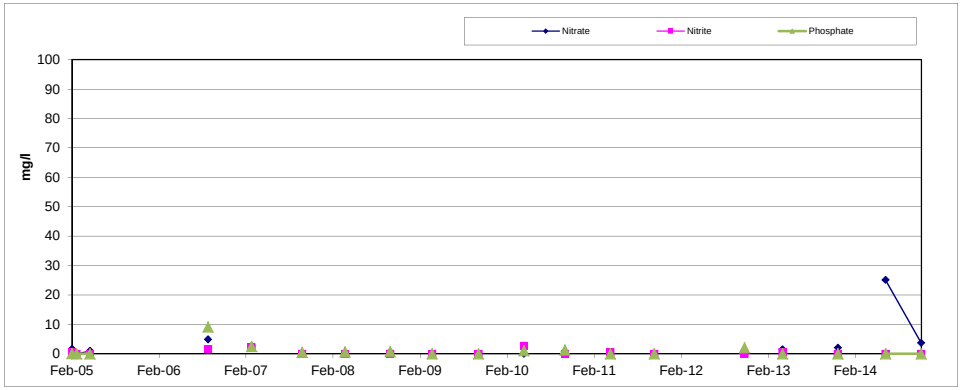

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

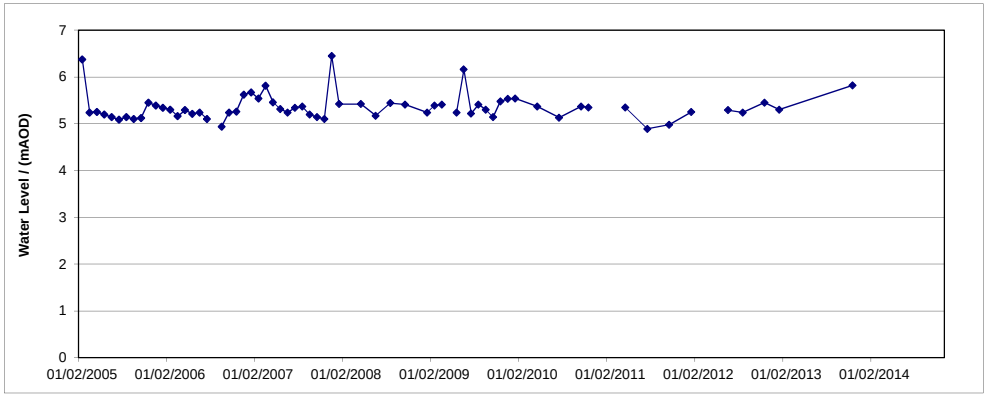

Copper
Arsenic
Copper microg/l
1000
100
10
1
0.1
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

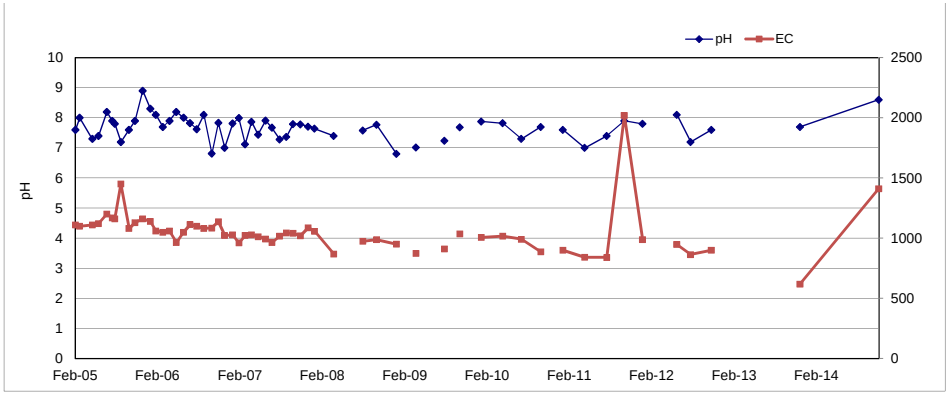

Trigger Level
Control Level 1
Control Level 2
Alkalinity mg/l CaCO3
250
200
150
100
50
0
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

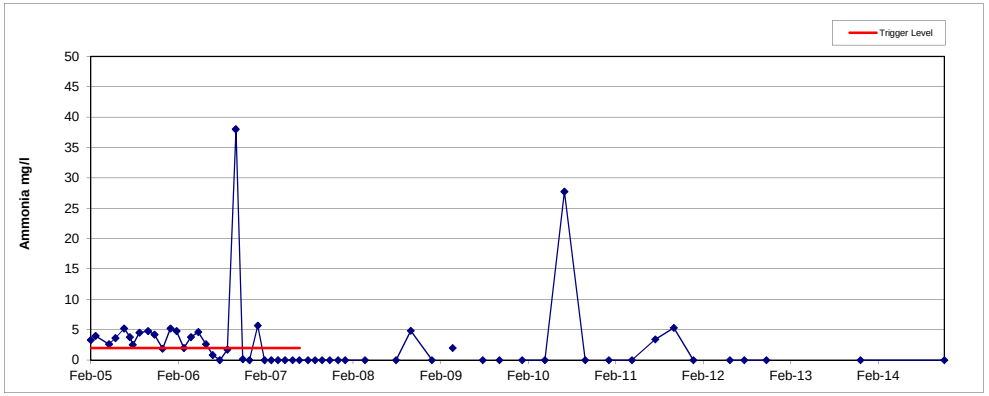

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

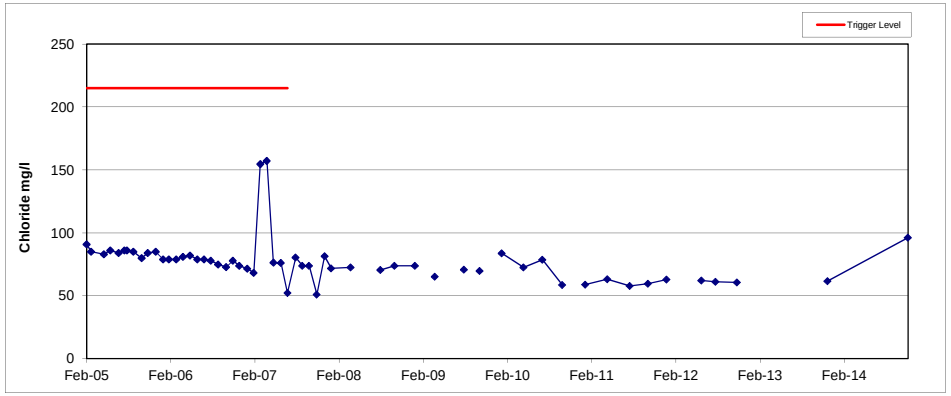

Sodium
Potassium
Magnesium
Sulphate
mg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

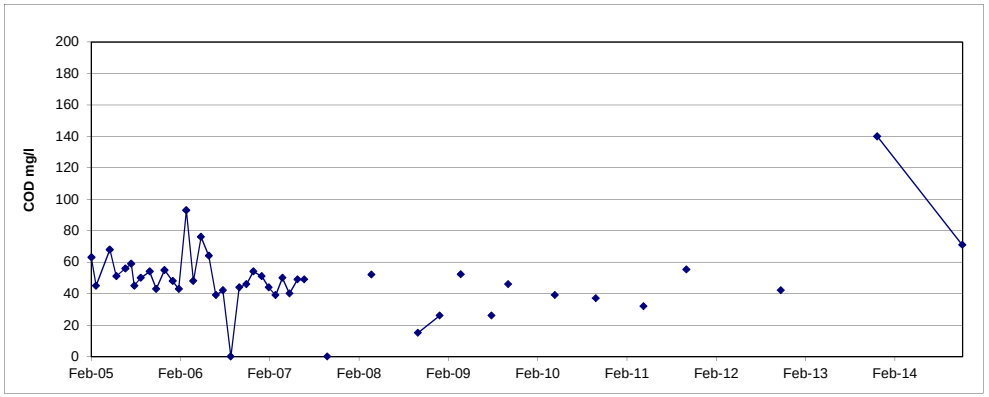

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

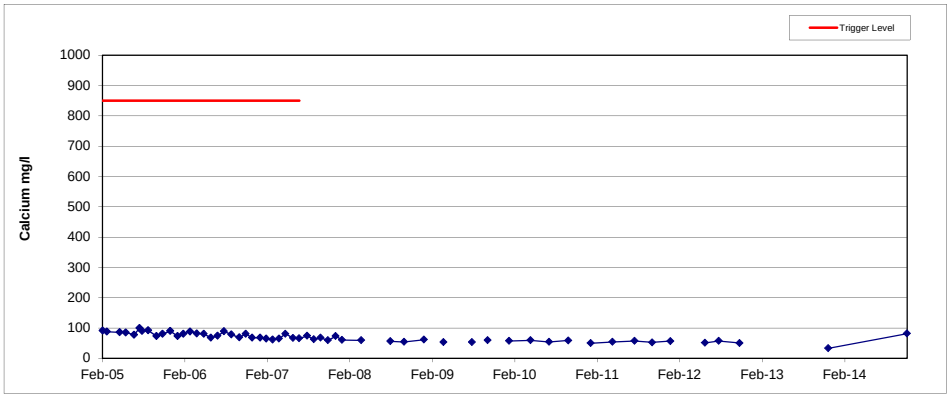

Water Level / (mAOD)
0
1
2
3
4
5
6
7
01/02/2005
01/02/2006
01/02/2007
01/02/2008
01/02/2009
01/02/2010
01/02/2011
01/02/2012
01/02/2013
01/02/2014

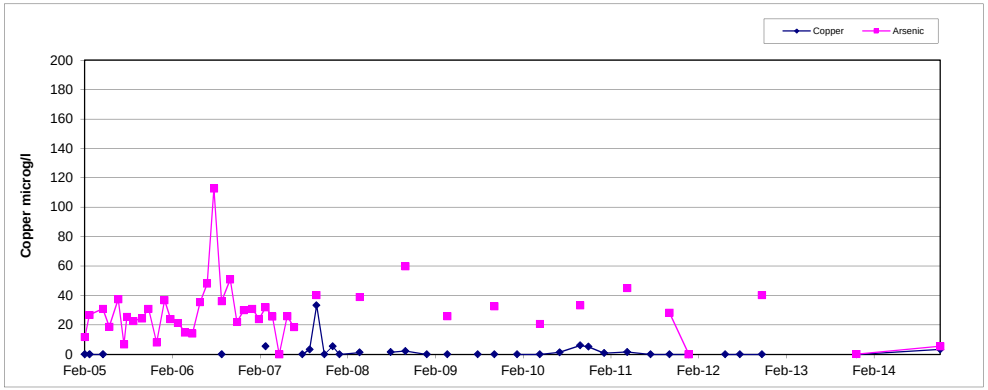

pH
EC
pH
0
1
2
3
4
5
6
7
8
9
10
0
500
1000
1500
2000
2500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

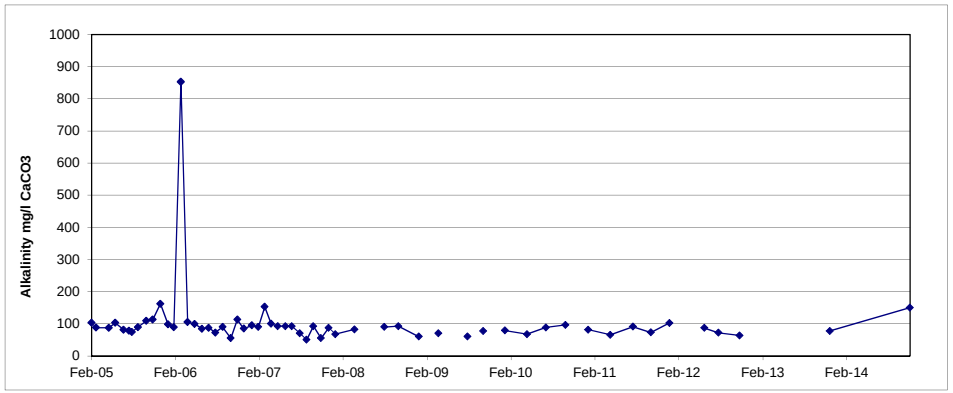

Trigger Level
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

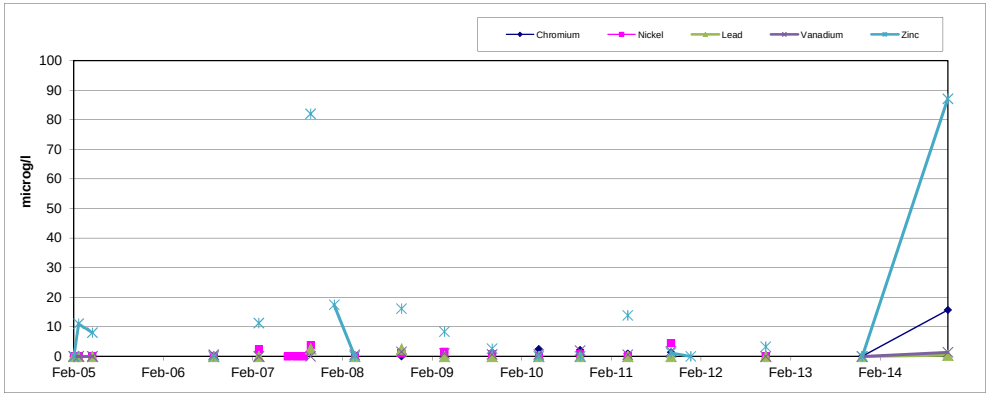

Trigger Level
Chloride mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

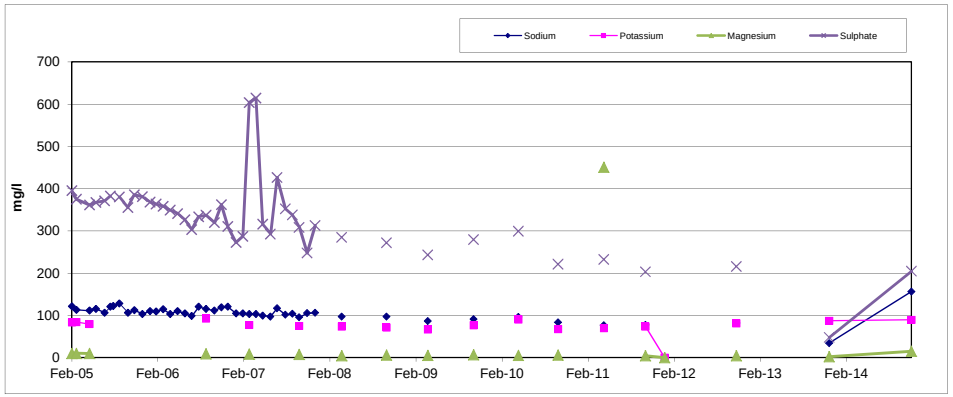

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

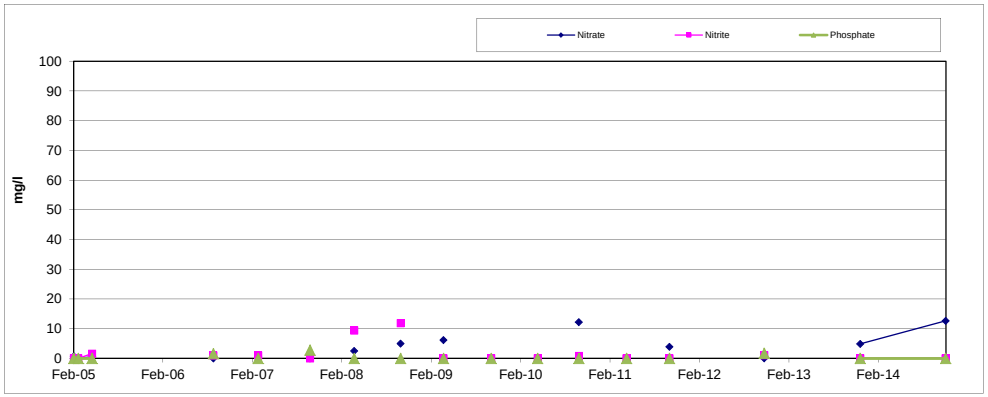

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

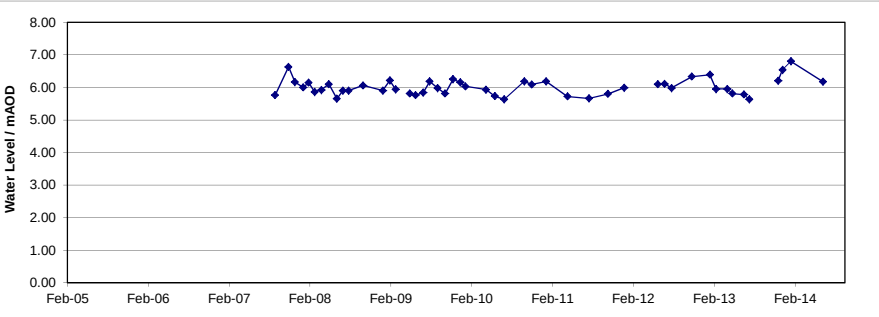

Copper
Arsenic
Copper microg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

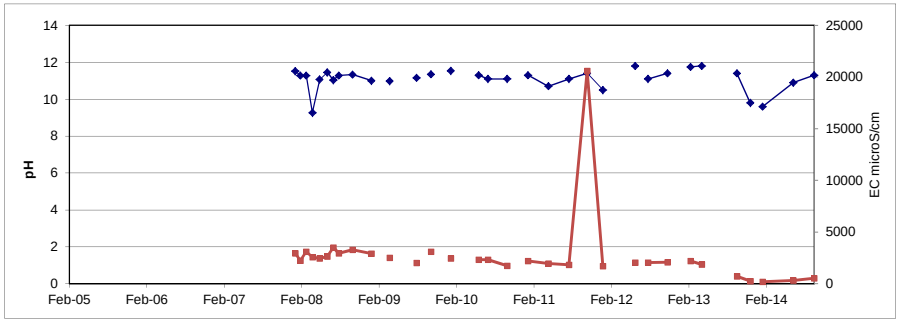

Alkalinity mg/l CaCO3
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

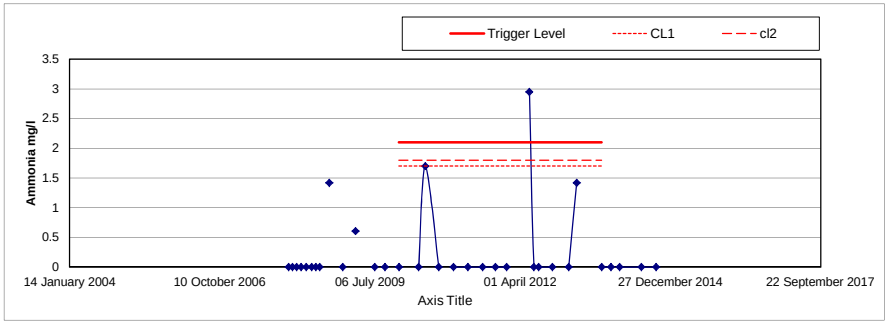

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
100
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

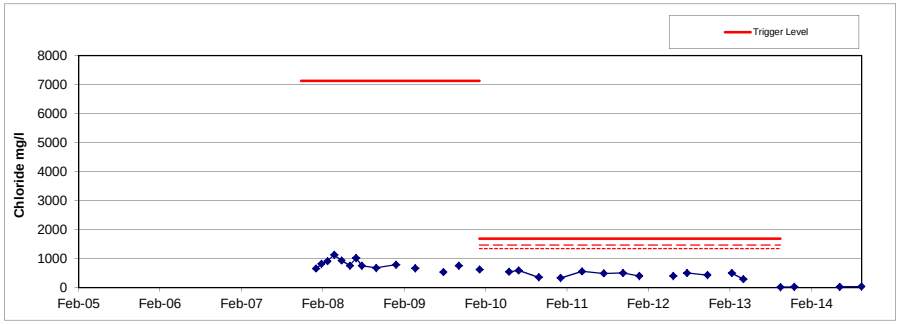

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
100
200
300
400
500
600
700
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

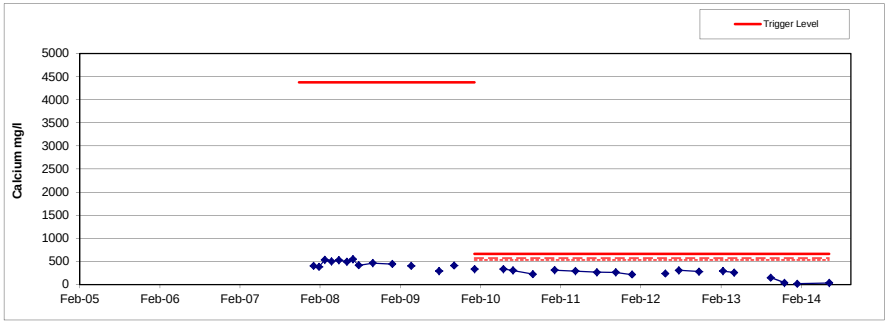

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
80
90
100
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

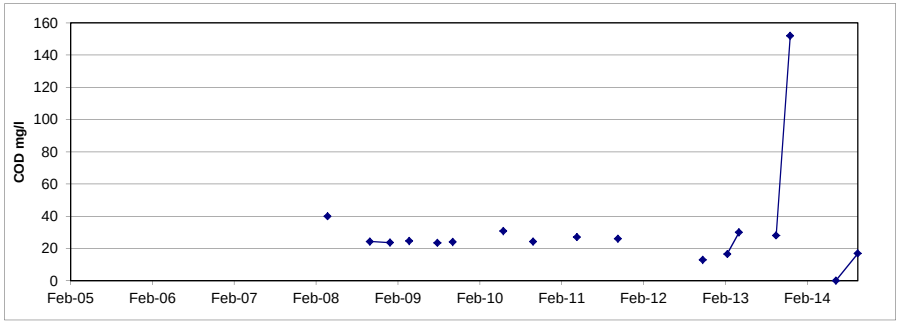

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

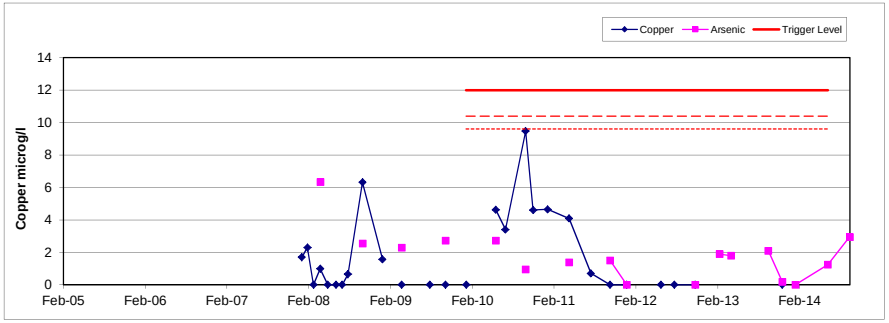

pH
EC microS/cm
14
12
10
8
6
4
2
0
25000
20000
15000
10000
5000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

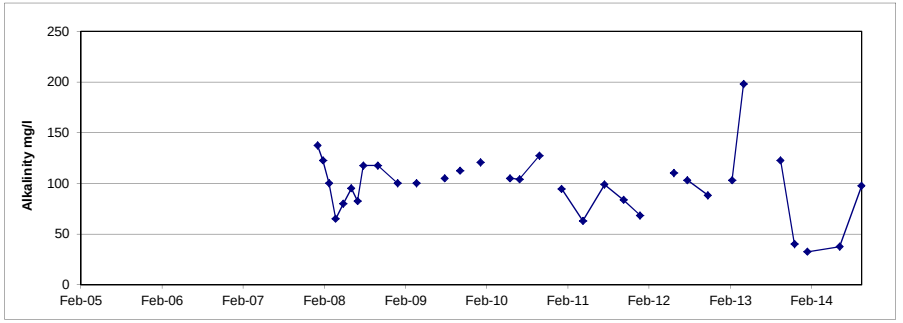

Trigger Level
CL1
cl2
Ammonia mg/l
3.5
3
2.5
2
1.5
1
0.5
0
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017
Axis Title

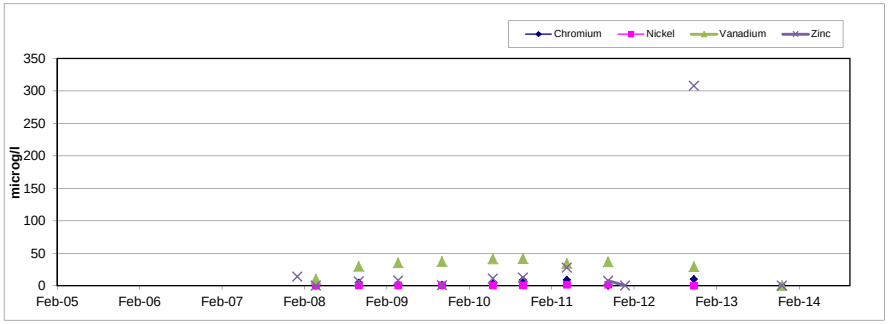

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

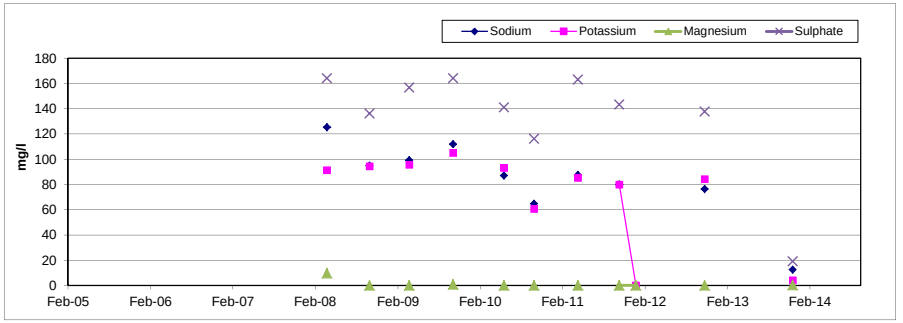

Trigger Level
Calcium mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

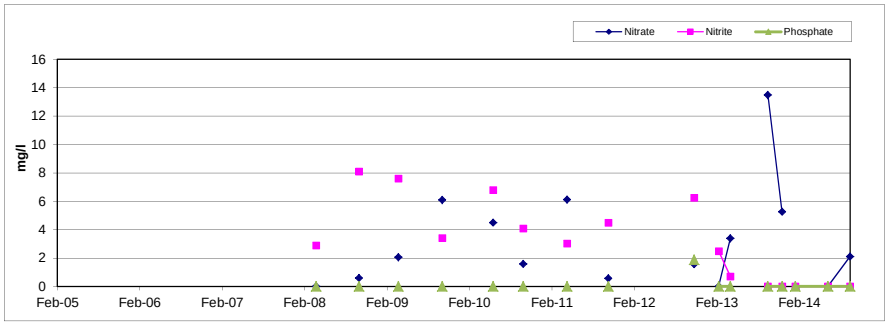

COD mg/l
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

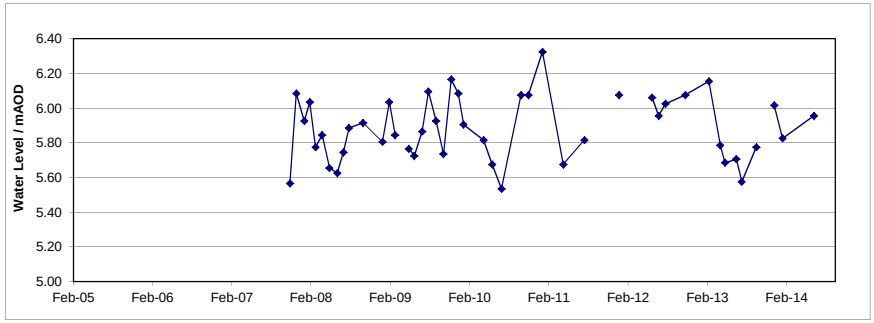

Copper
Arsenic
Trigger Level
Copper microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

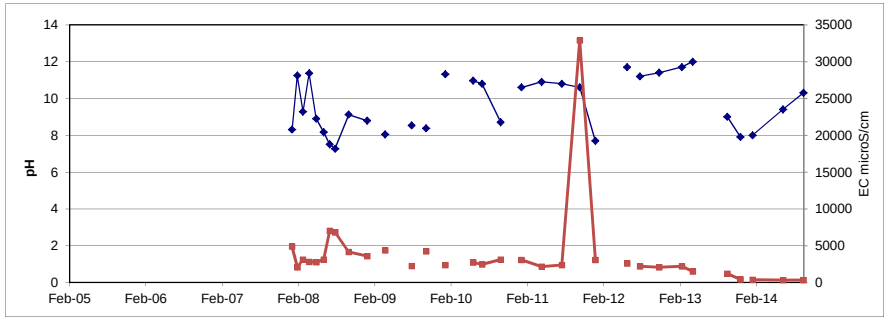

Alkalinity mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

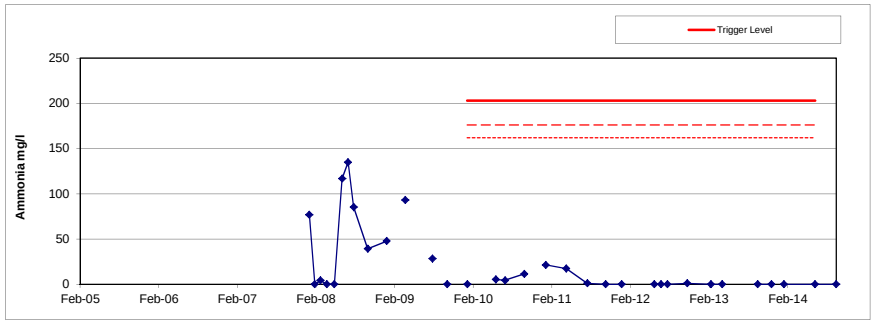

Chromium
Nickel
Vanadium
Zinc
microg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

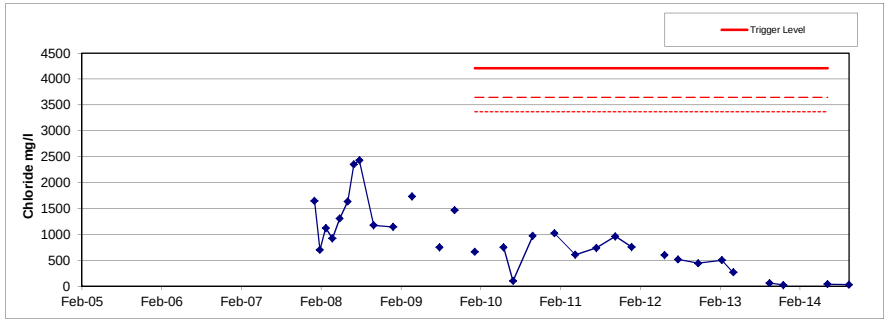

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
20
40
60
80
100
120
140
160
180
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

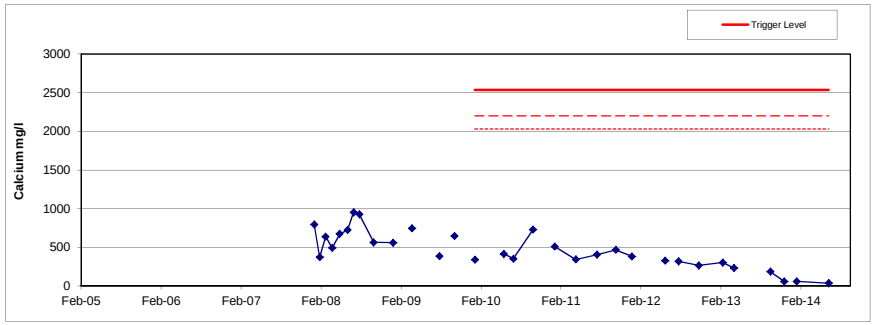

Nitrate
Nitrite
Phosphate
mg/l
0
2
4
6
8
10
12
14
16
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

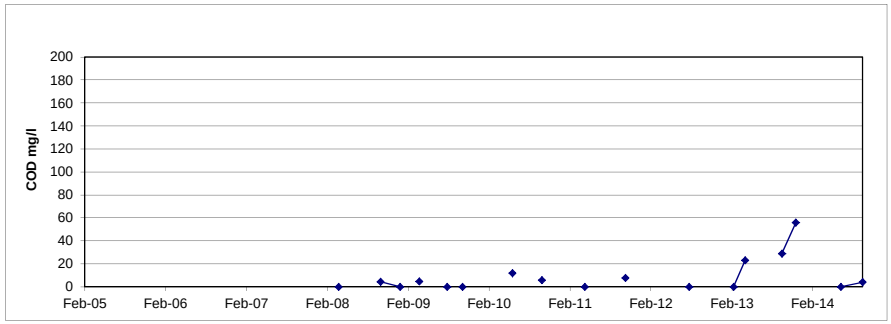

Water Level / mAOD
6.40
6.20
6.00
5.80
5.60
5.40
5.20
5.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

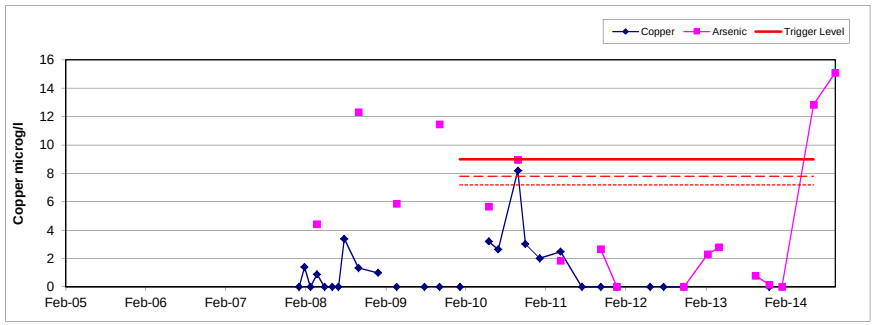

pH
EC microS/cm
14
12
10
8
6
4
2
0
35000
30000
25000
20000
15000
10000
5000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

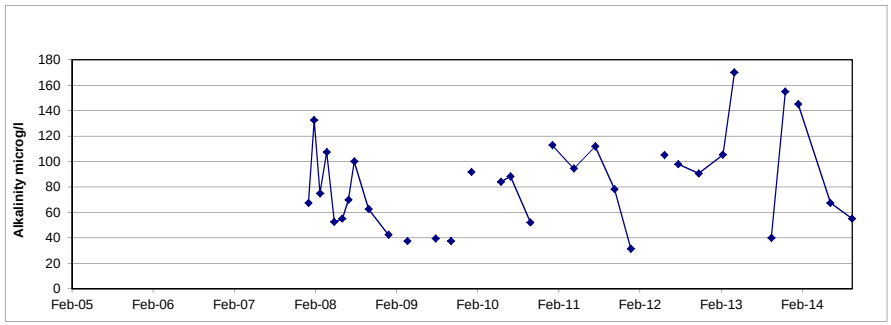

Trigger Level
Ammonia mg/l
250
200
150
100
50
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

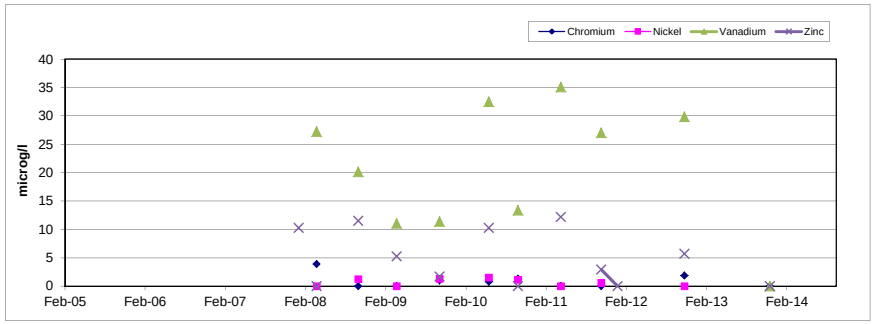

Trigger Level
Chloride mg/l
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

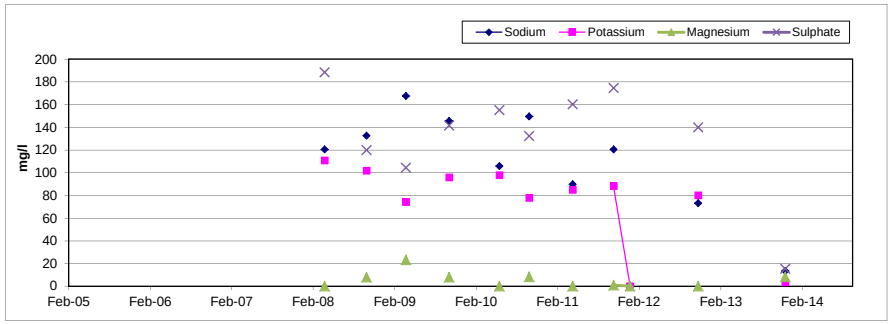

Trigger Level
Calcium mg/l
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

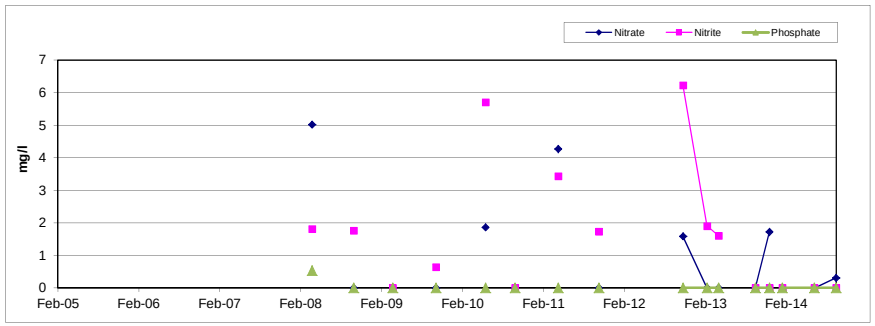

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

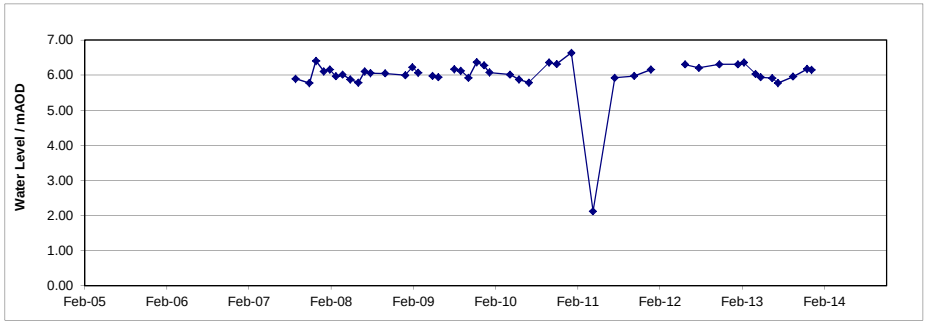

Copper
Arsenic
Trigger Level
Copper microg/l
16
14
12
10
8
6
4
2
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

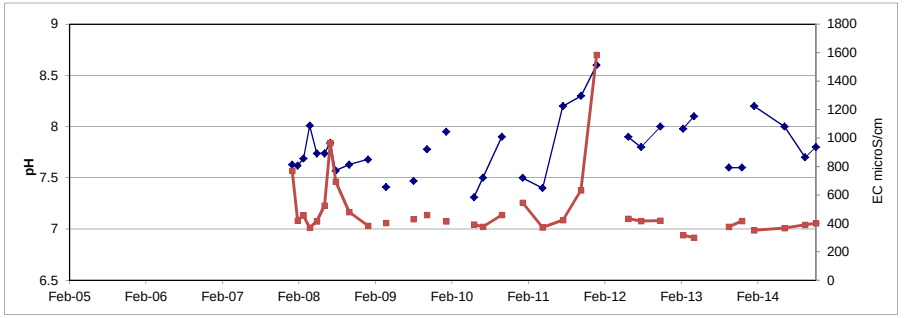

Alkalinity microg/l
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

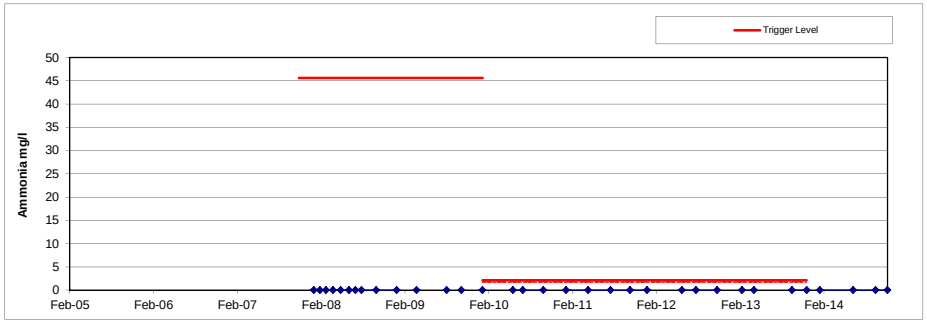

Chromium
Nickel
Vanadium
Zinc
microg/l
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

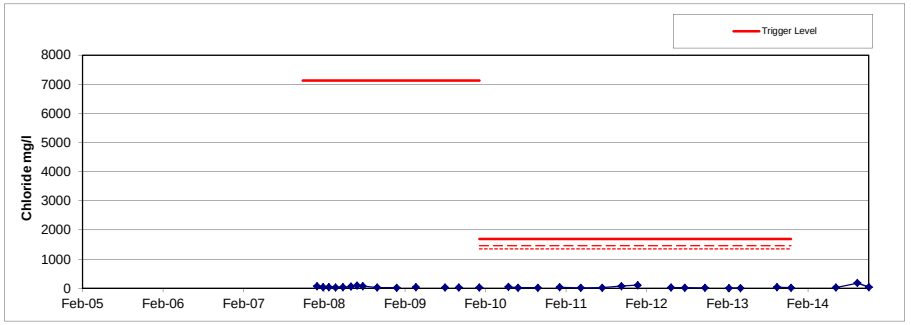

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

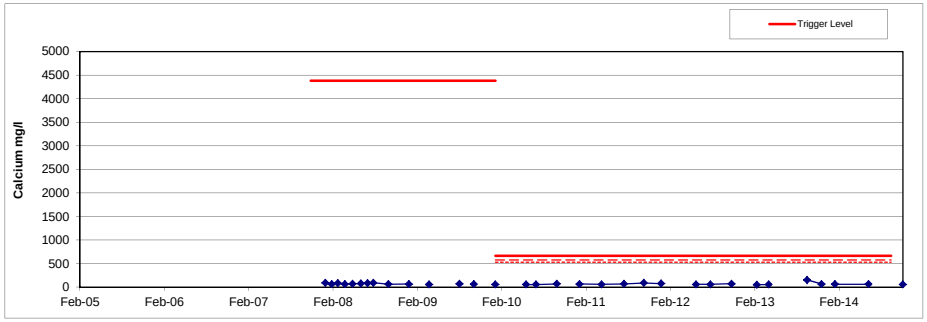

Nitrate
Nitrite
Phosphate
mg/l
7
6
5
4
3
2
1
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

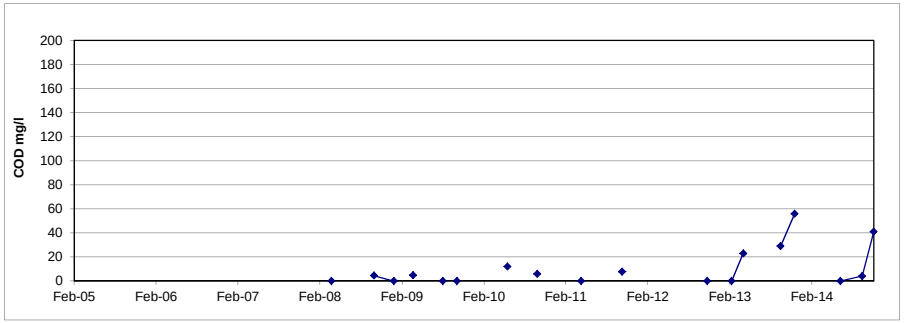

Water Level / mAOD
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

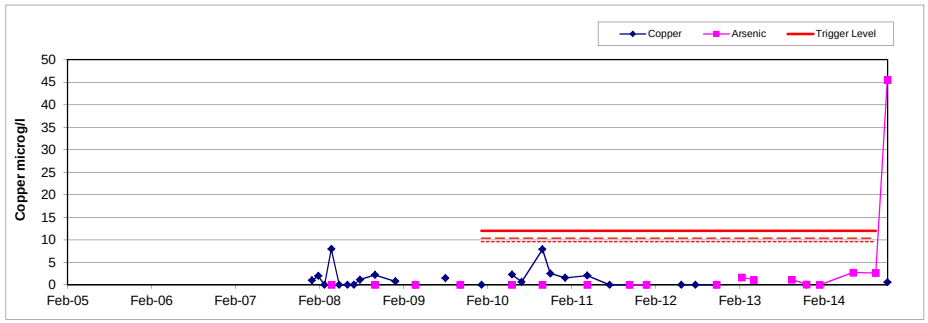

pH
EC microS/cm
9
8.5
8
7.5
7
6.5
1800
1600
1400
1200
1000
800
600
400
200
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

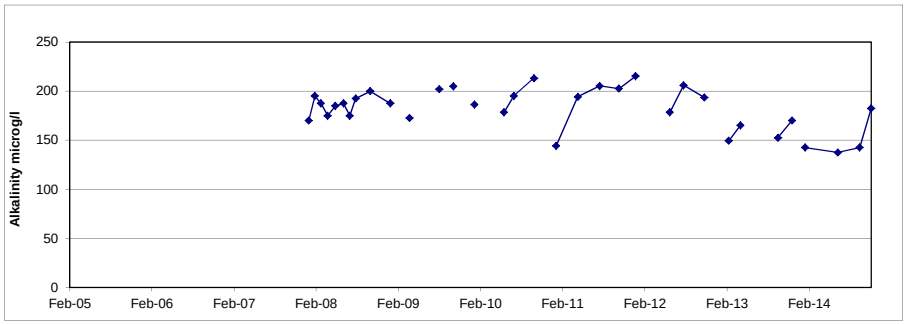

Trigger Level
Ammonia mg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

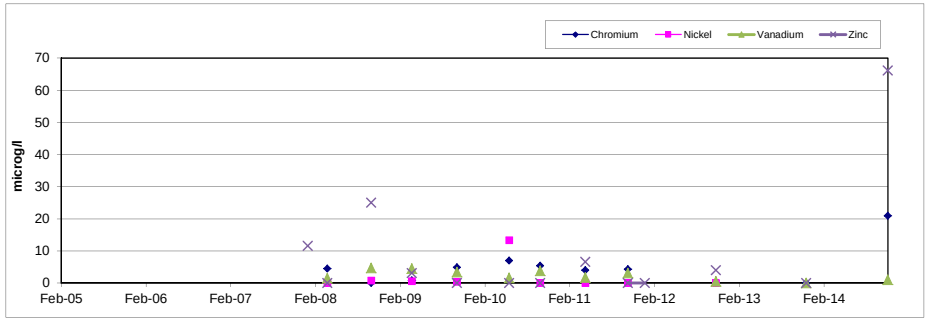

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

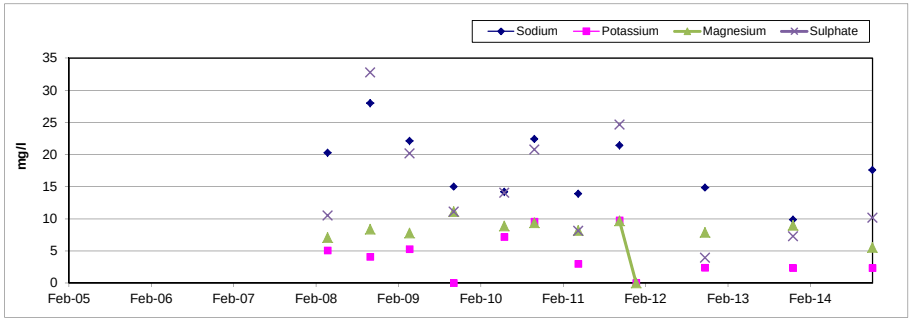

Trigger Level
Calcium mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

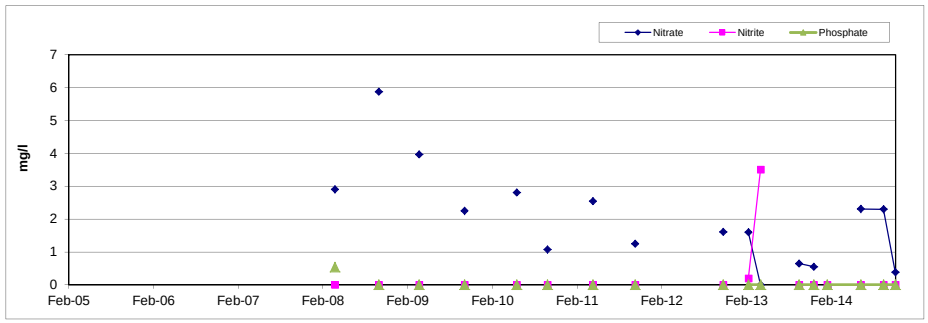

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

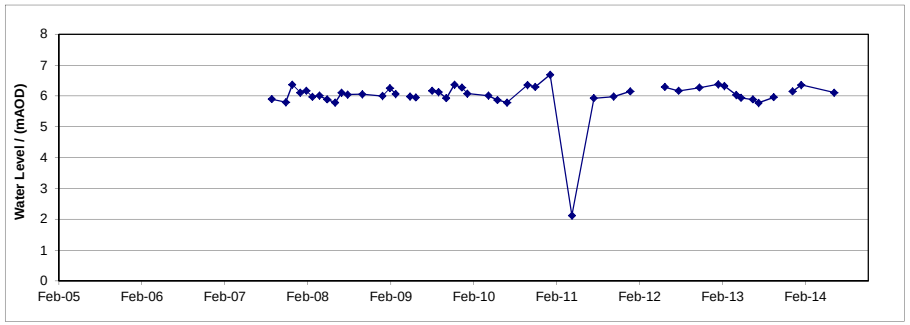

Copper
Arsenic
Trigger Level
Copper microg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

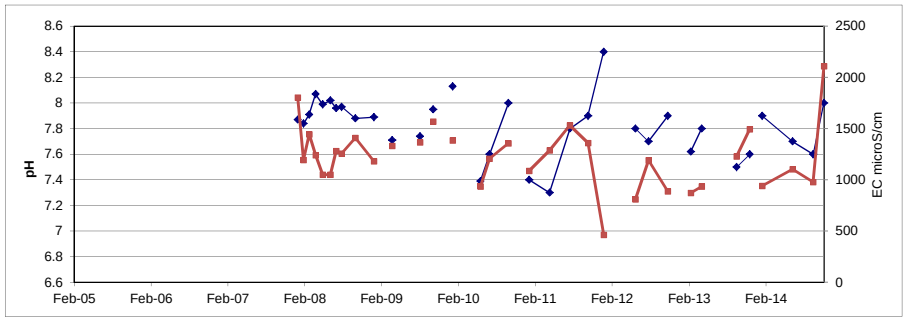

Alkalinity microg/l
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

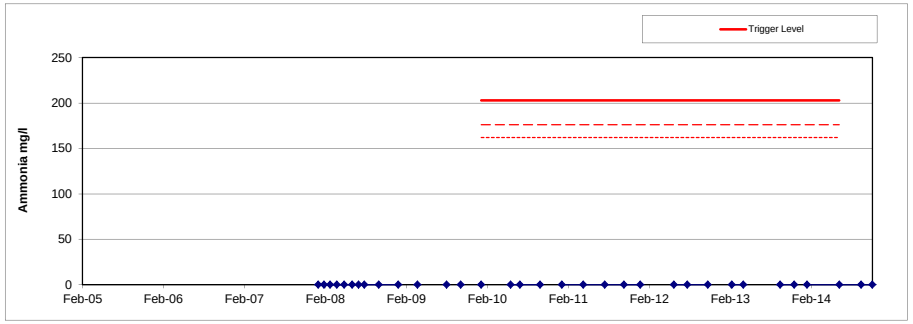

Chromium
Nickel
Vanadium
Zinc
microg/l
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

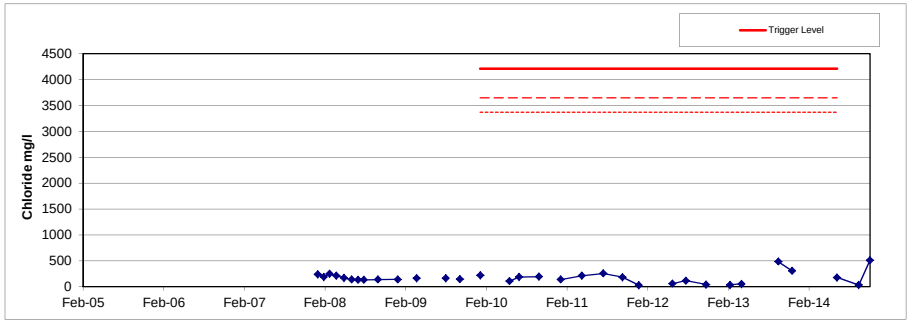

Sodium
Potassium
Magnesium
Sulphate
mg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

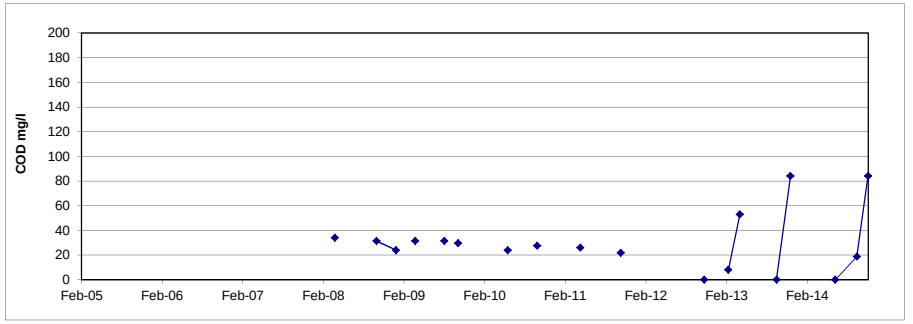

Nitrate
Nitrite
Phosphate
mg/l
7
6
5
4
3
2
1
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

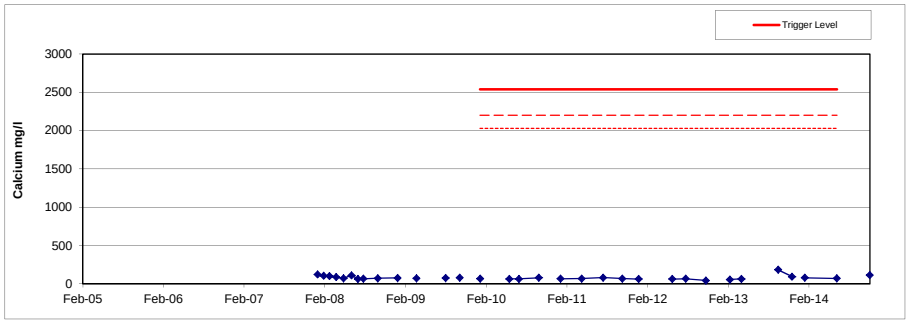

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

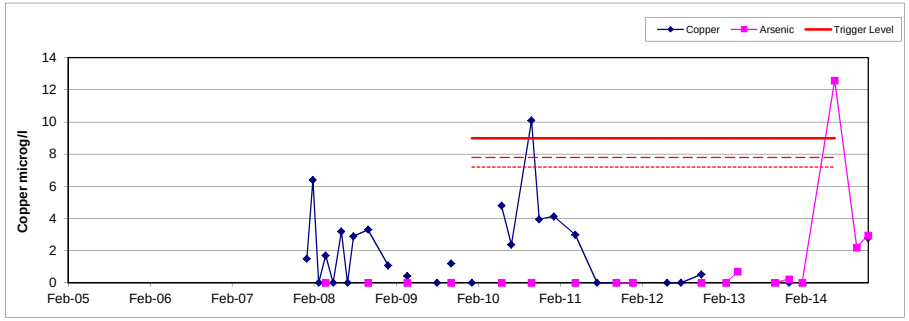

pH
6.6
6.8
7
7.2
7.4
7.6
7.8
8
8.2
8.4
8.6
EC microS/cm
0
500
1000
1500
2000
2500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

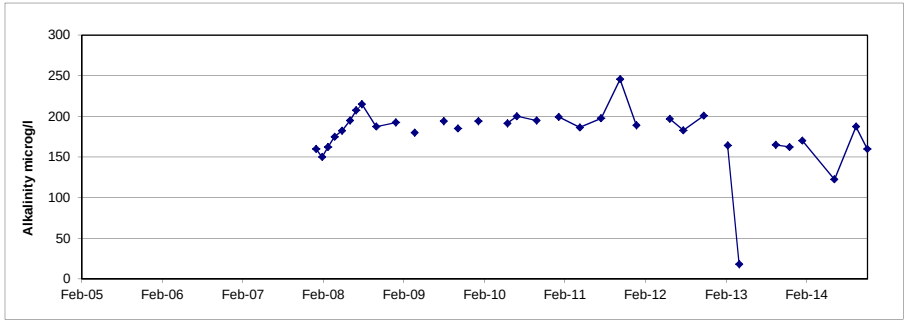

Trigger Level
Ammonia mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

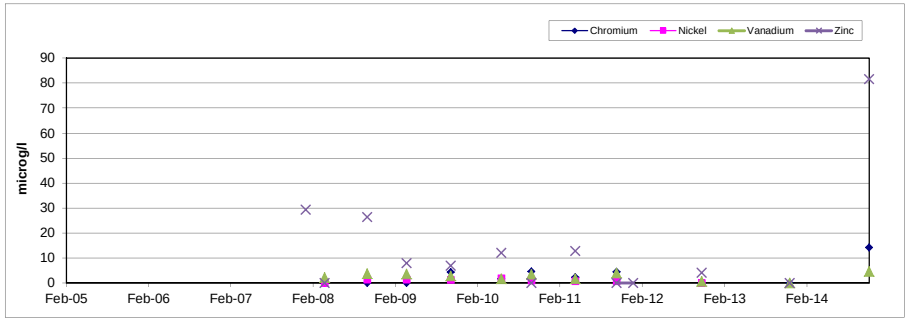

Trigger Level
Chloride mg/l
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

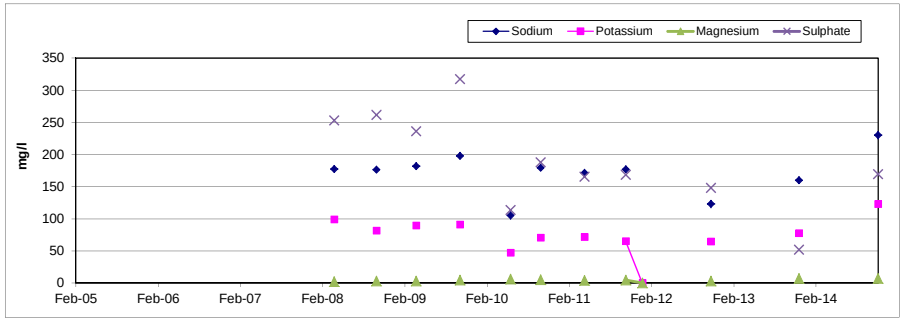

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

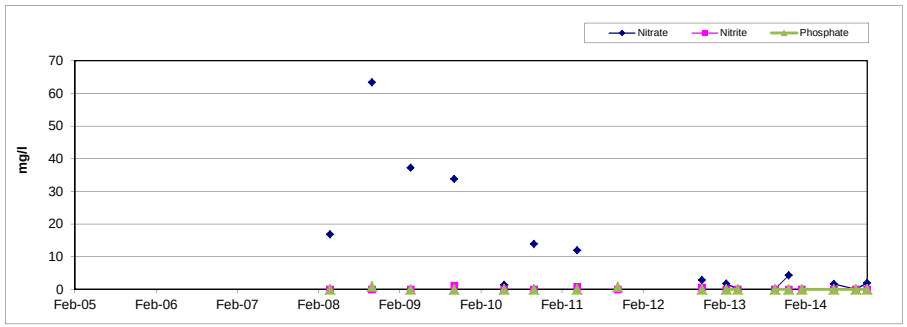

Trigger Level
Calcium mg/l
0
500
1000
1500
2000
2500
3000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

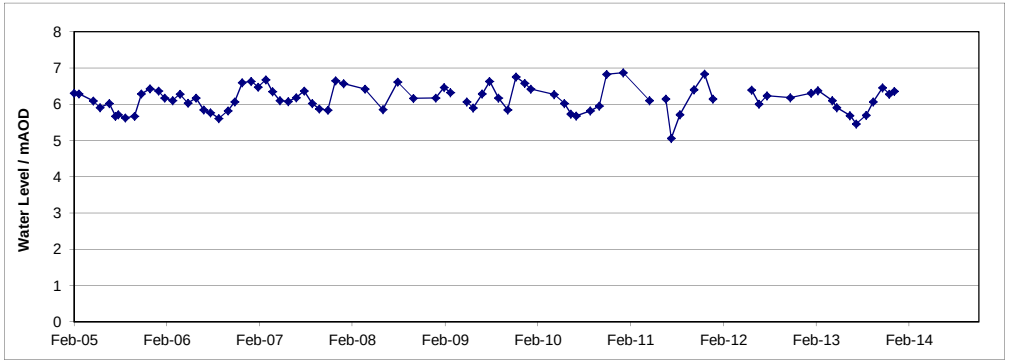

Copper
Arsenic
Trigger Level
Copper microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

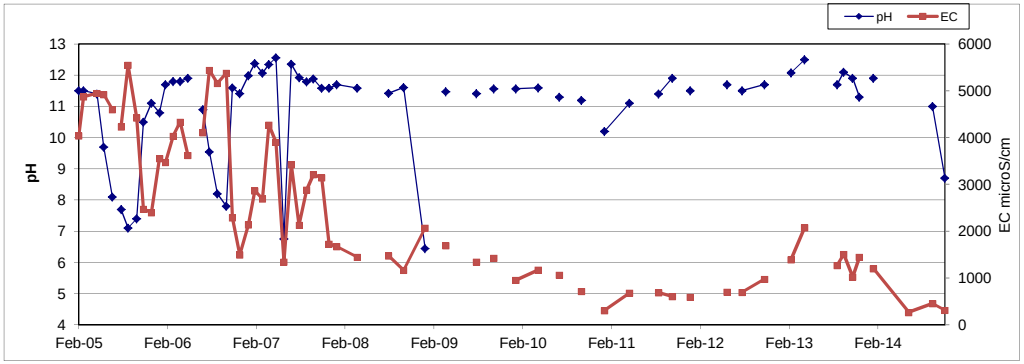

Alkalinity microg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

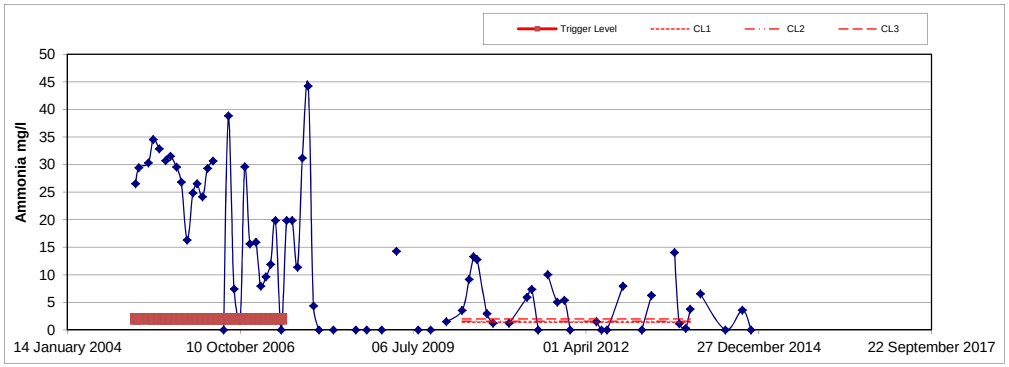

Chromium
Nickel
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

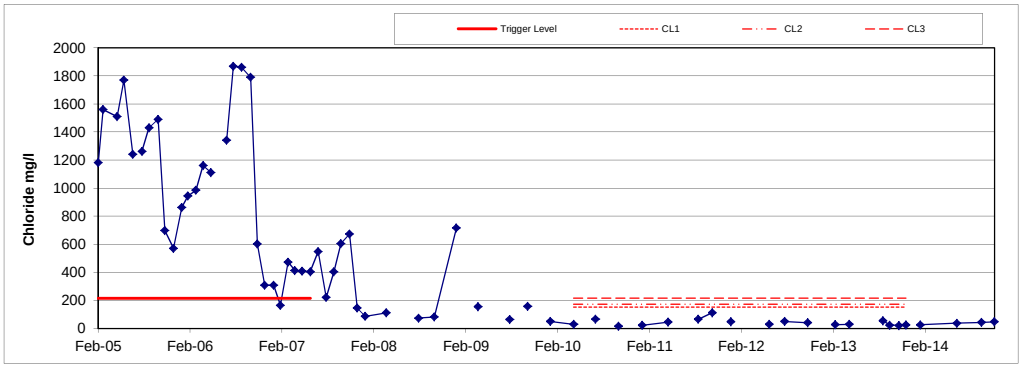

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

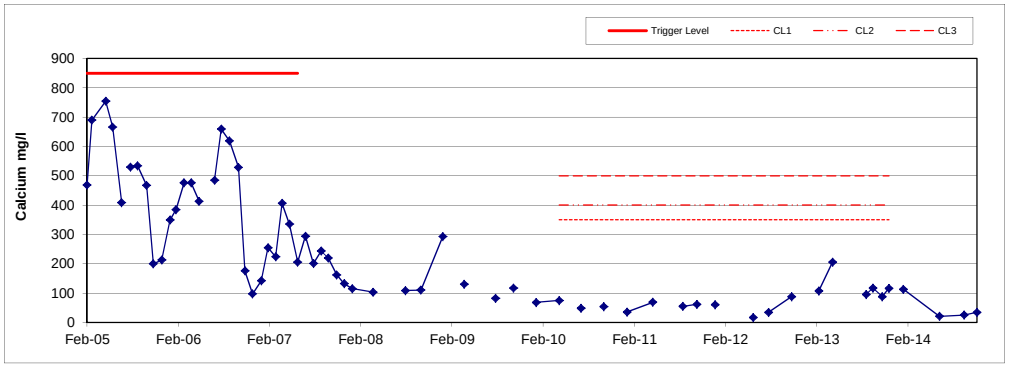

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

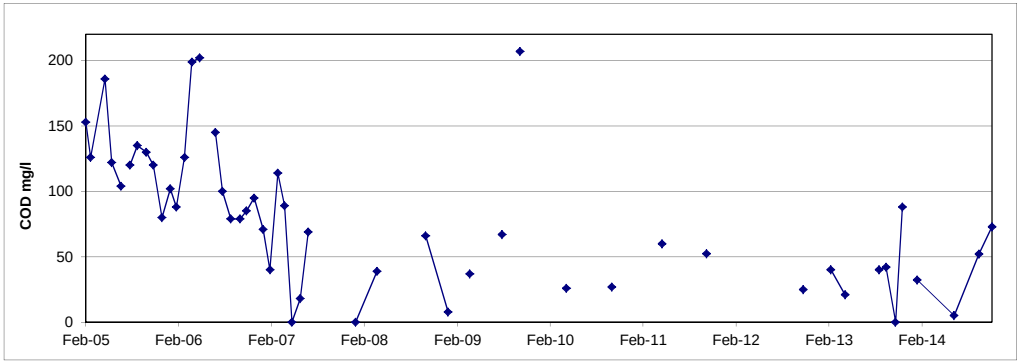

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

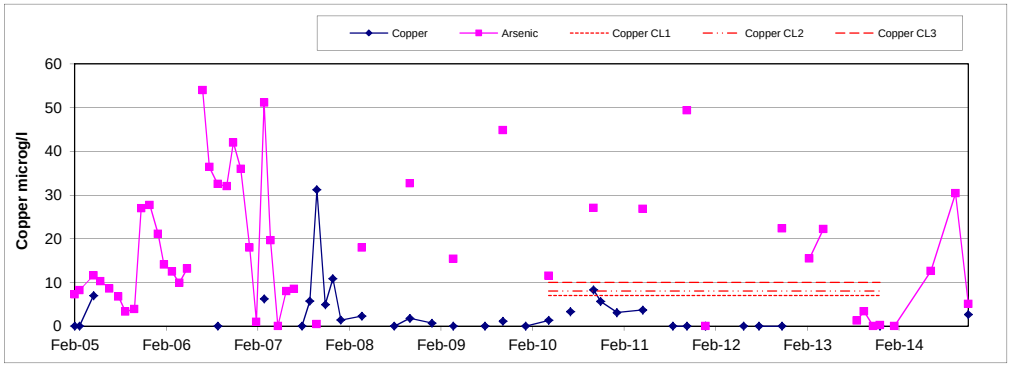

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
1000
2000
3000
4000
5000
6000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

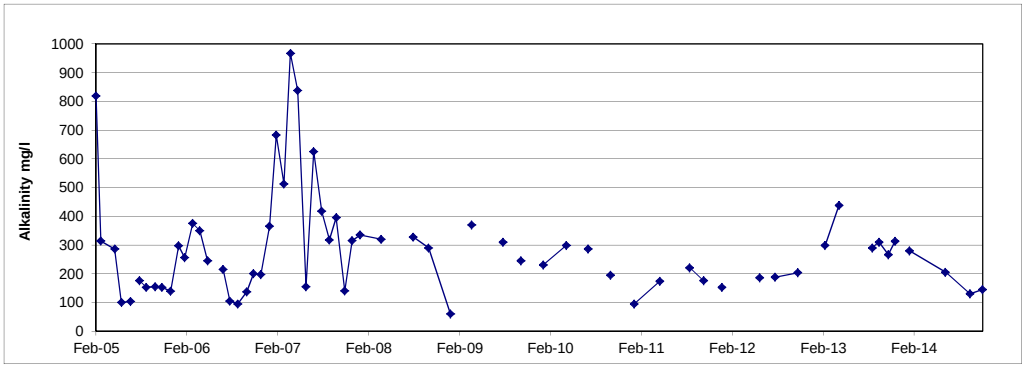

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

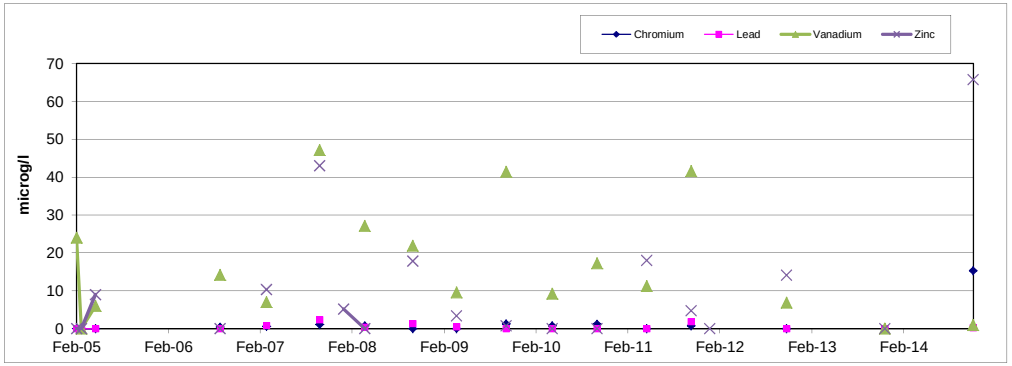

Trigger Level
CL1
CL2
CL3
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

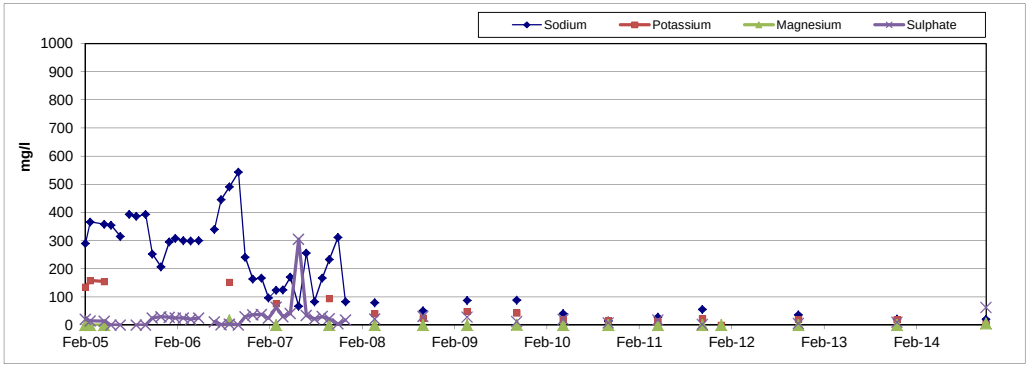

Trigger Level
CL1
CL2
CL3
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

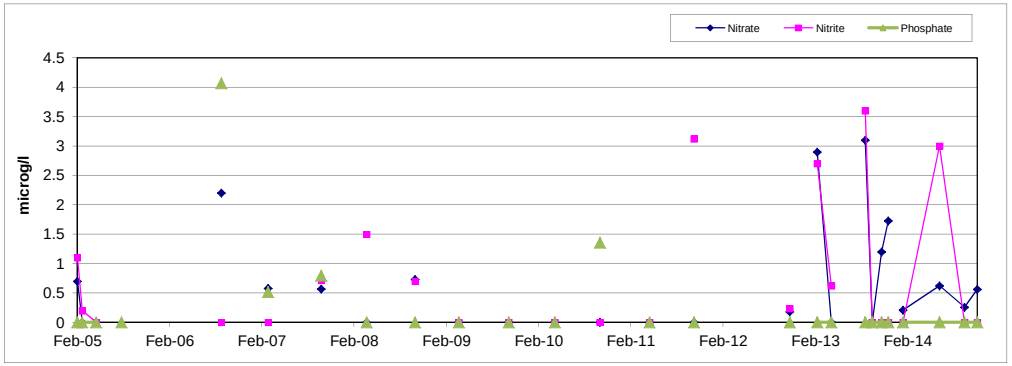

COD mg/l
0
50
100
150
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

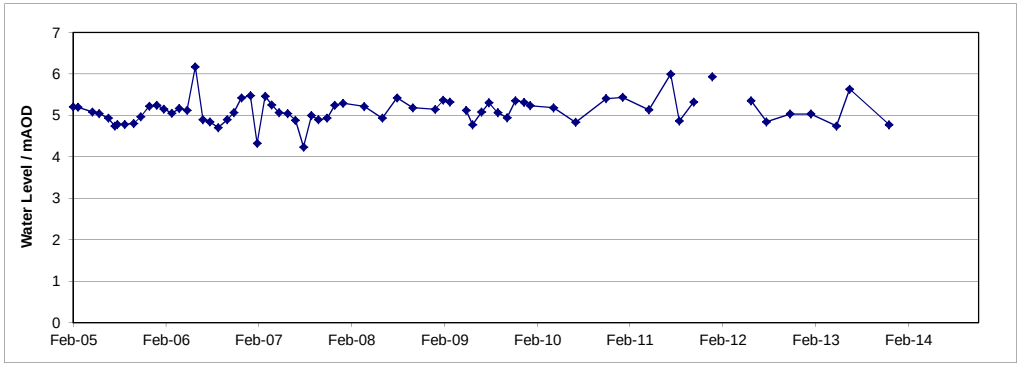

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
Copper microg/l
0
10
20
30
40
50
60
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

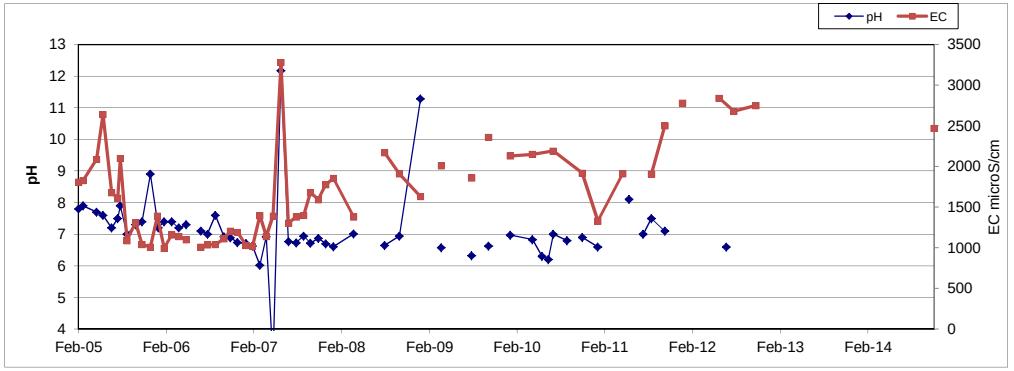

Alkalinity mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

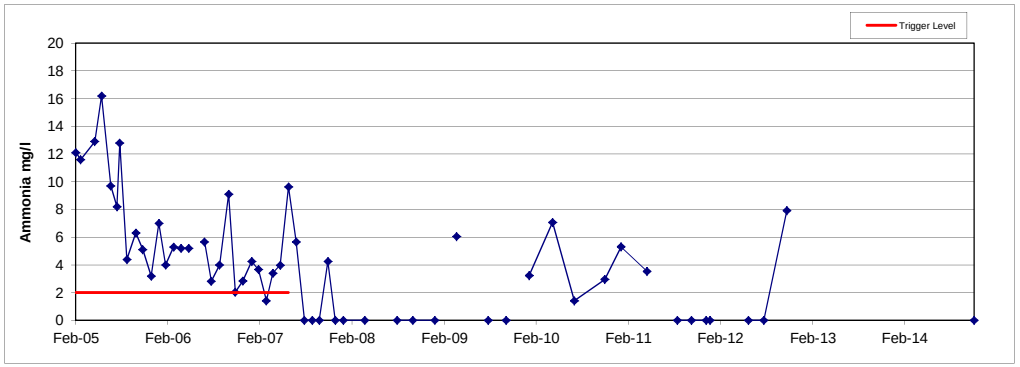

Chromium
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

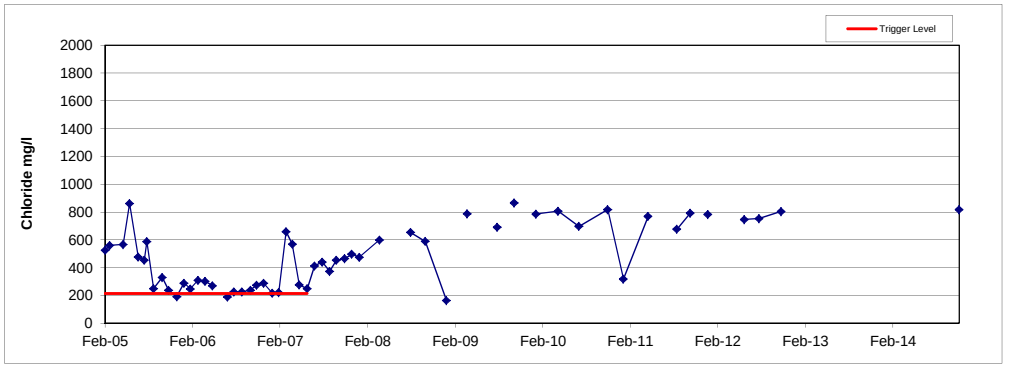

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

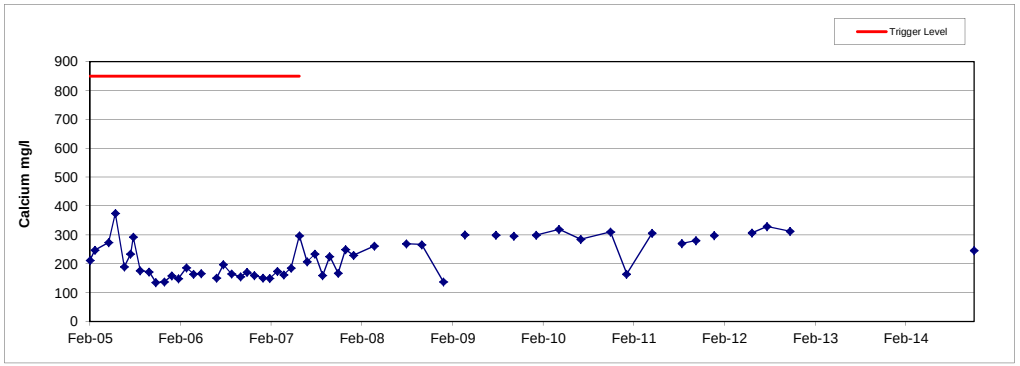

Nitrate
Nitrite
Phosphate
microg/l
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

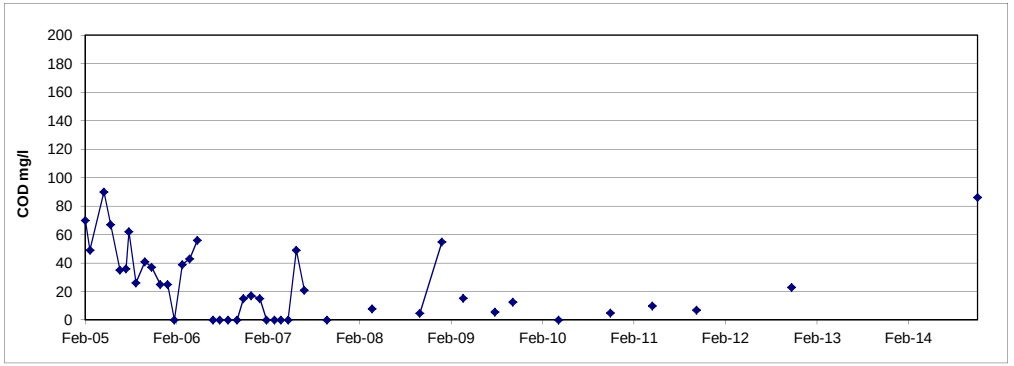

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

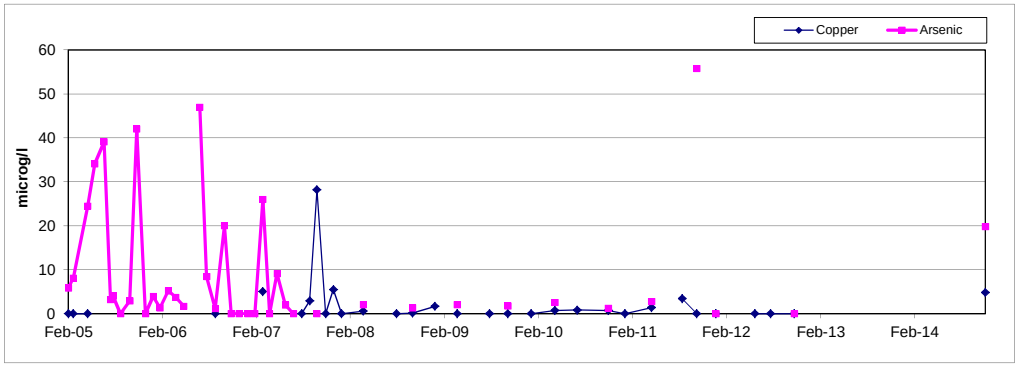

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
500
1000
1500
2000
2500
3000
3500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

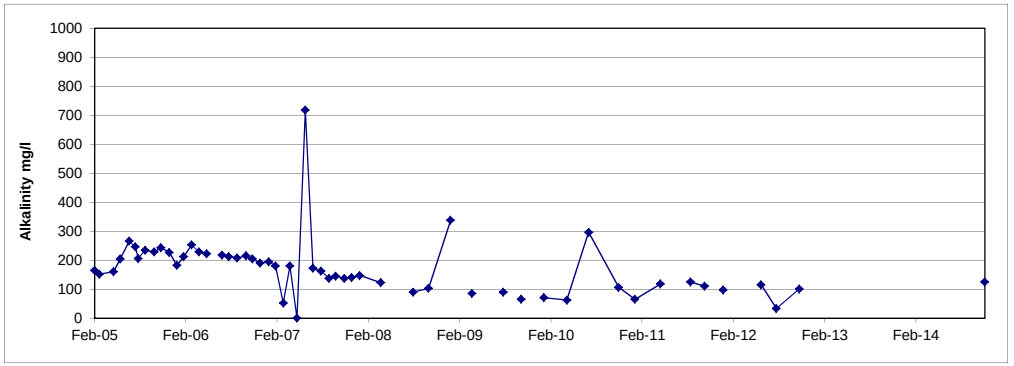

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

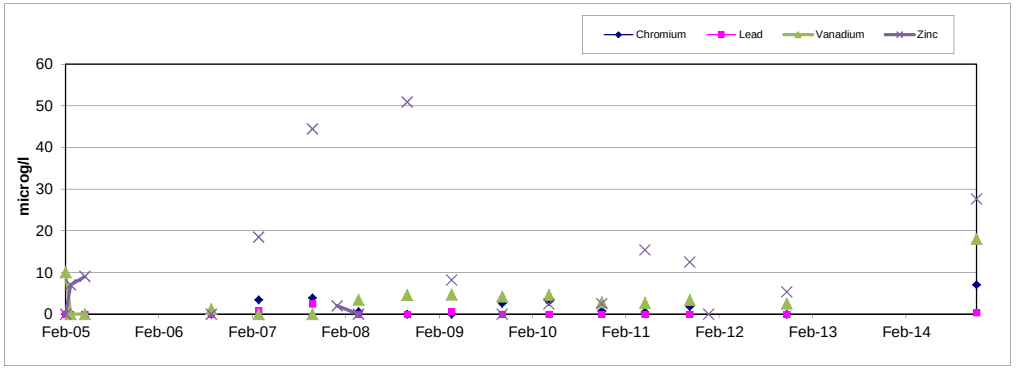

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

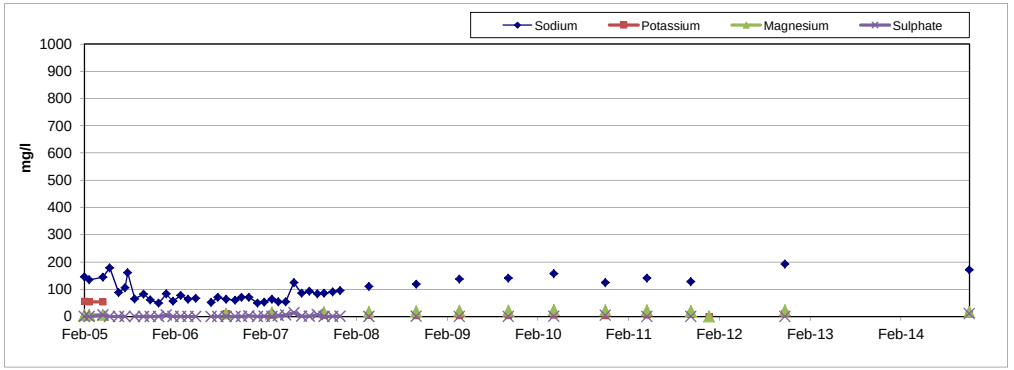

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

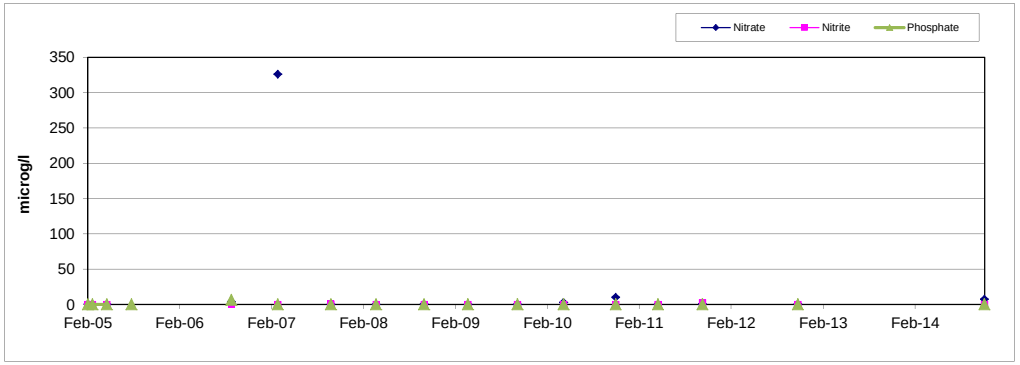

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

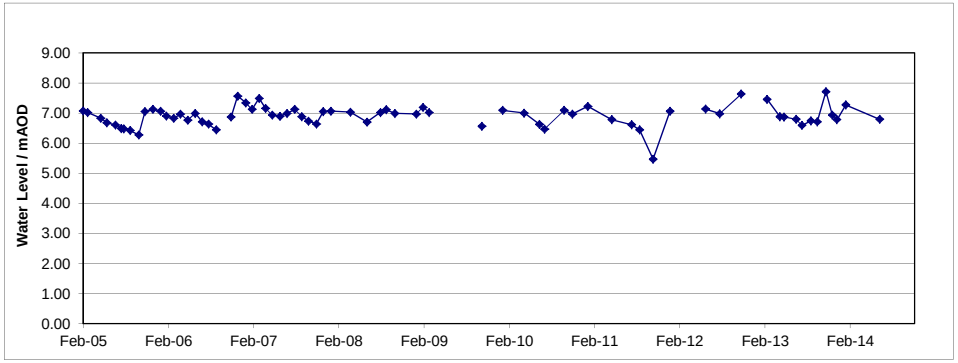

Copper
Arsenic
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

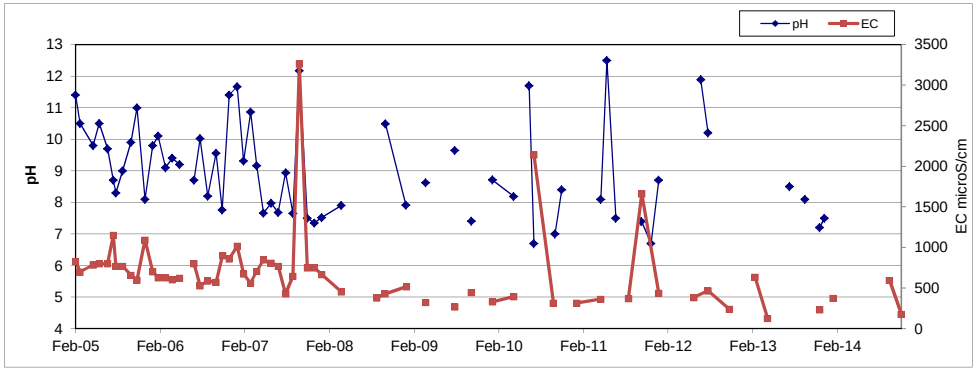

Alkalinity mg/l
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

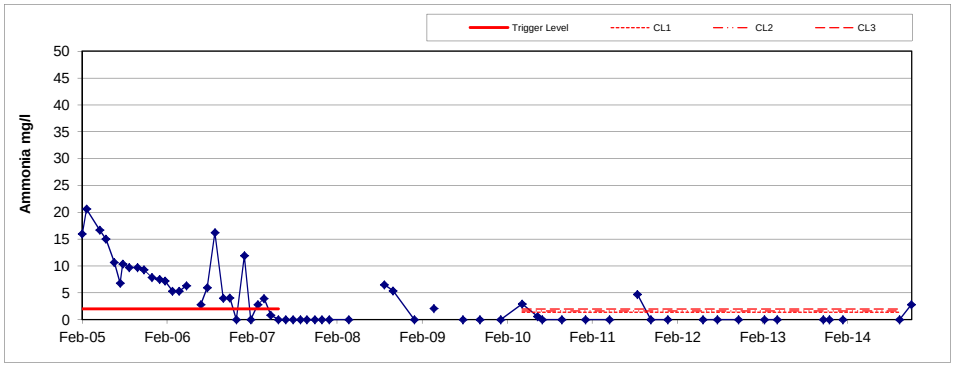

Chromium
Lead
Vanadium
Zinc
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

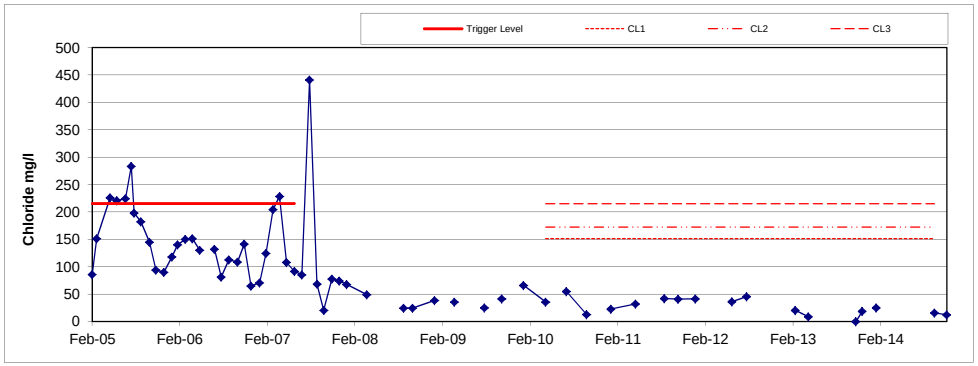

Sodium
Potassium
Magnesium
Sulphate
mg/l
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

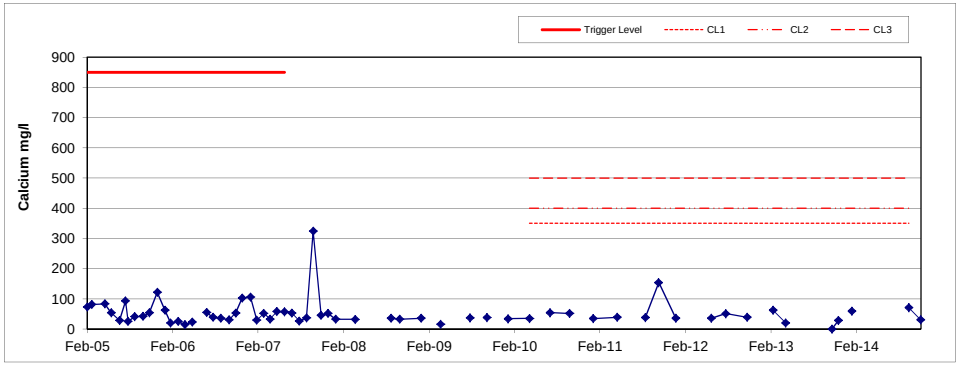

Nitrate
Nitrite
Phosphate
microg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

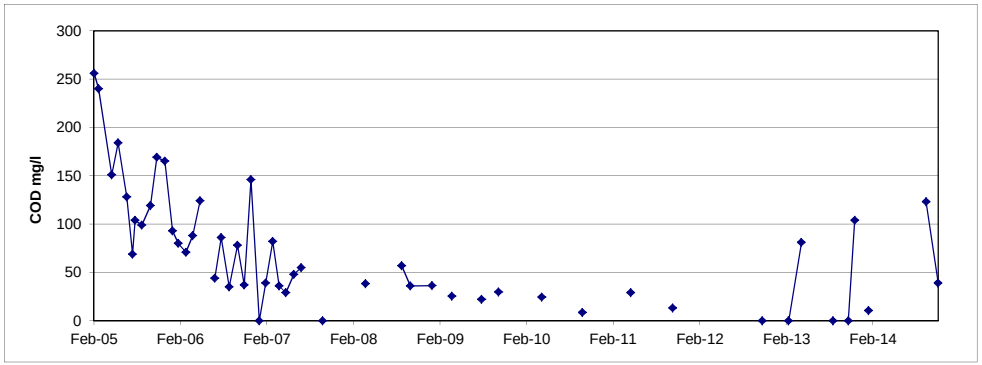

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

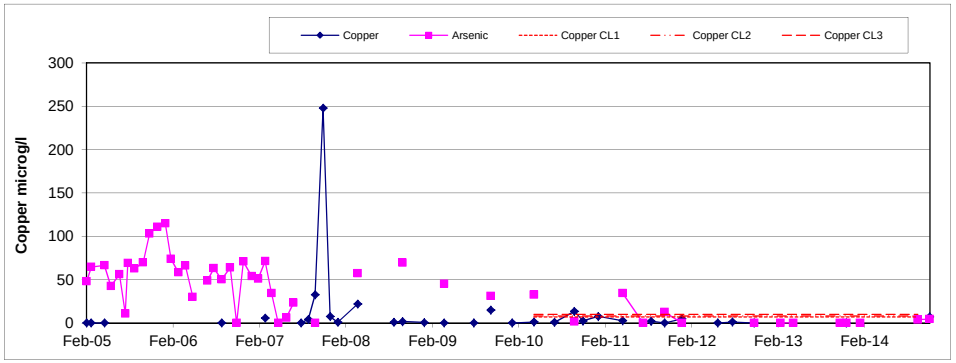

pH
EC
pH
EC microS/cm
13
12
11
10
9
8
7
6
5
4
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

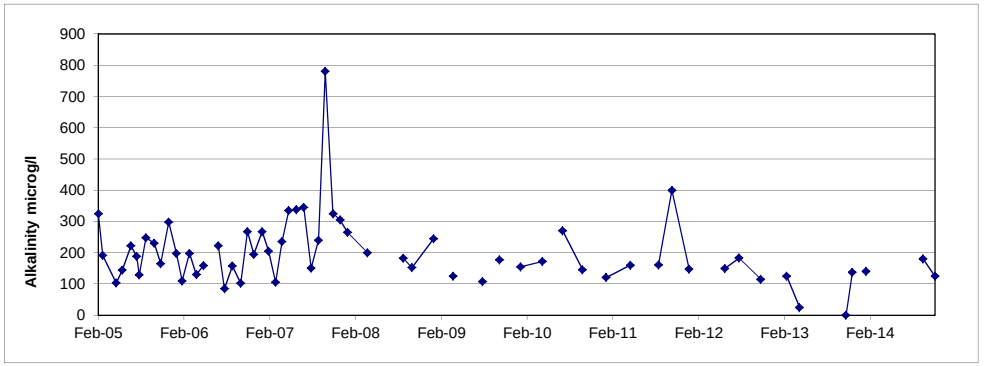

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

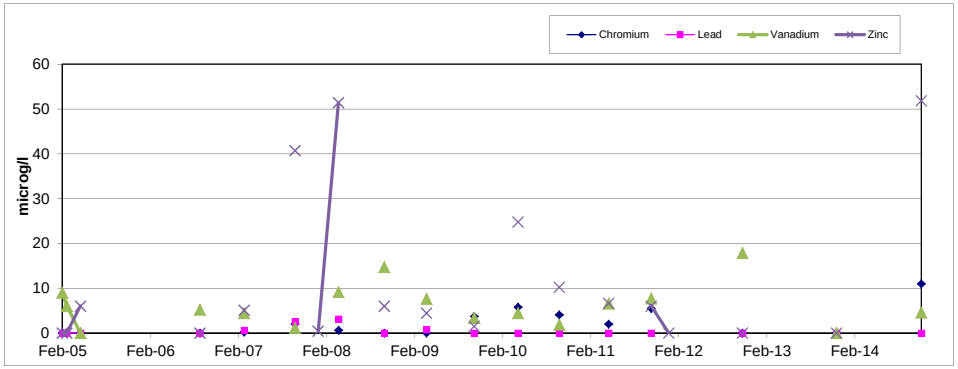

Trigger Level
CL1
CL2
CL3
Chloride mg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

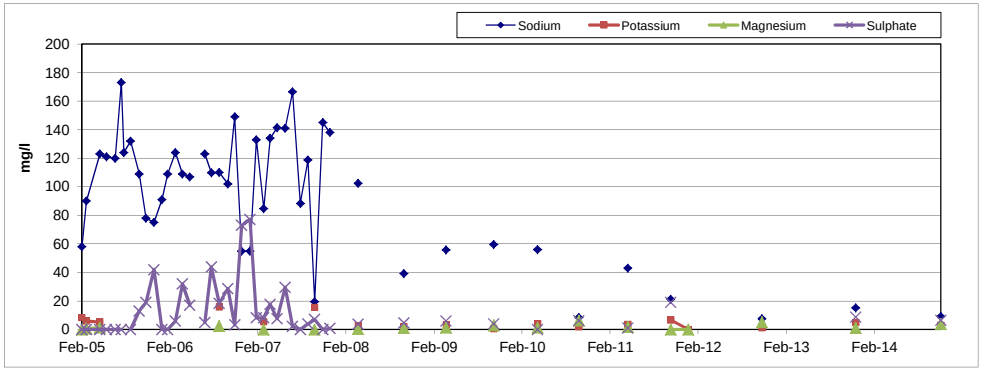

Trigger Level
CL1
CL2
CL3
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

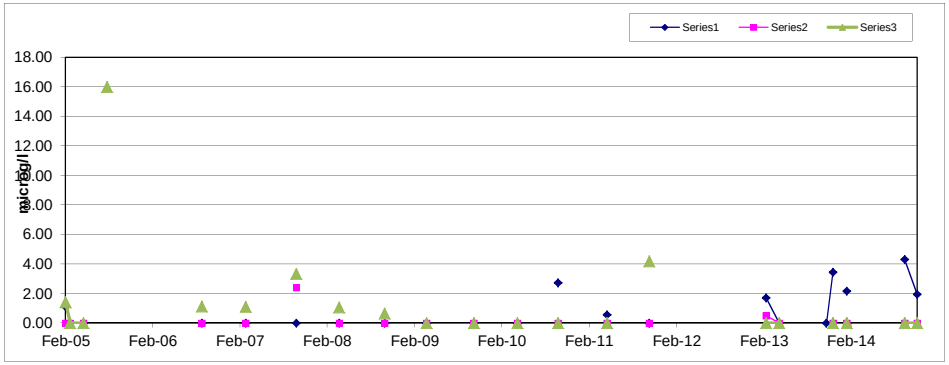

COD mg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

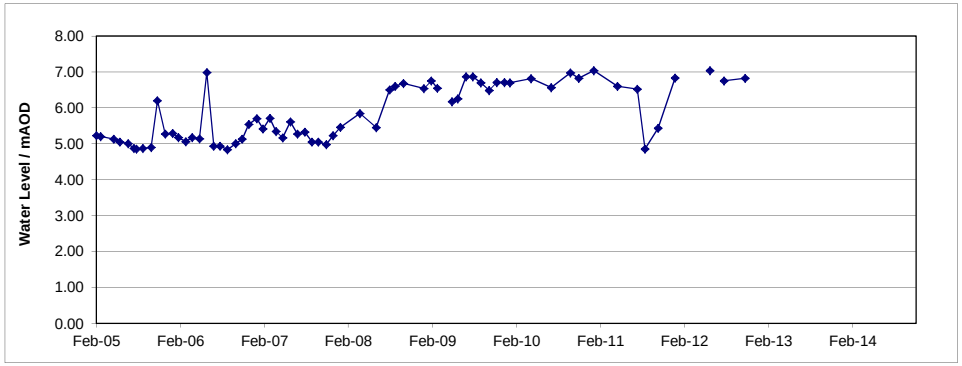

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
Copper microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

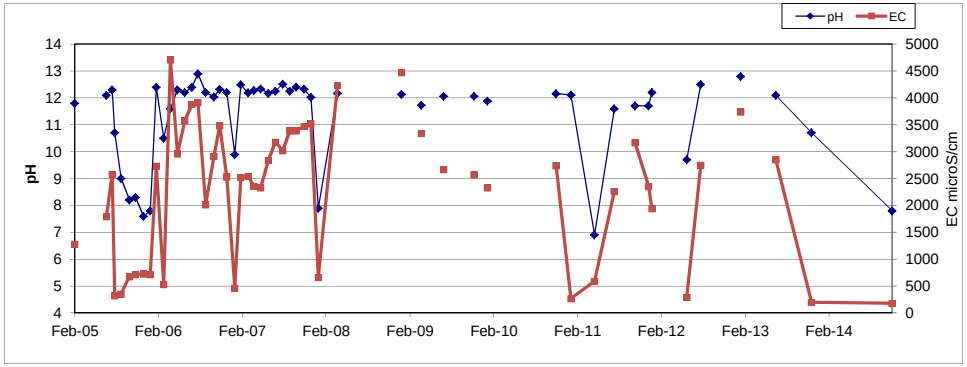

Alkalinity microg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

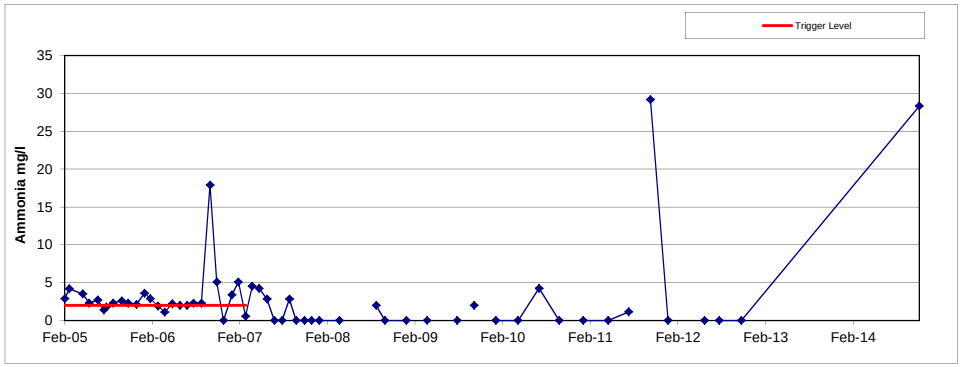

Chromium
Lead
Vanadium
Zinc
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

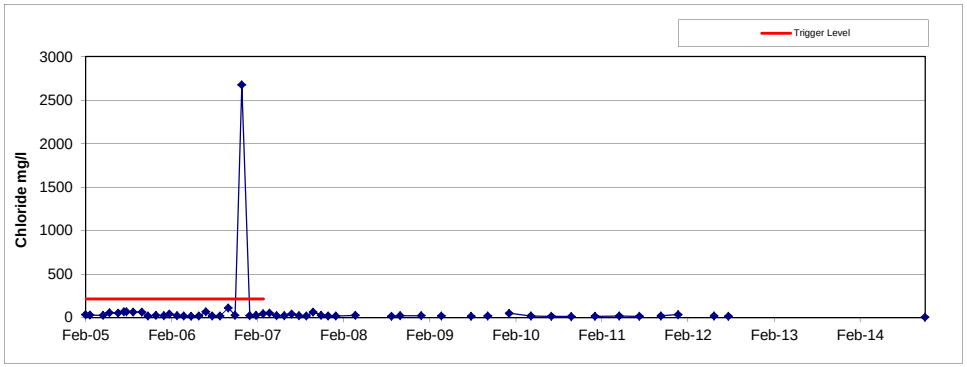

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

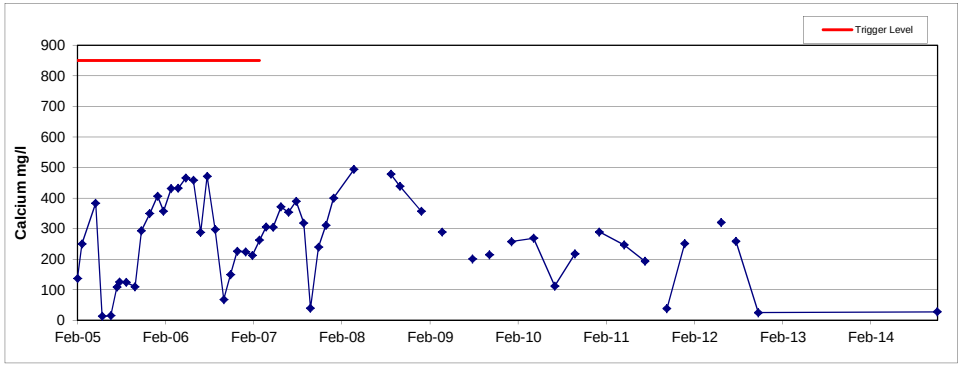

Series1
Series2
Series3
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

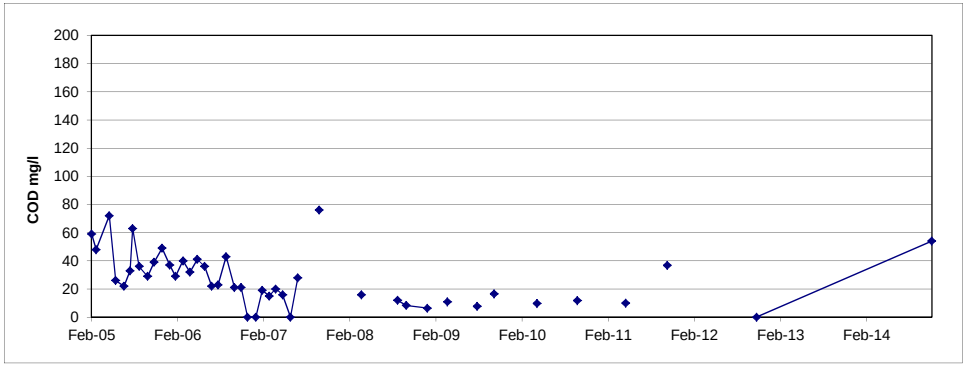

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

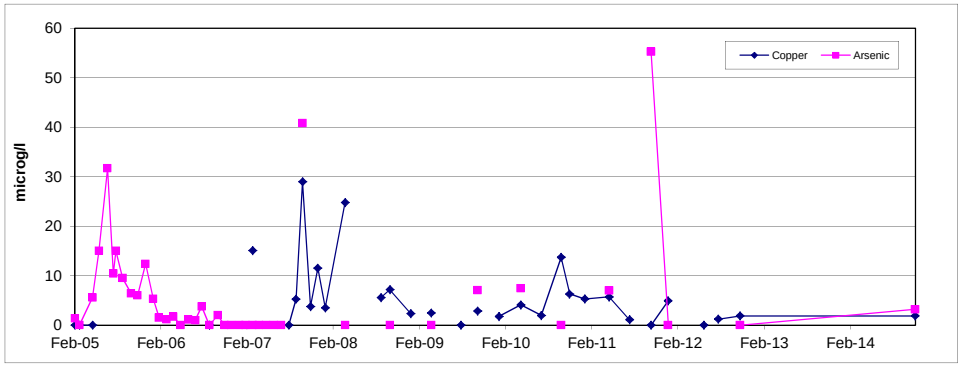

pH
EC
pH
EC microS/cm
14
13
12
11
10
9
8
7
6
5
4
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

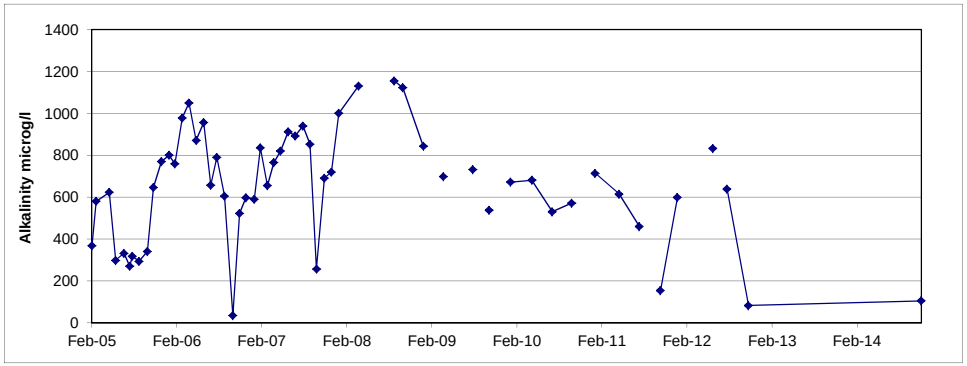

Trigger Level
Ammonia mg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

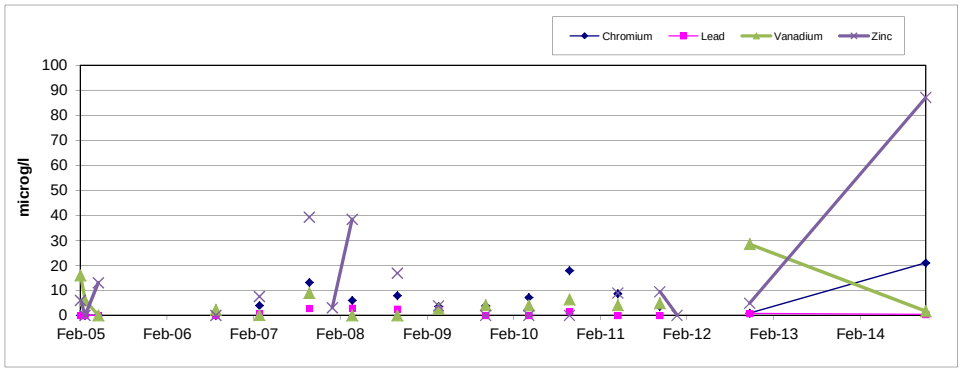

Trigger Level
Chloride mg/l
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

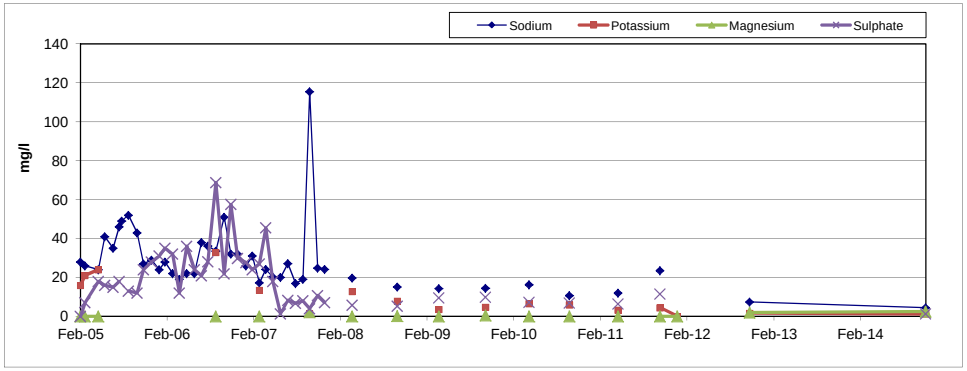

Trigger Level
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

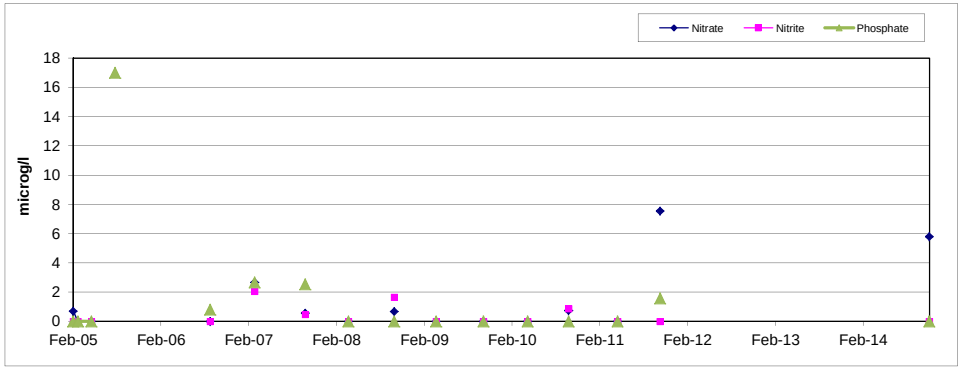

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

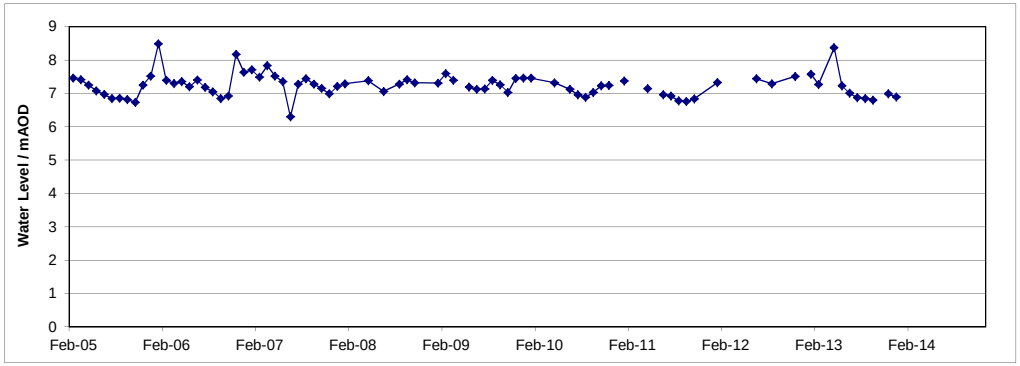

Copper
Arsenic
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

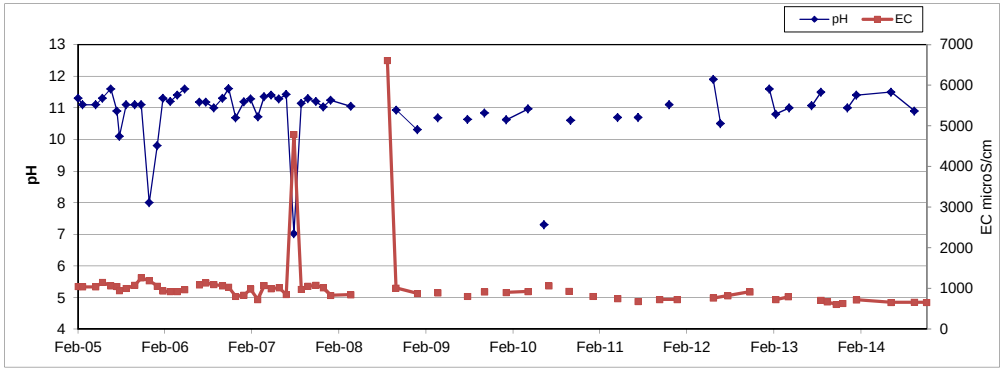

Alkalinity microg/l
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

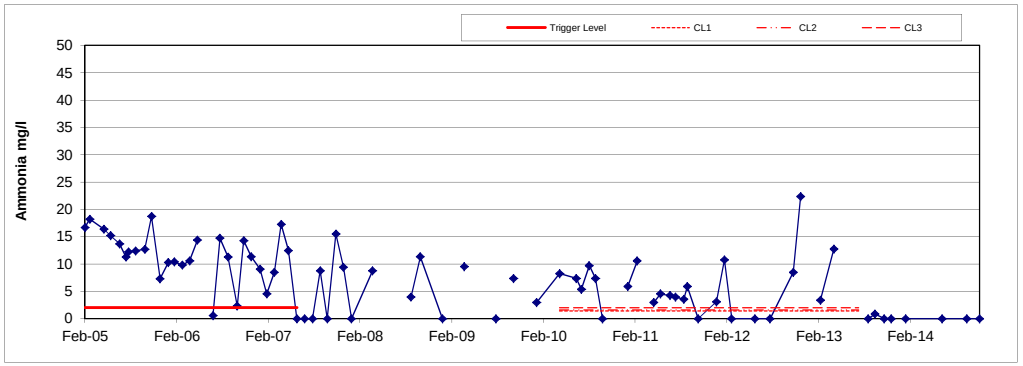

Chromium
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

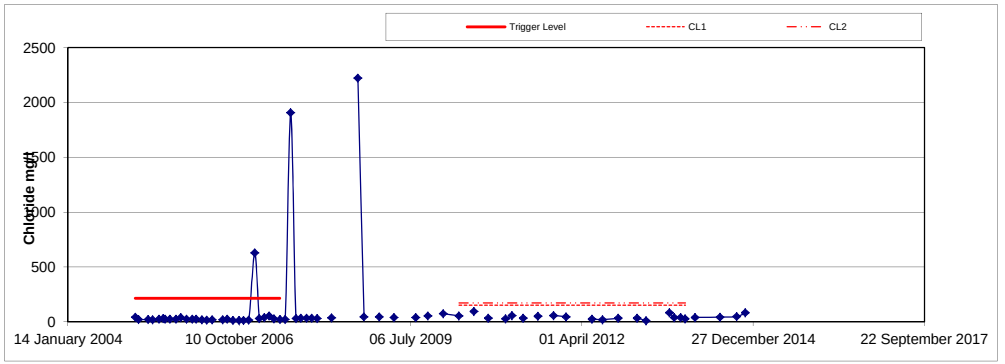

Sodium
Potassium
Magnesium
Sulphate
mg/l
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

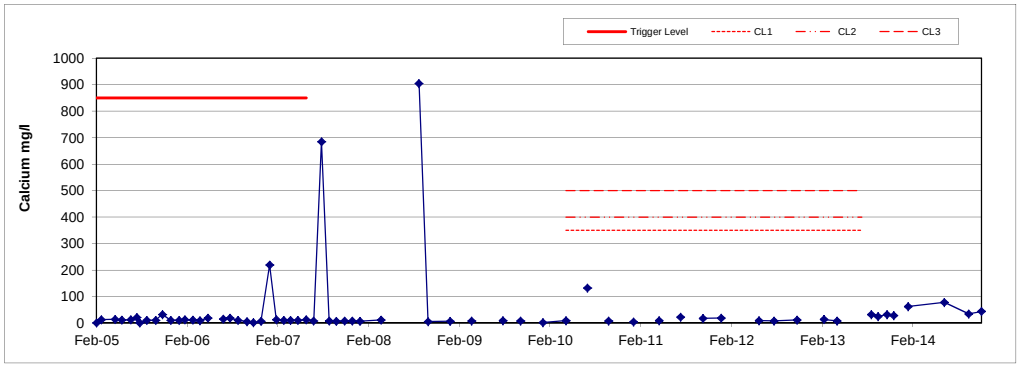

Nitrate
Nitrite
Phosphate
microg/l
18
16
14
12
10
8
6
4
2
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

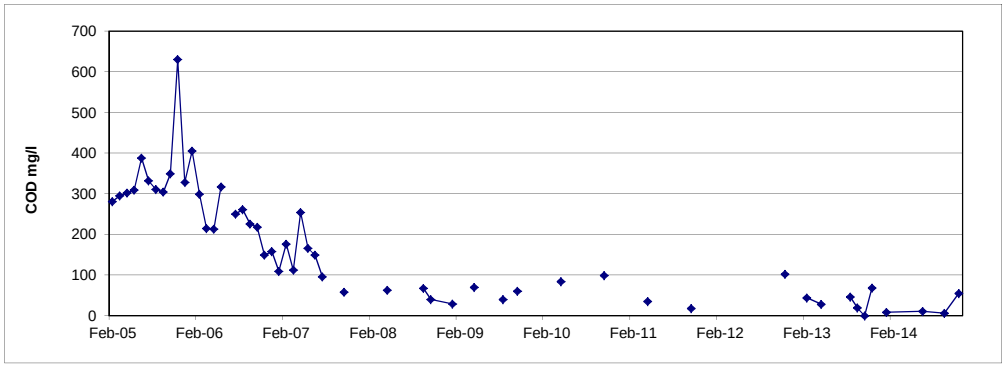

Water Level / mAOD
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

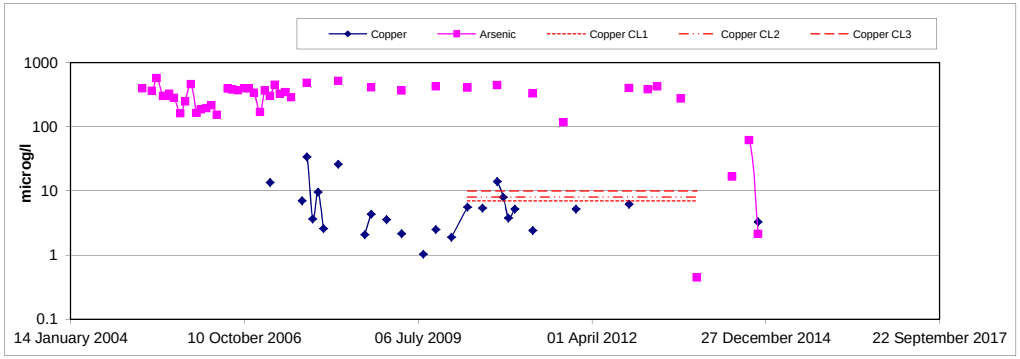

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

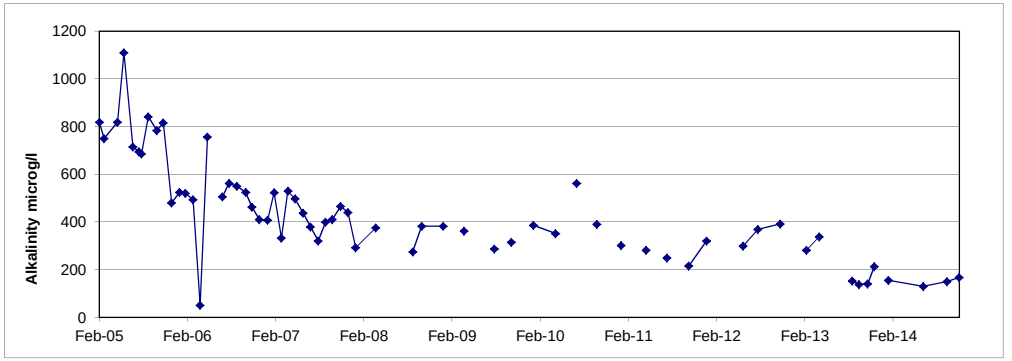

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

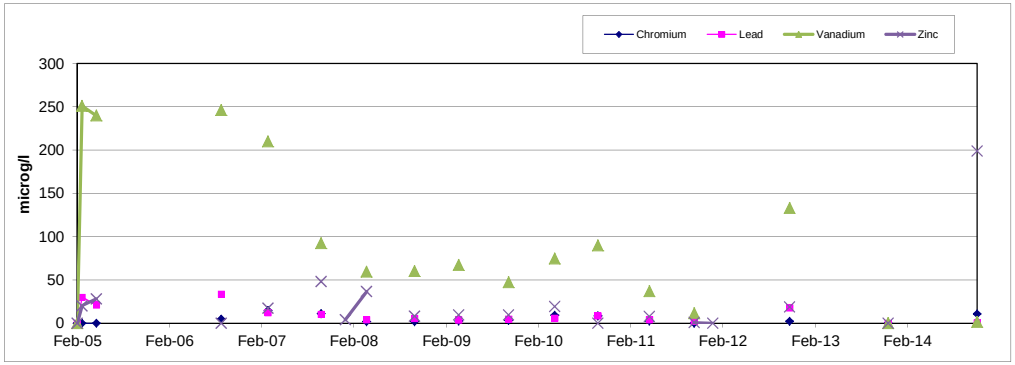

Trigger Level
CL1
CL2
Chloride mg/l
0
500
1000
1500
2000
2500
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

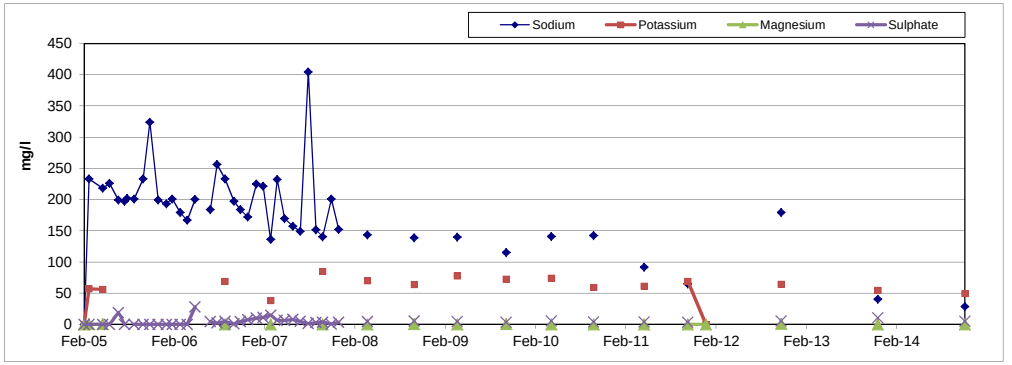

Trigger Level
CL1
CL2
CL3
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

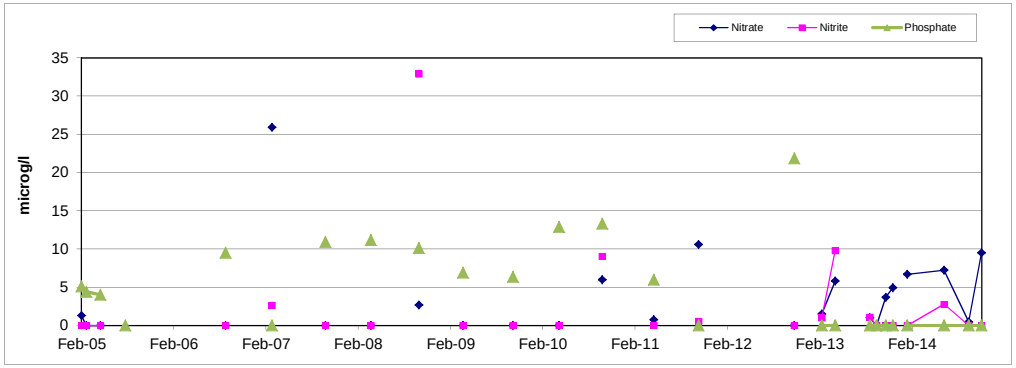

COD mg/l
0
100
200
300
400
500
600
700
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

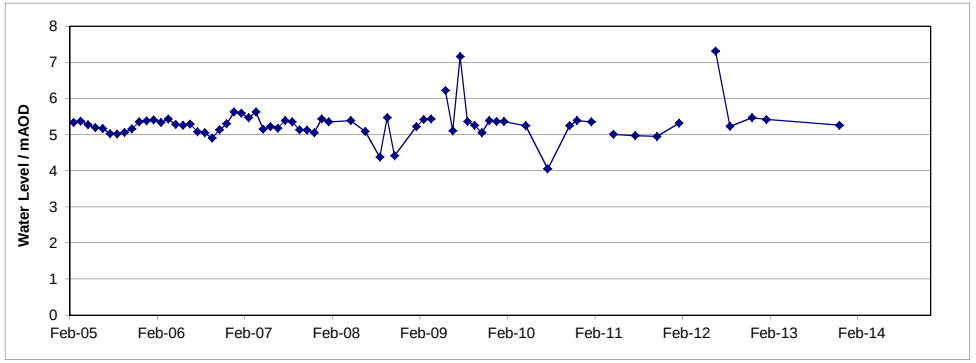

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
microg/l
1000
100
10
1
0.1
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

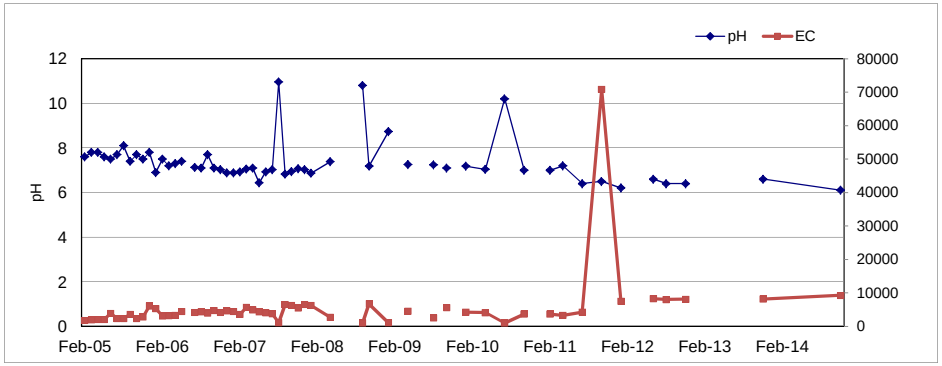

Alkalinity microg/l
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

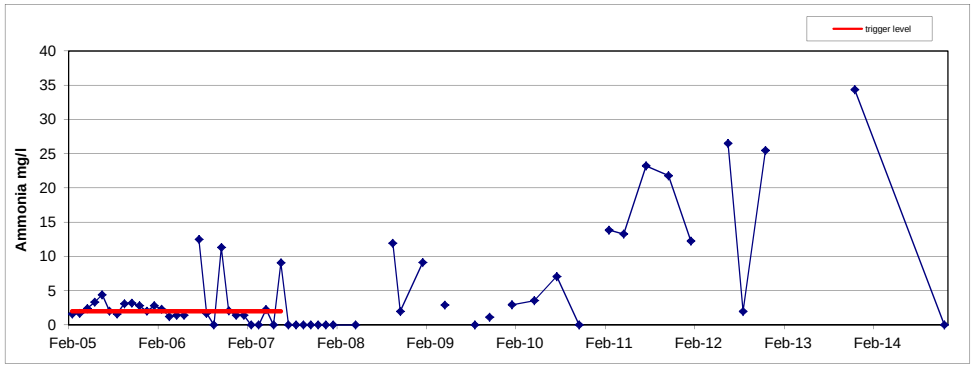

Chromium
Lead
Vanadium
Zinc
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

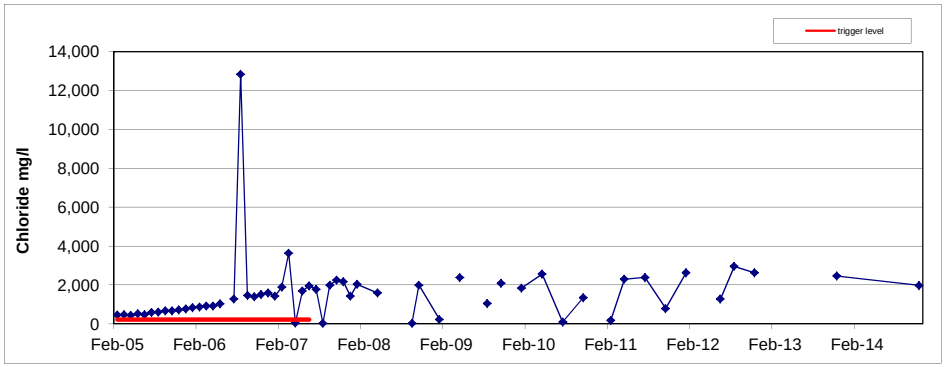

Sodium
Potassium
Magnesium
Sulphate
mg/l
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

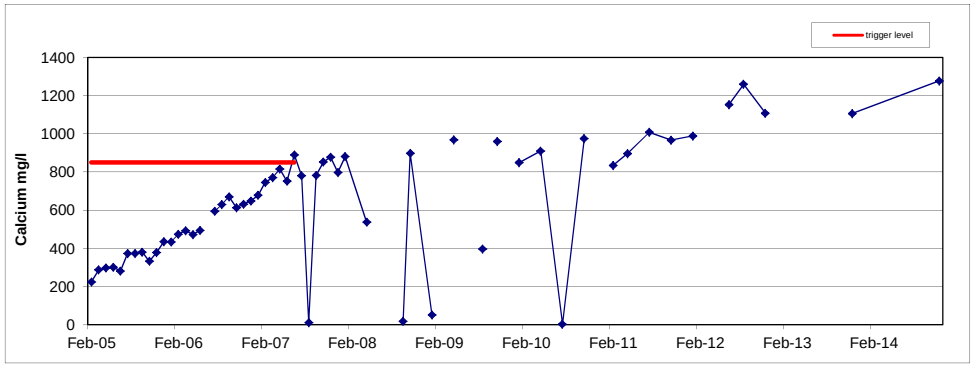

Nitrate
Nitrite
Phosphate
microg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

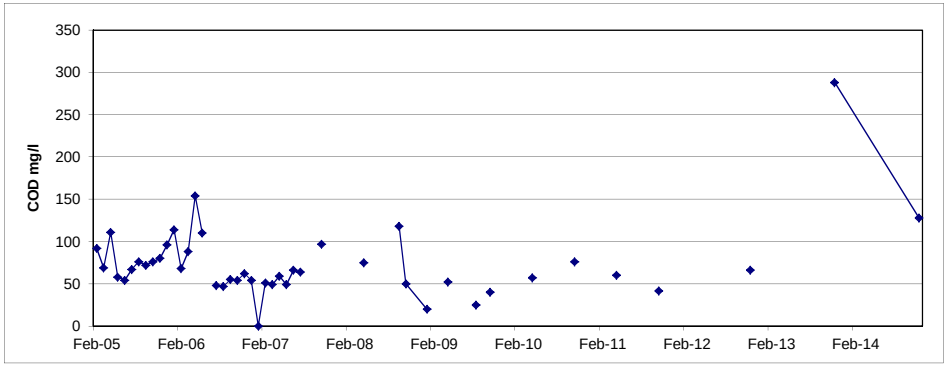

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

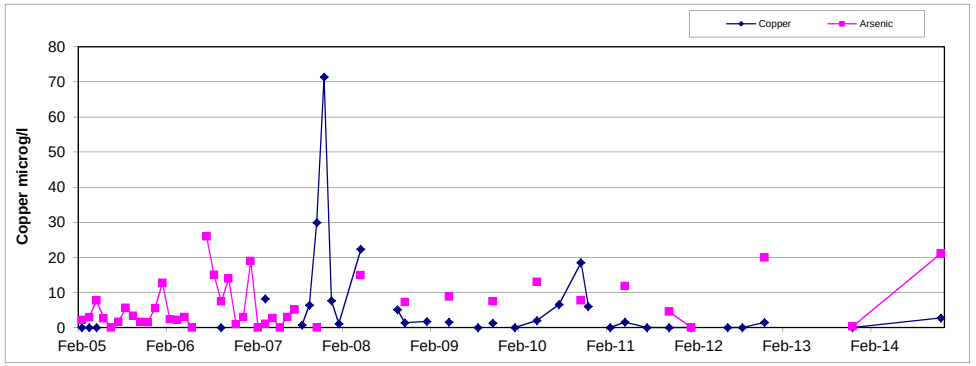

pH
EC
pH
0
2
4
6
8
10
12
0
10000
20000
30000
40000
50000
60000
70000
80000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

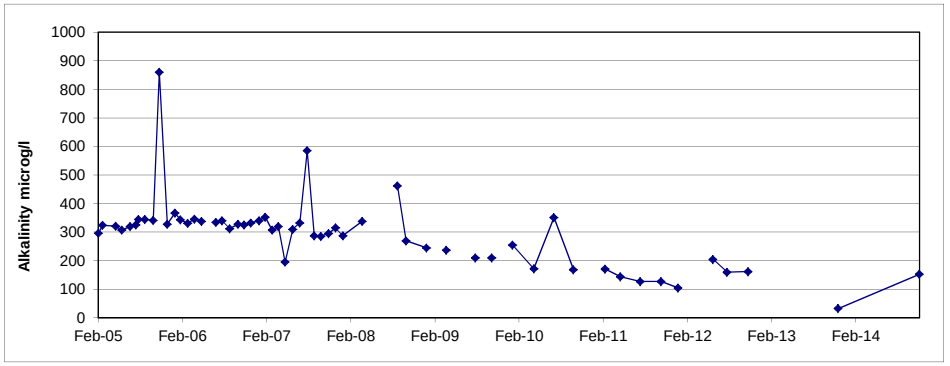

trigger level
Ammonia mg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

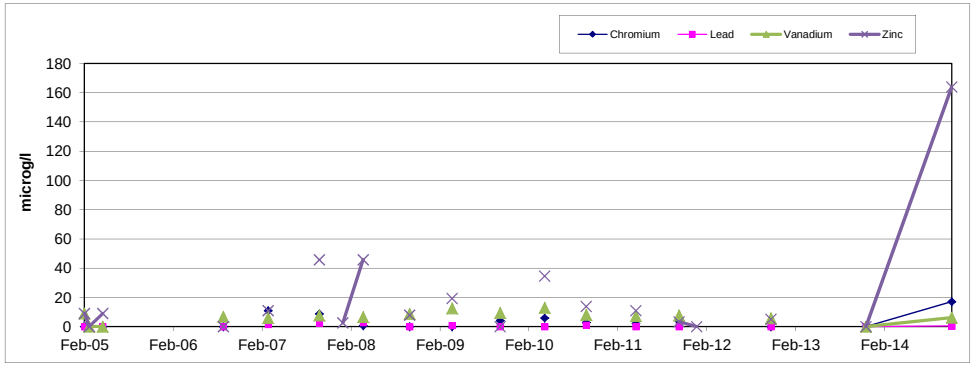

trigger level
Chloride mg/l
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

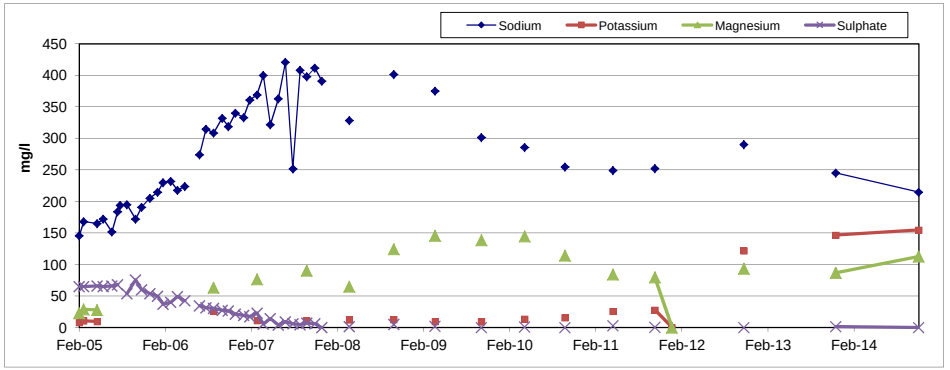

trigger level
Calcium mg/l
0
200
400
600
800
1000
1200
1400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

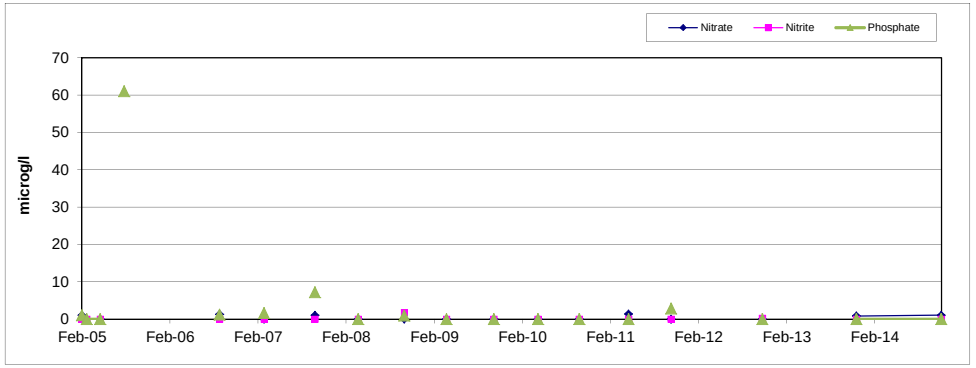

COD mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

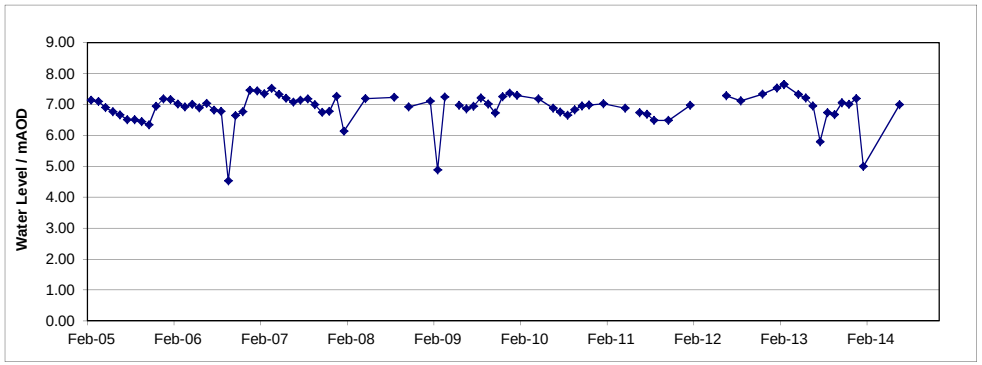

Copper
Arsenic
Copper microg/l
0
10
20
30
40
50
60
70
80
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

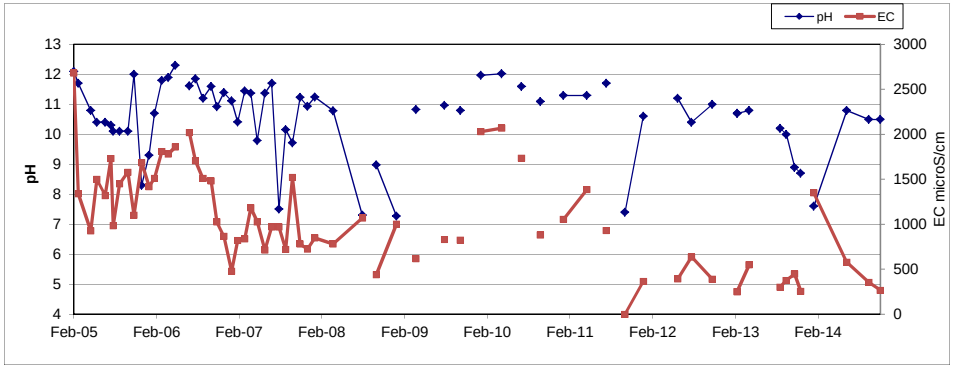

Alkalinity microg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

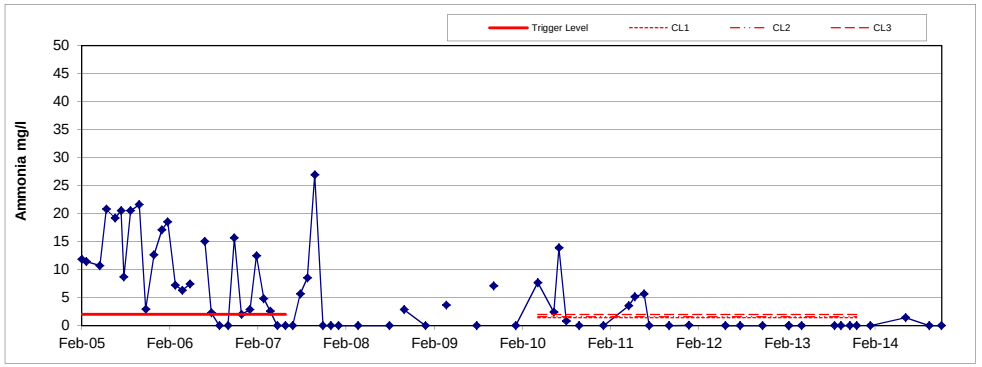

Chromium
Lead
Vanadium
Zinc
microg/l
0
20
40
60
80
100
120
140
160
180
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

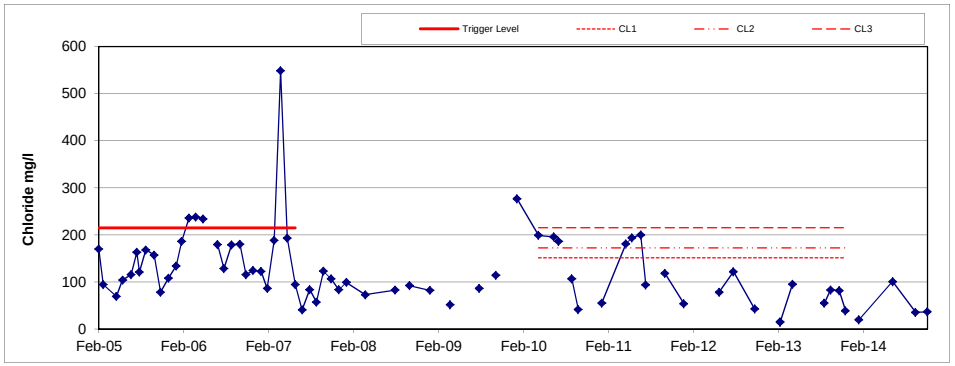

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

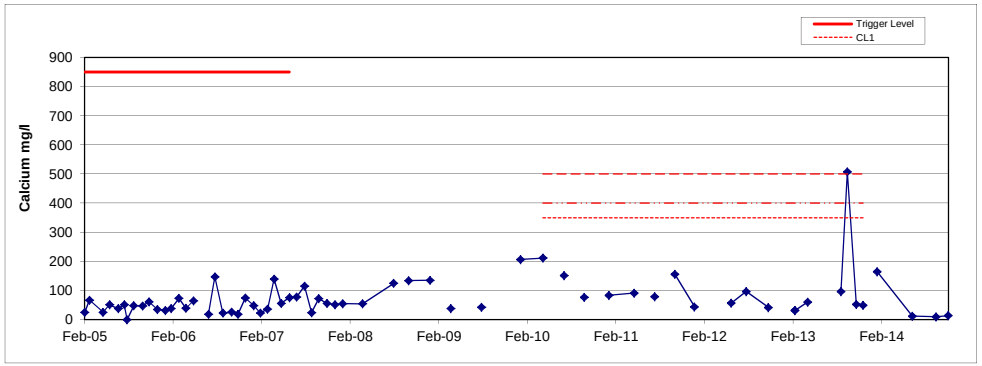

Nitrate
Nitrite
Phosphate
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

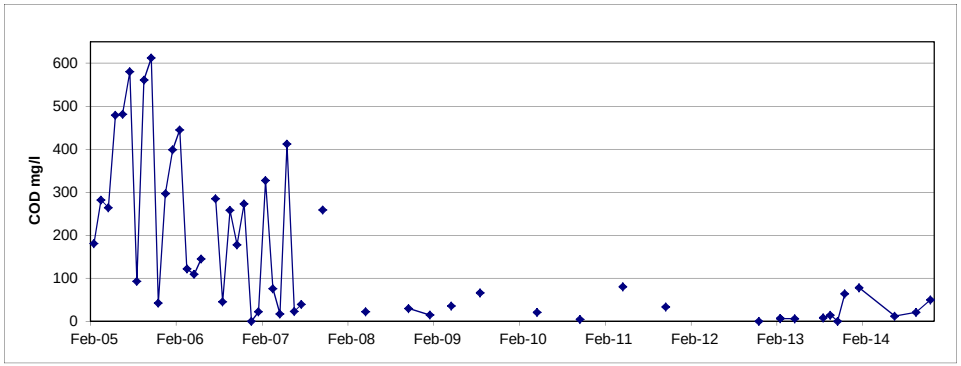

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

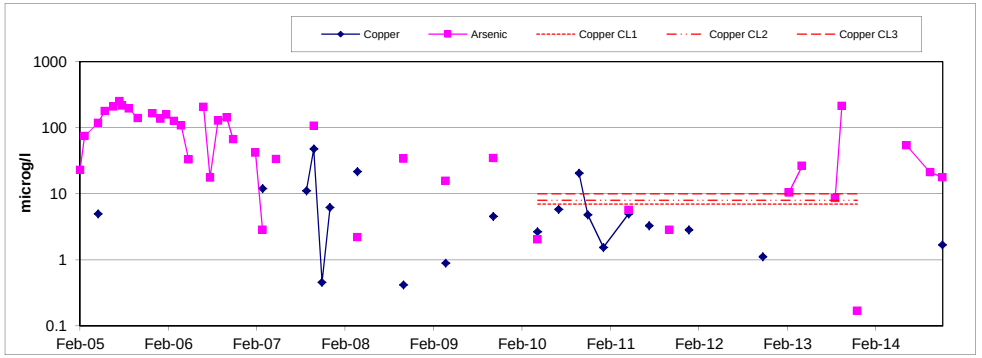

pH
EC
pH
EC microS/cm
13 12 11 10 9 8 7 6 5 4
3000 2500 2000 1500 1000 500 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

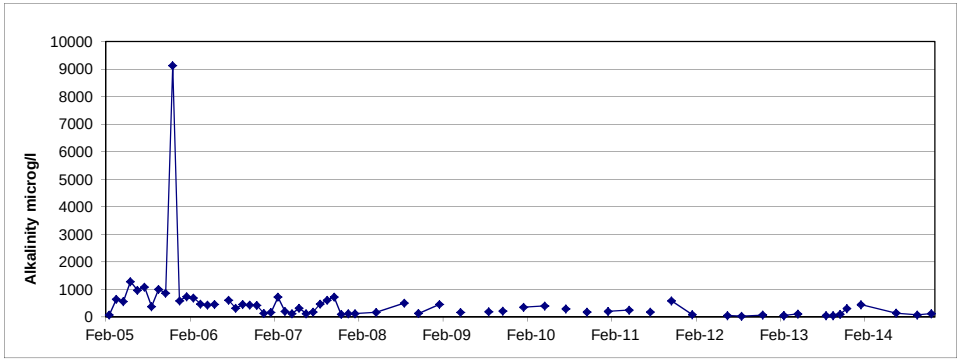

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
50 45 40 35 30 25 20 15 10 5 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

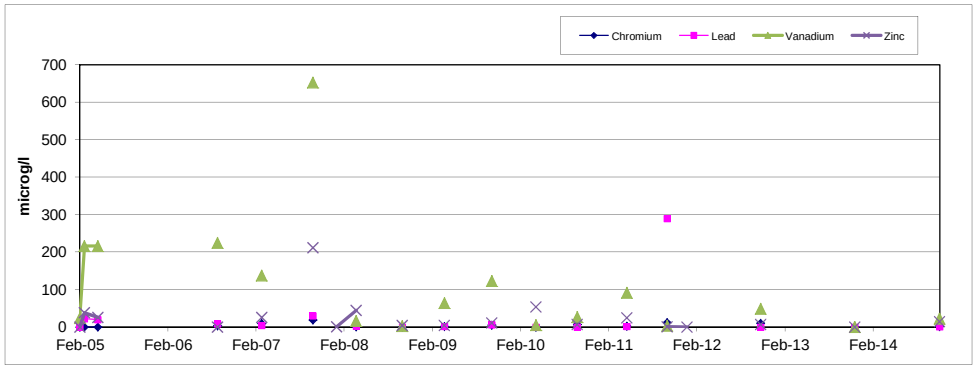

Trigger Level
CL1
CL2
CL3
Chloride mg/l
600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

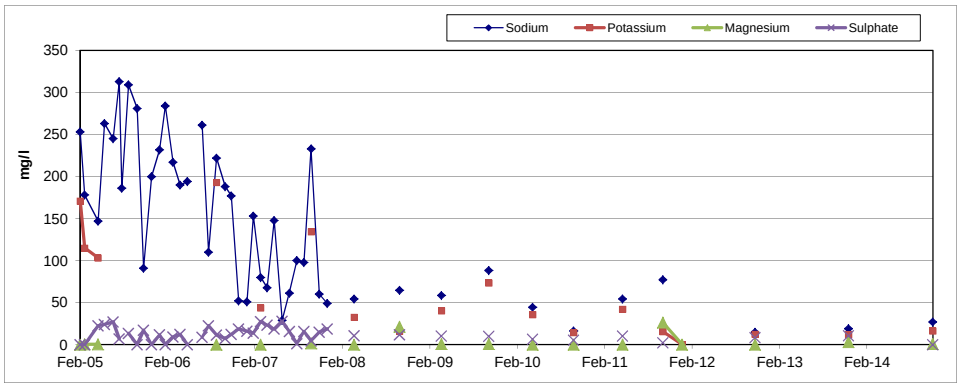

Trigger Level
CL1
Calcium mg/l
900 800 700 600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

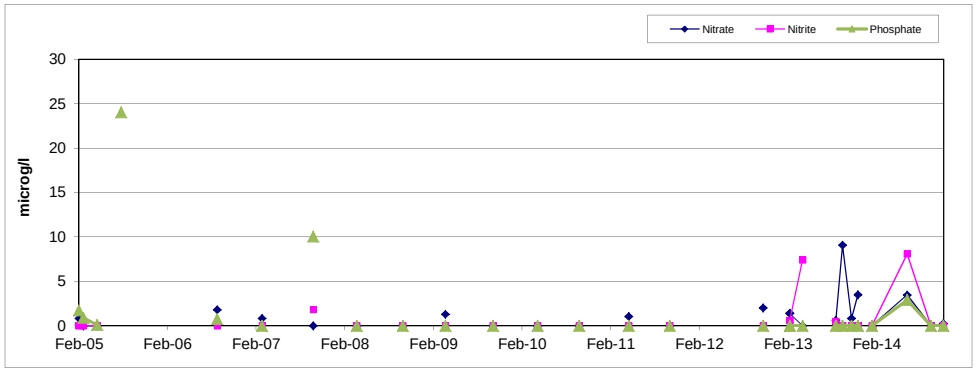

COD mg/l
600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

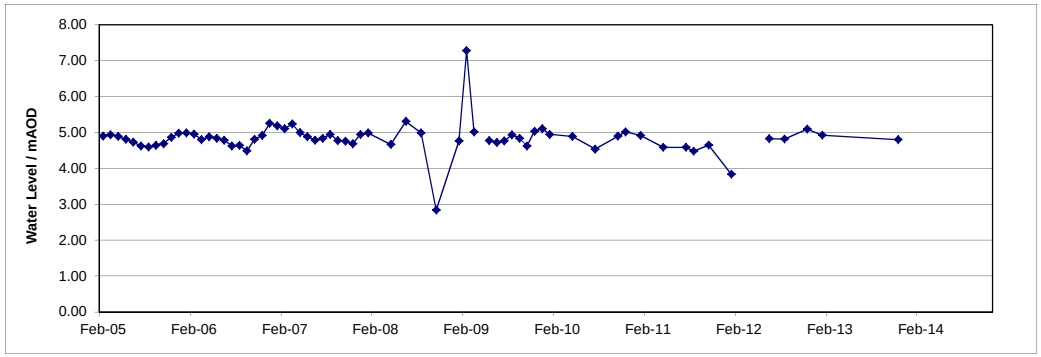

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
microg/l
1000
100
10
1
0.1
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

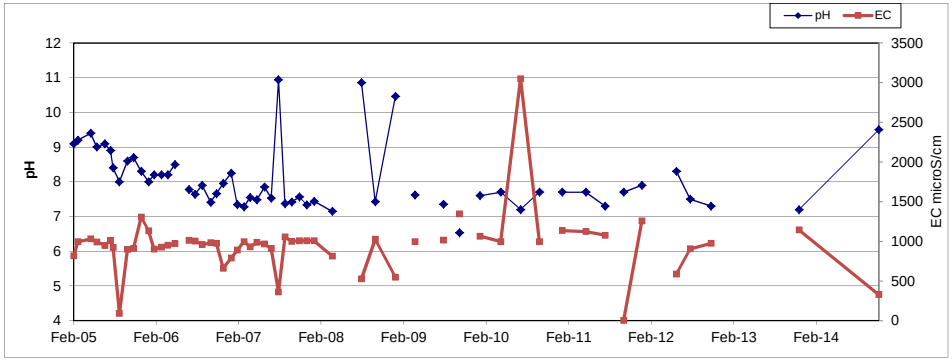

Alkalinity microg/l
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

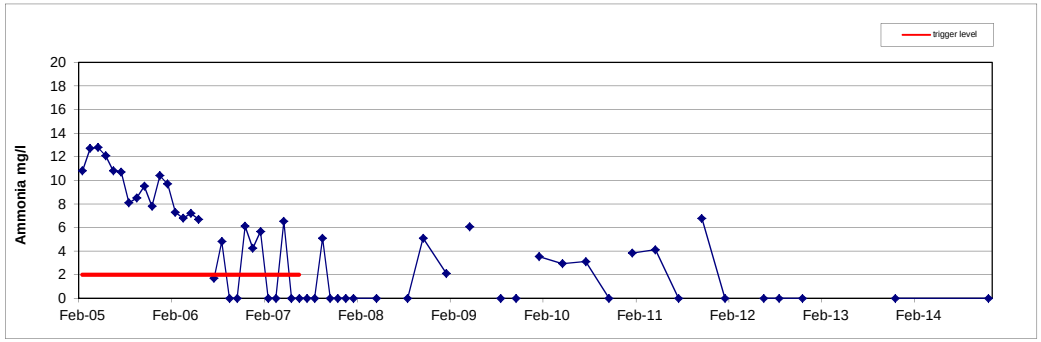

Chromium
Lead
Vanadium
Zinc
microg/l
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

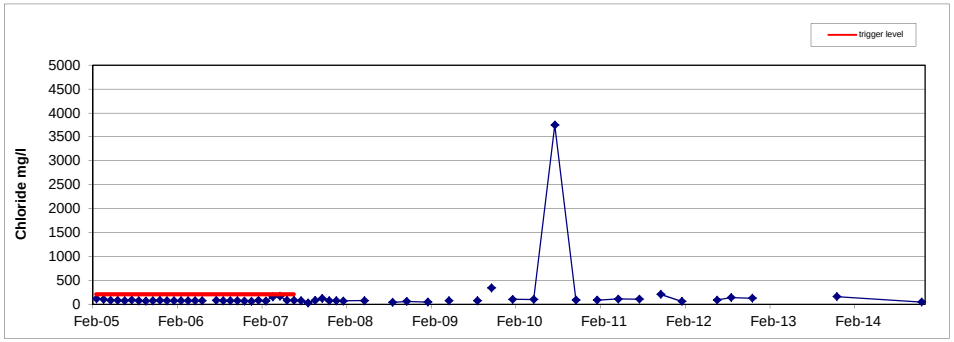

Sodium
Potassium
Magnesium
Sulphate
mg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

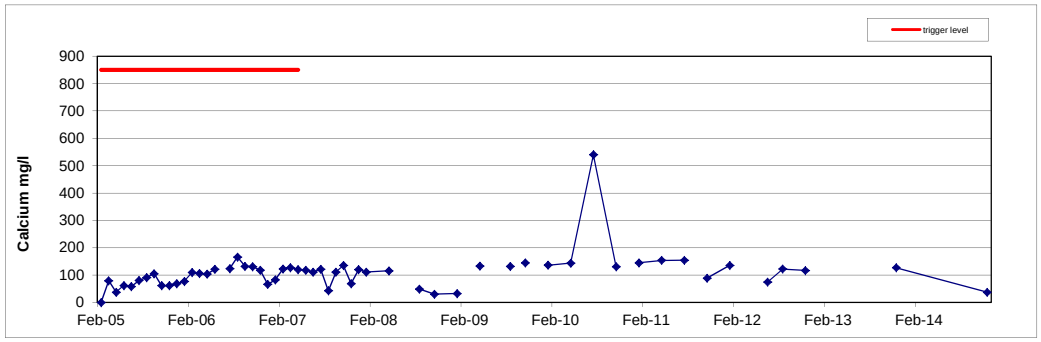

Nitrate
Nitrite
Phosphate
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

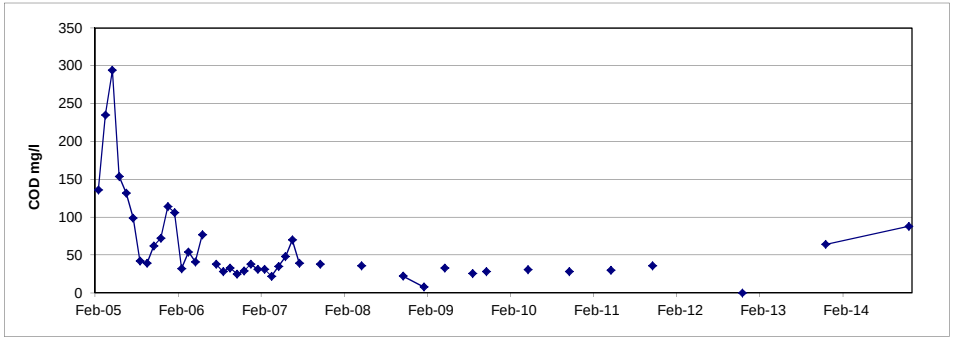

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

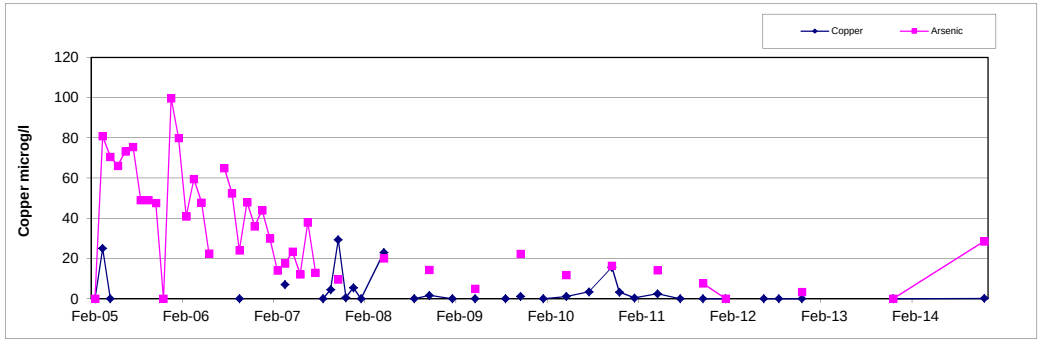

pH
EC
pH
EC microS/cm
12
11
10
9
8
7
6
5
4
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

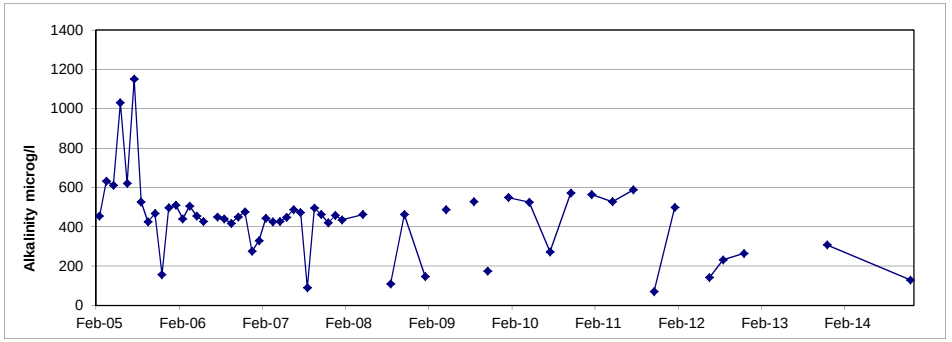

trigger level
Ammonia mg/l
20
18
16
14
12
10
8
6
4
2
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

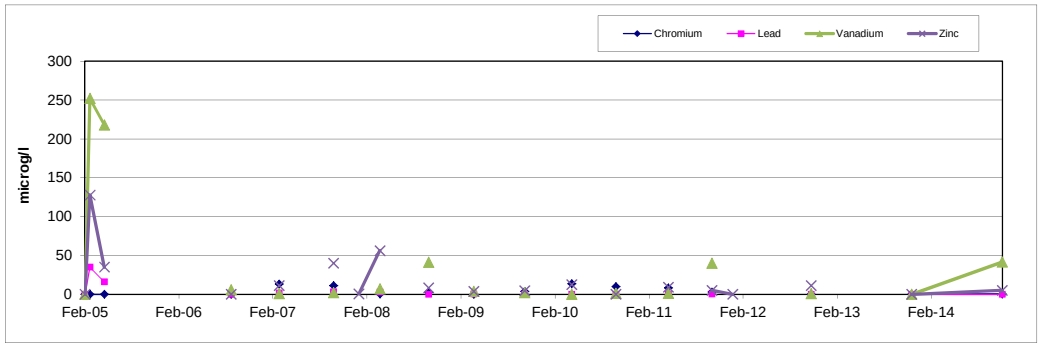

trigger level
Chloride mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

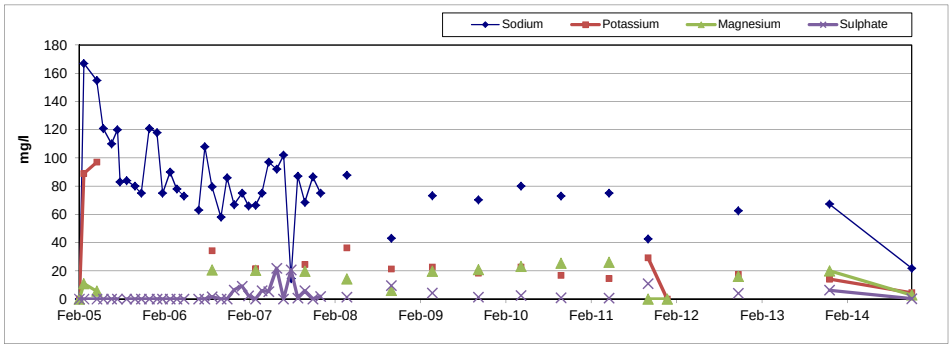

trigger level
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

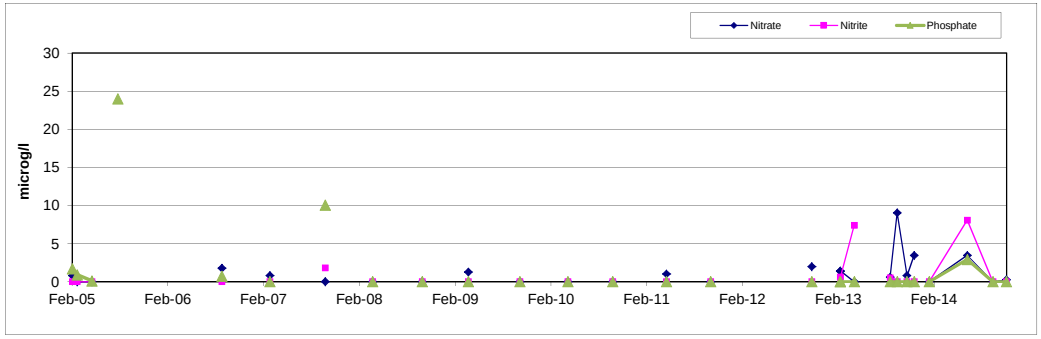

COD mg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Copper
Arsenic
Copper microg/l
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Alkalinity microg/l
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Chromium
Lead
Vanadium
Zinc
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Sodium
Potassium
Magnesium
Sulphate
mg/l
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Nitrate
Nitrite
Phosphate
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

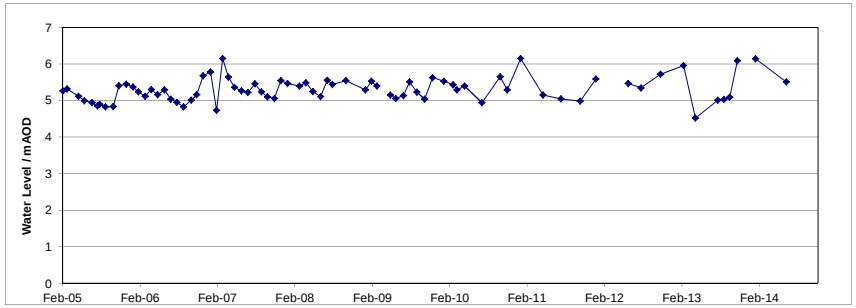
MORFA CLOSED LANDFILL, PORT TALBOT

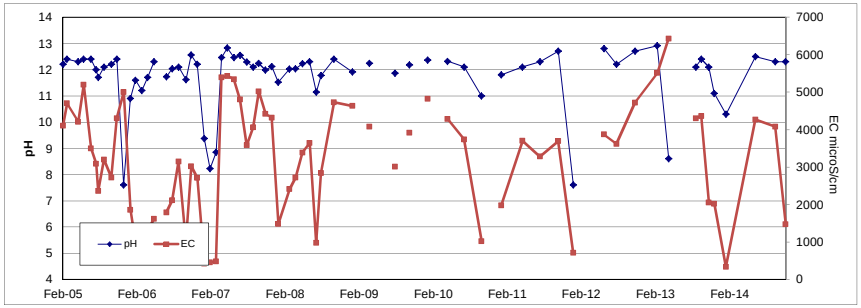
PERMIT EPR/AP3292LT

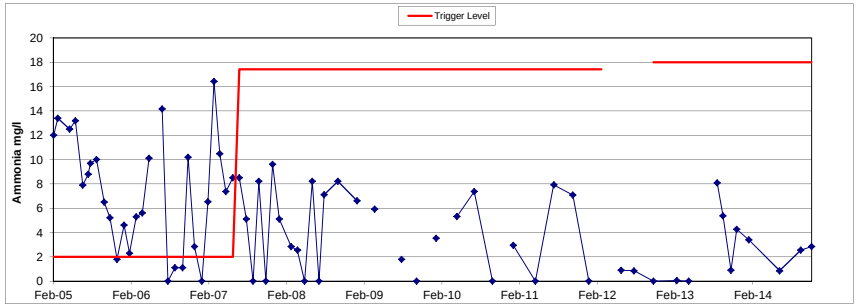
2014 Annual Review of Environmental Monitoring Results

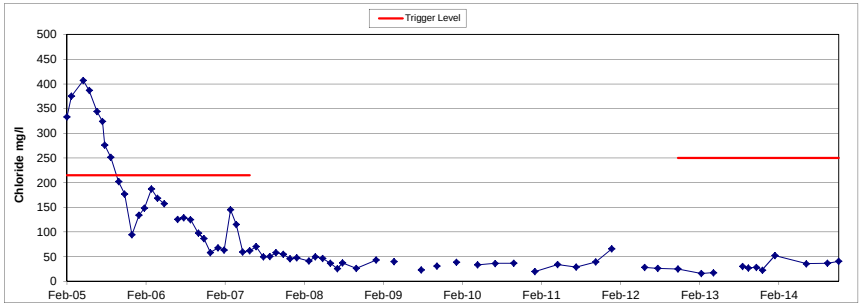
Appendix 3
Temporal variation of groundwater

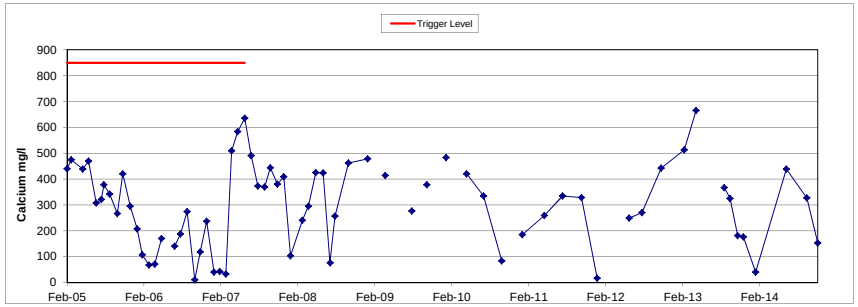
Report Number 1394r1v1d0315

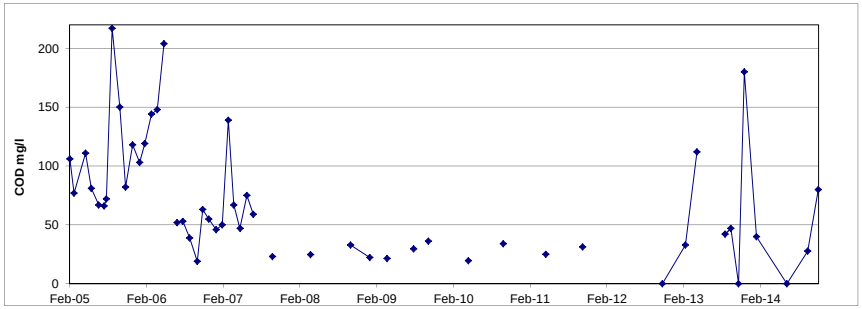

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

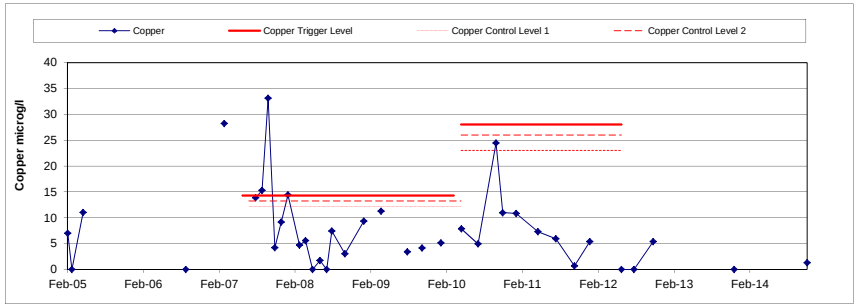

pH
EC microS/cm
pH
EC
4
5
6
7
8
9
10
11
12
13
14
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

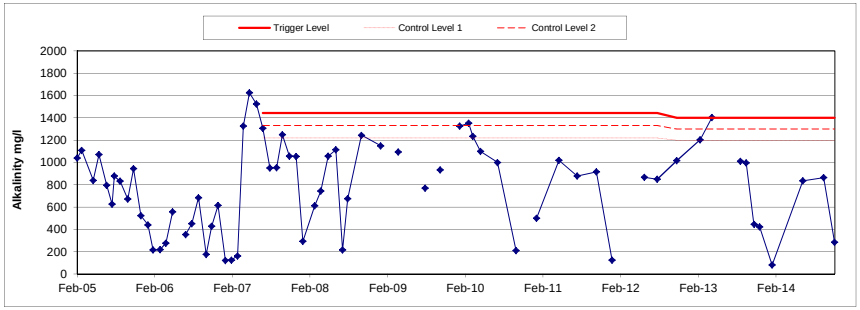

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

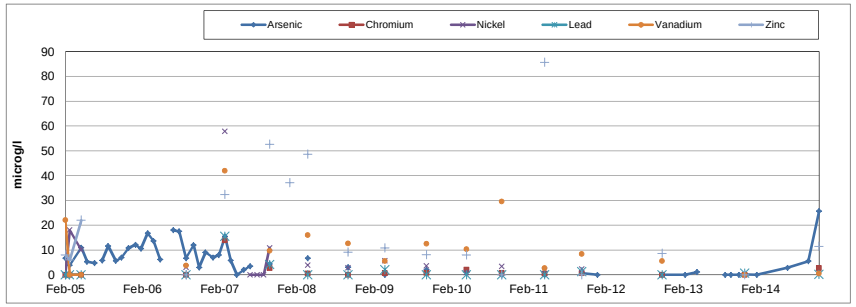

Trigger Level
Chloride mg/l
0
50
100
150
200
250
300
350
400
450
500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

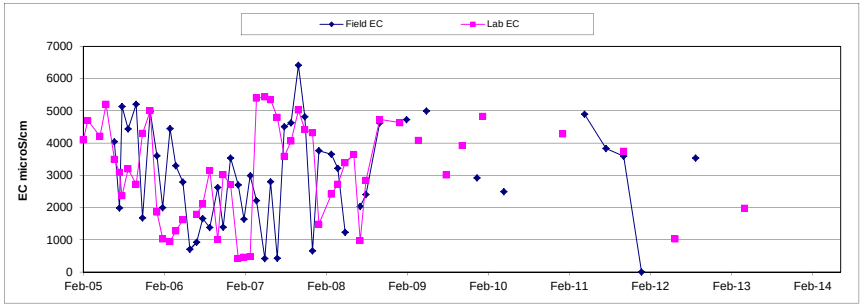

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

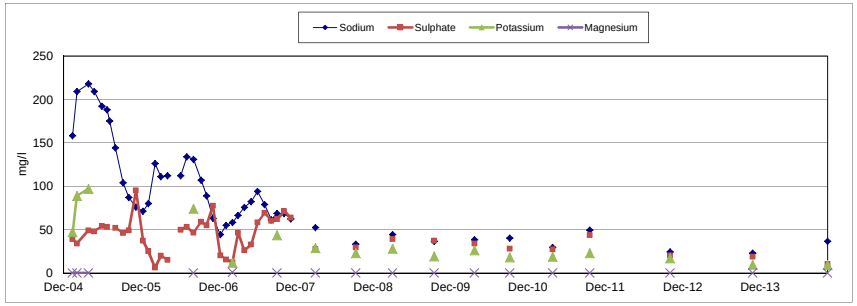

COD mg/l
0
50
100
150
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

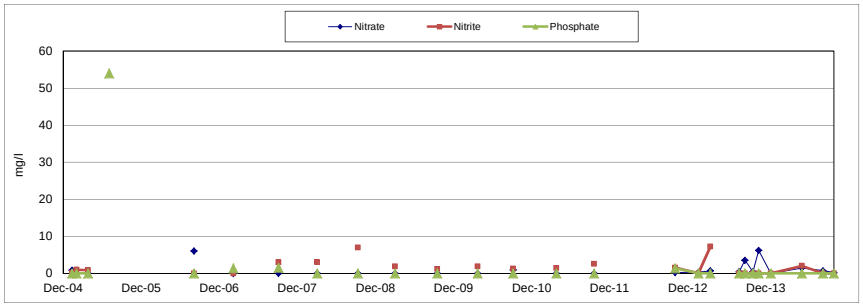

Copper
Copper Trigger Level
Copper Control Level 1
Copper Control Level 2
Copper microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

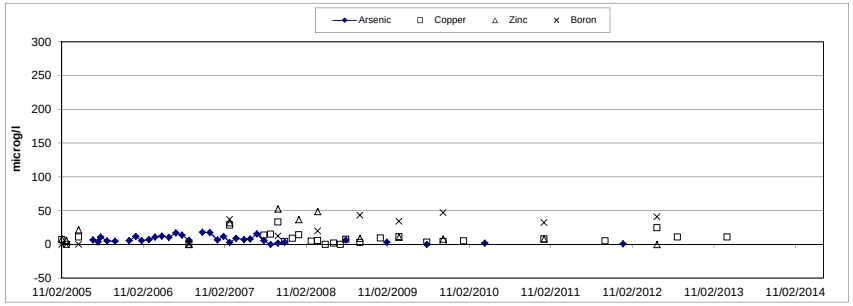

Trigger Level
Control Level 1
Control Level 2
Alkalinity mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

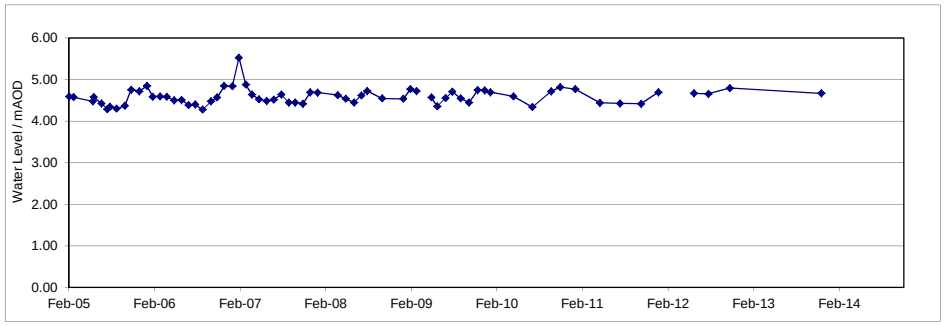

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

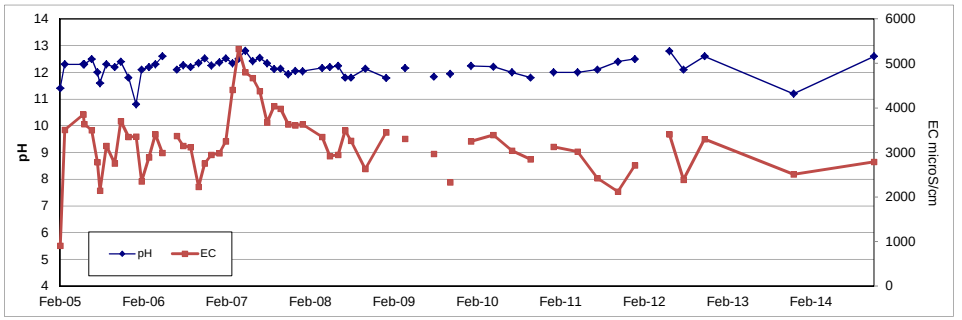

Field EC
Lab EC
EC microS/cm
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

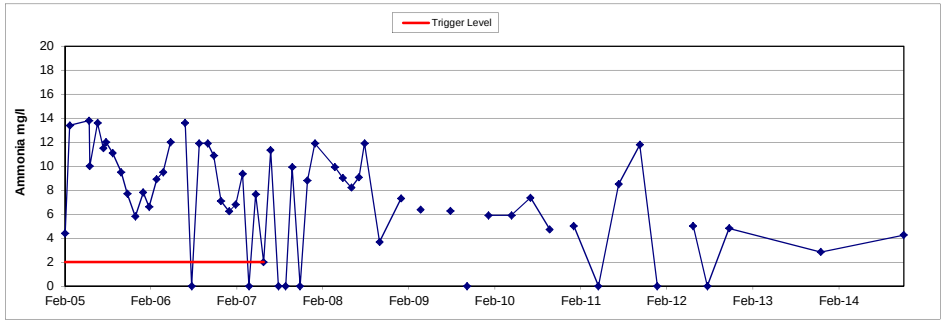

Sodium
Sulphate
Potassium
Magnesium
mg/l
250
200
150
100
50
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

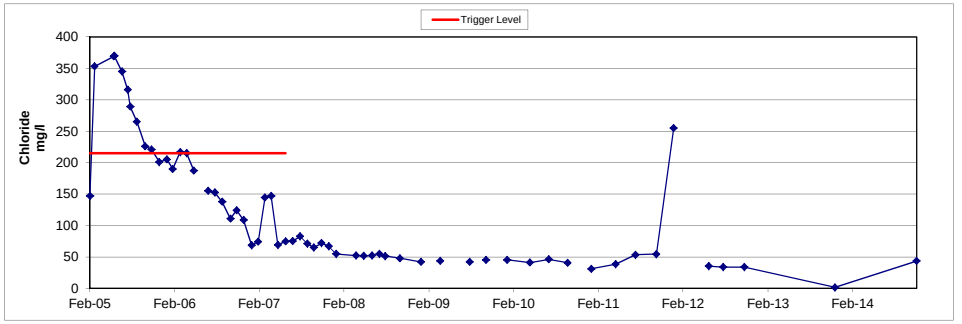

Nitrate
Nitrite
Phosphate
mg/l
60
50
40
30
20
10
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

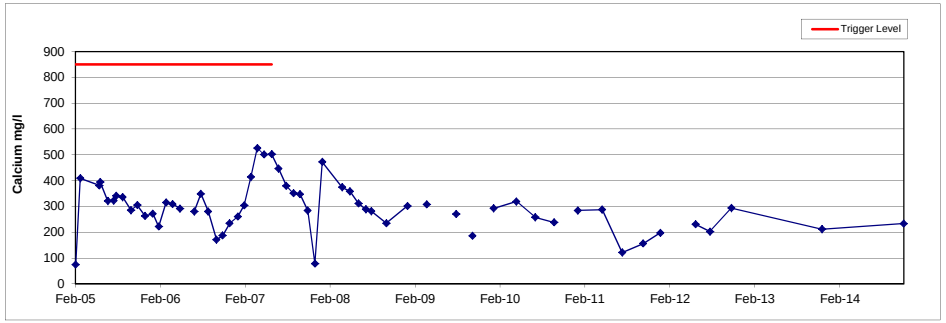

Arsenic
Copper
Zinc
Boron
microg/l
300
250
200
150
100
50
0
-50
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

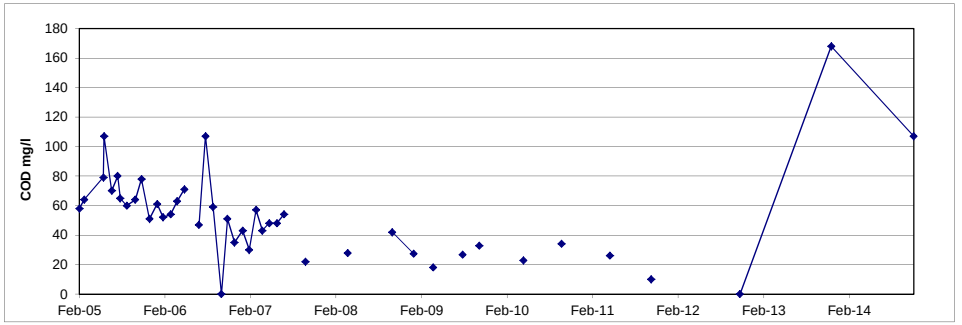

Water Level / mAOD
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

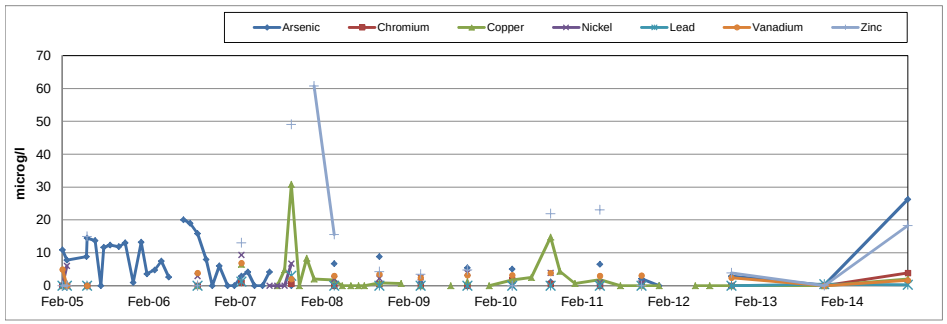

pH
EC microS/cm
pH
EC
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

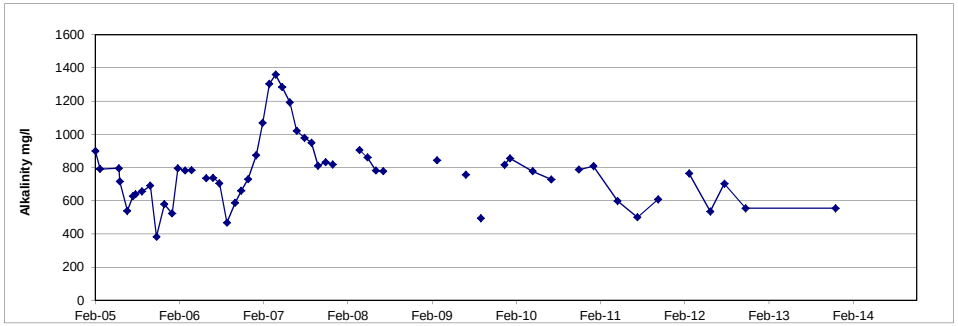

Trigger Level
Ammonia mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

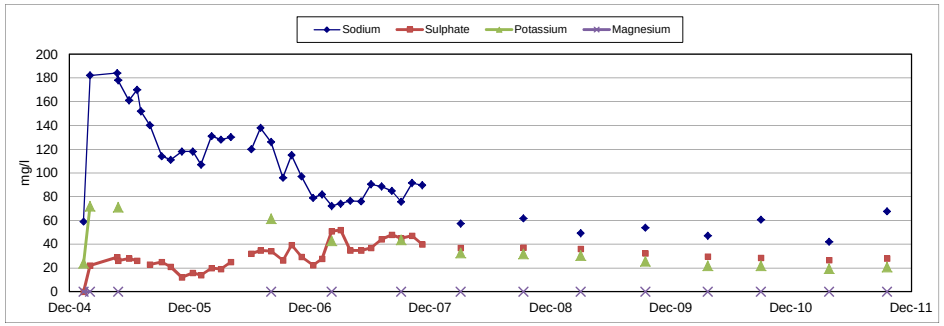

Trigger Level
Chloride mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

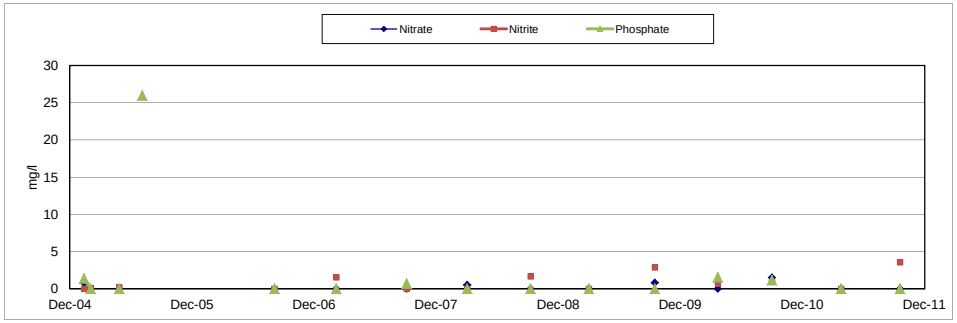

Trigger Level
Calcium mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

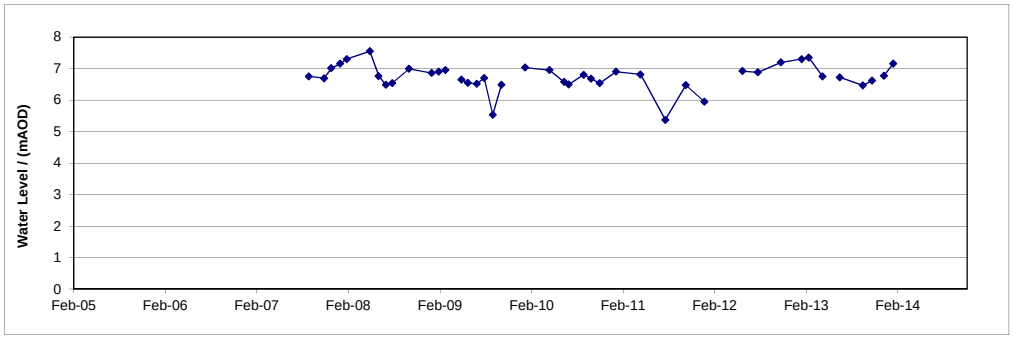

COD mg/l
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

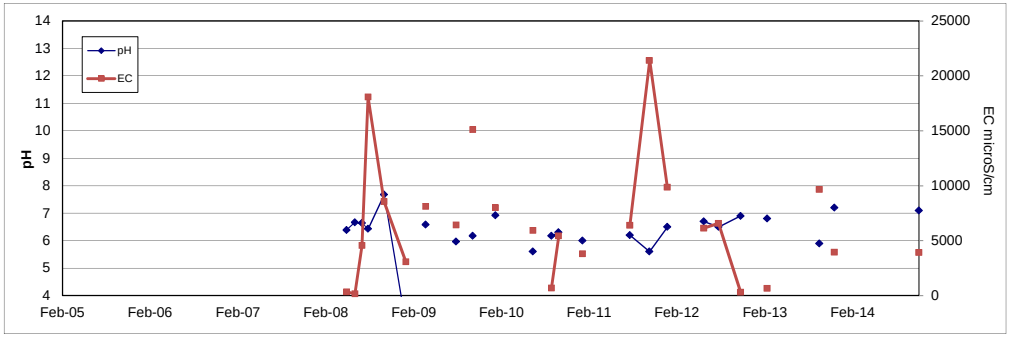

Arsenic
Chromium
Copper
Nickel
Lead
Vanadium
Zinc
microg/l
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

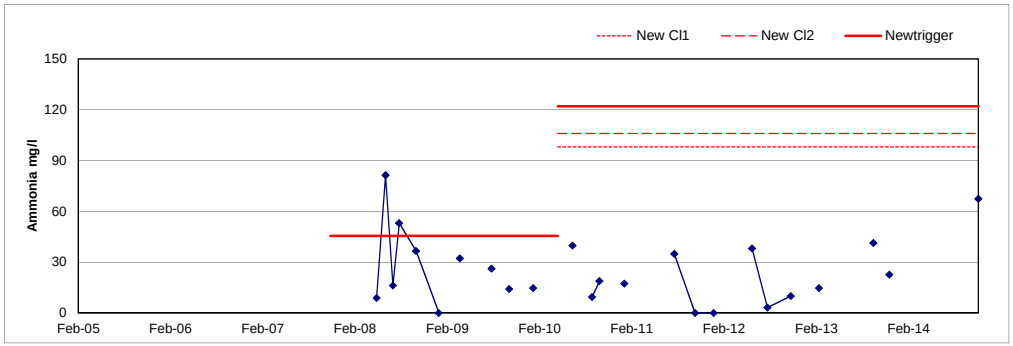

Alkalinity mg/l
1600
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

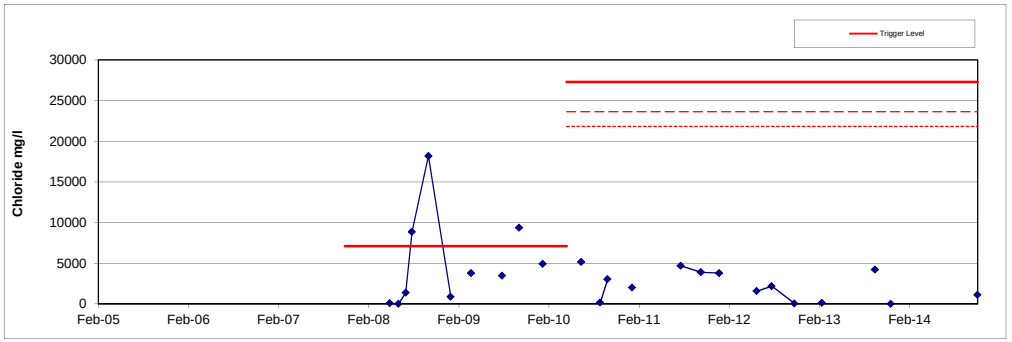

Sodium
Sulphate
Potassium
Magnesium
mg/l
200
180
160
140
120
100
80
60
40
20
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11

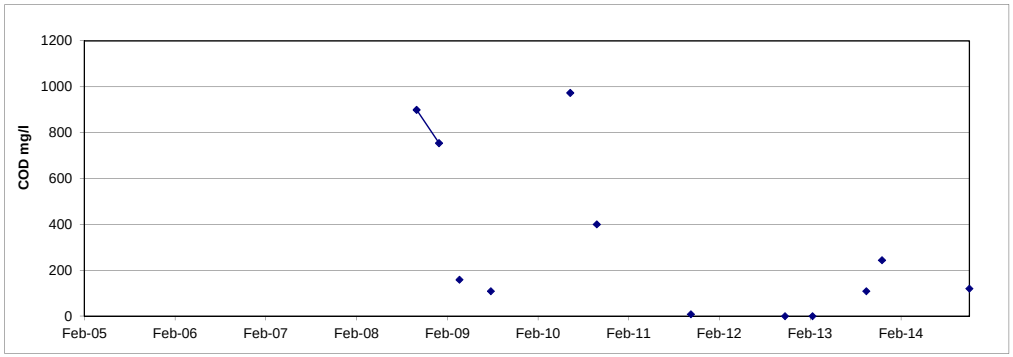

Nitrate
Nitrite
Phosphate
mg/l
30
25
20
15
10
5
0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11

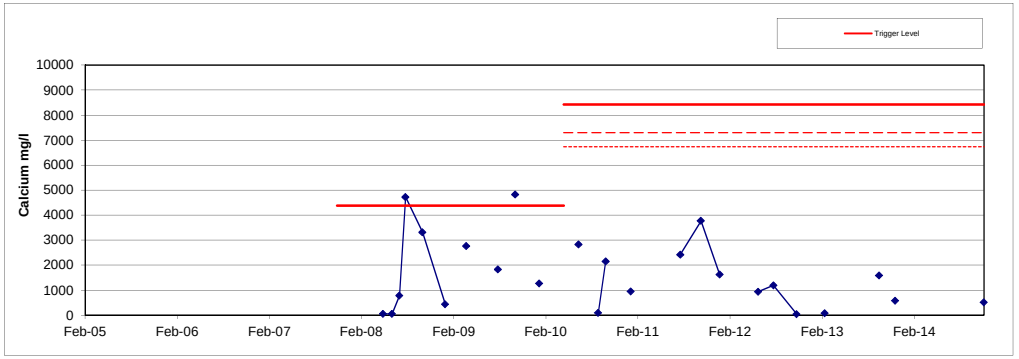

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

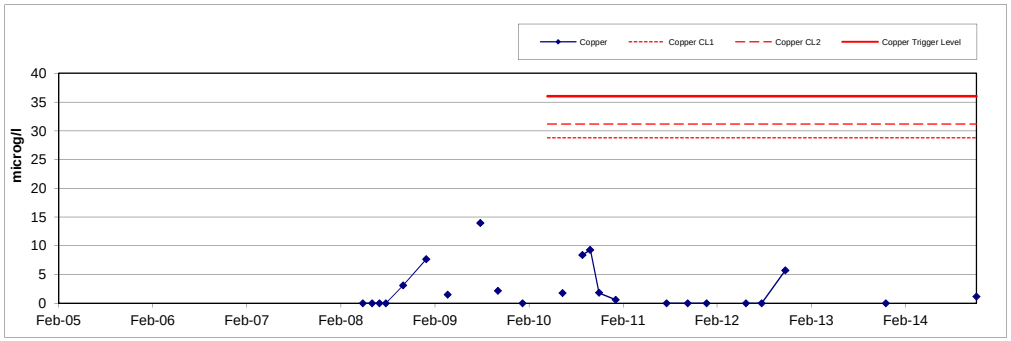

pH
EC
EC microS/cm
4
5
6
7
8
9
10
11
12
13
14
0
5000
10000
15000
20000
25000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

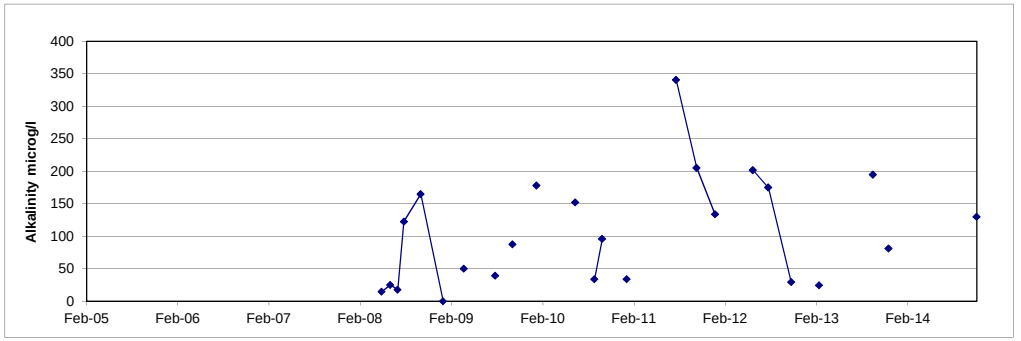

New Cl1
New Cl2
Newtrigger
Ammonia mg/l
0
30
60
90
120
150
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

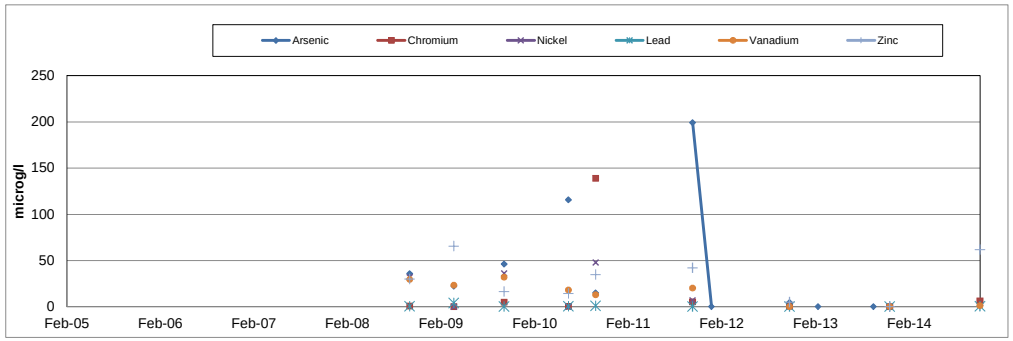

Trigger Level
Chloride mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

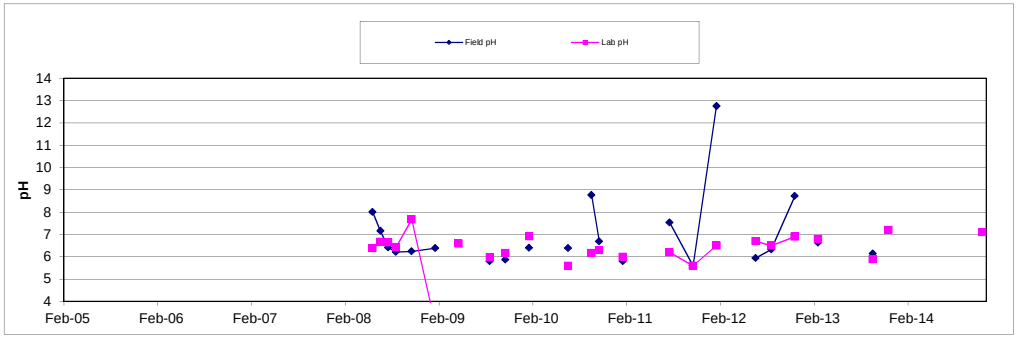

COD mg/l
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

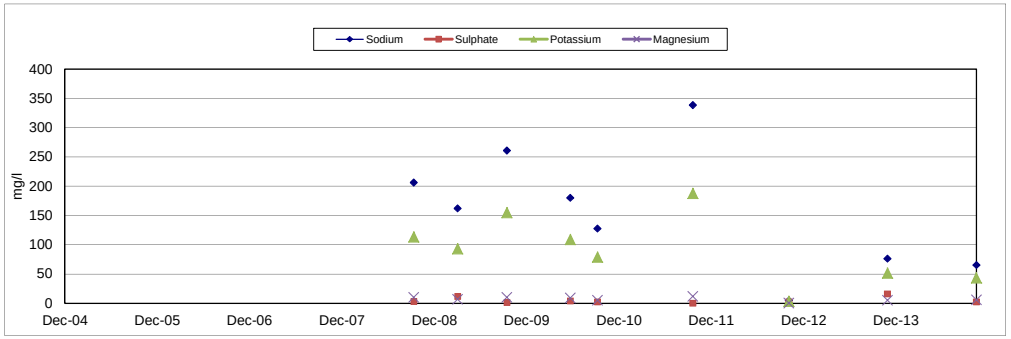

Trigger Level
Calcium mg/l
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

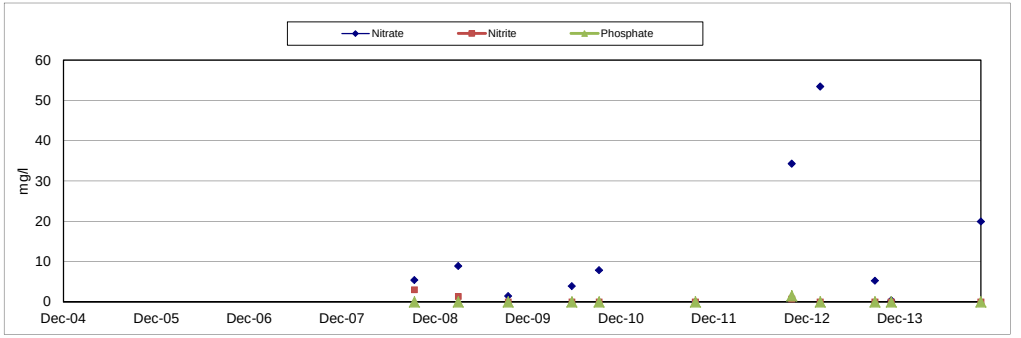

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

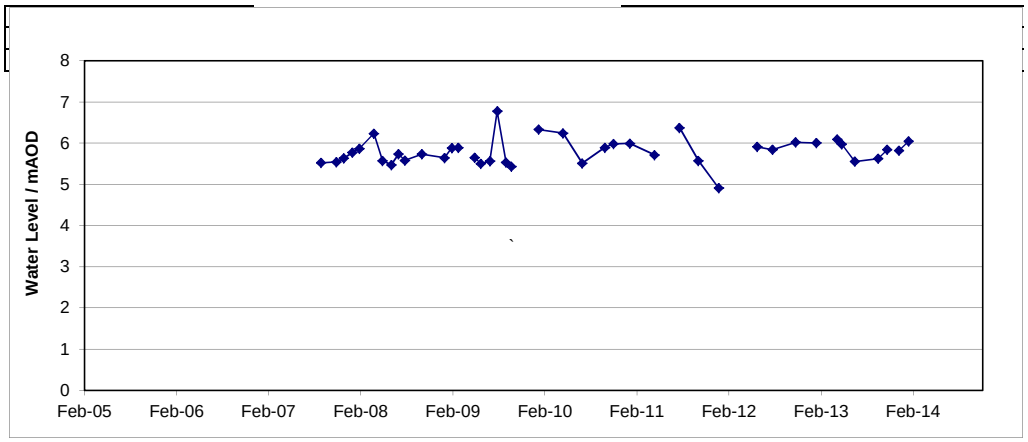

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

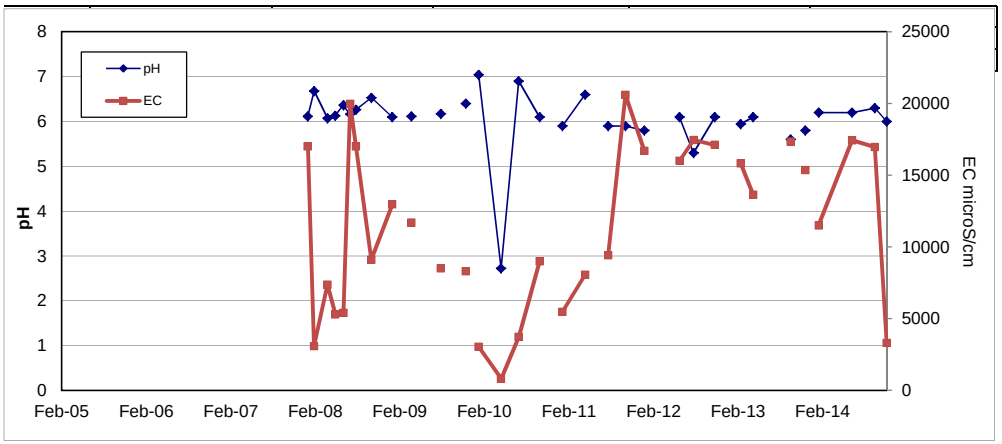

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

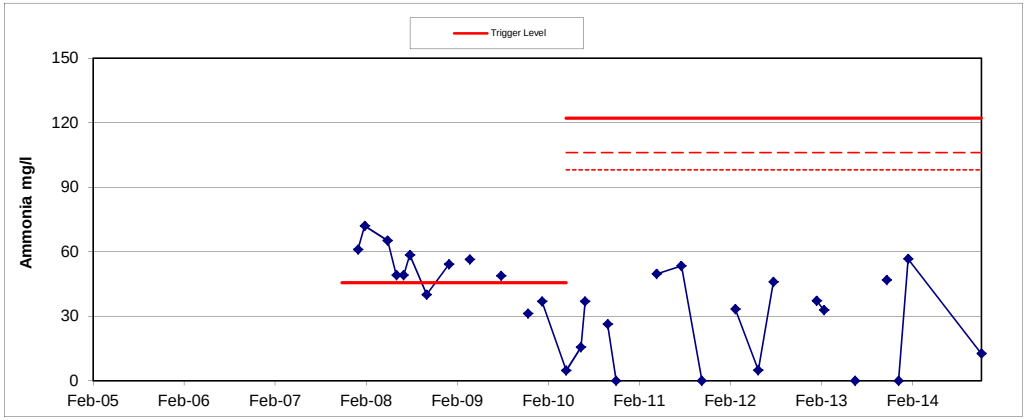

Field pH
Lab pH
pH
4
5
6
7
8
9
10
11
12
13
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

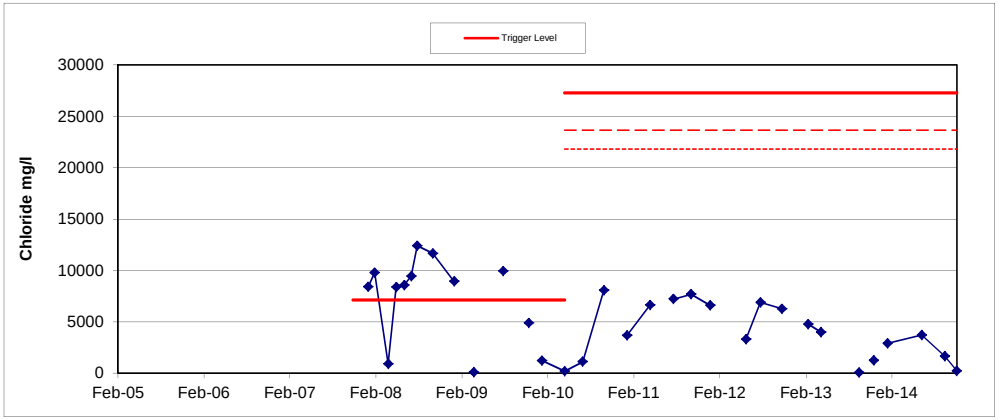

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
50
100
150
200
250
300
350
400
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

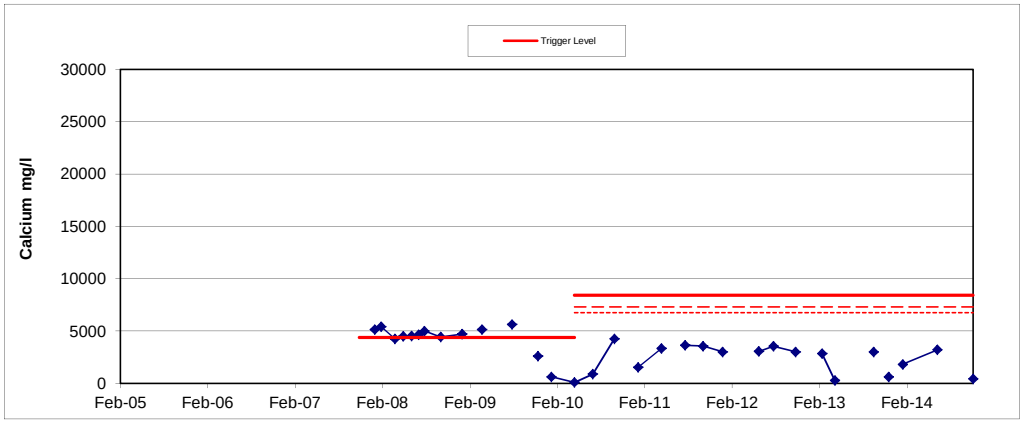

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

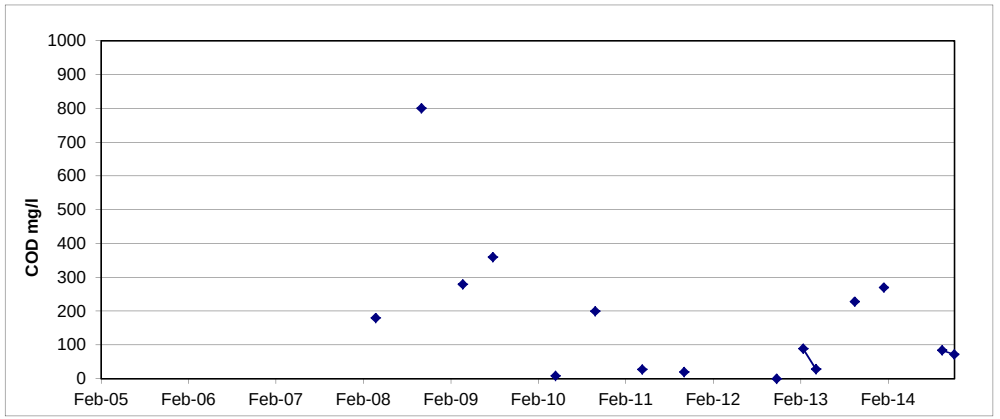

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

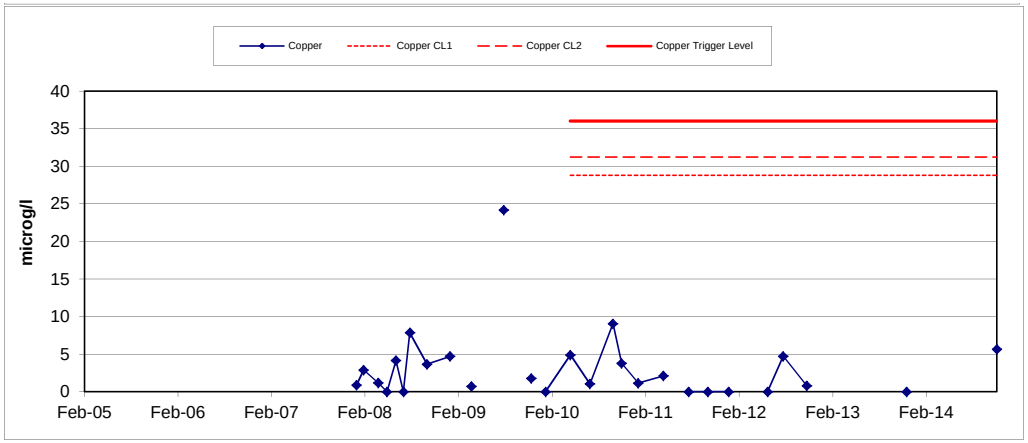

pH
EC
pH
EC microS/cm
0
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

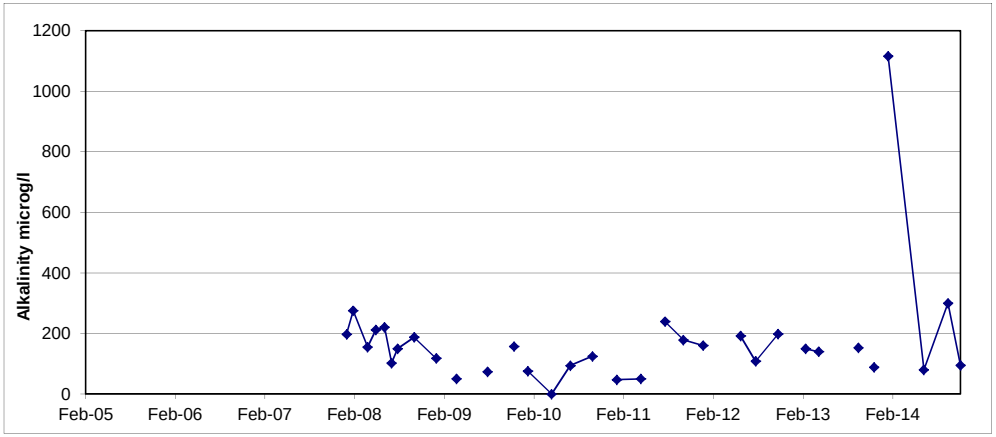

Trigger Level
Ammonia mg/l
0
30
60
90
120
150
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

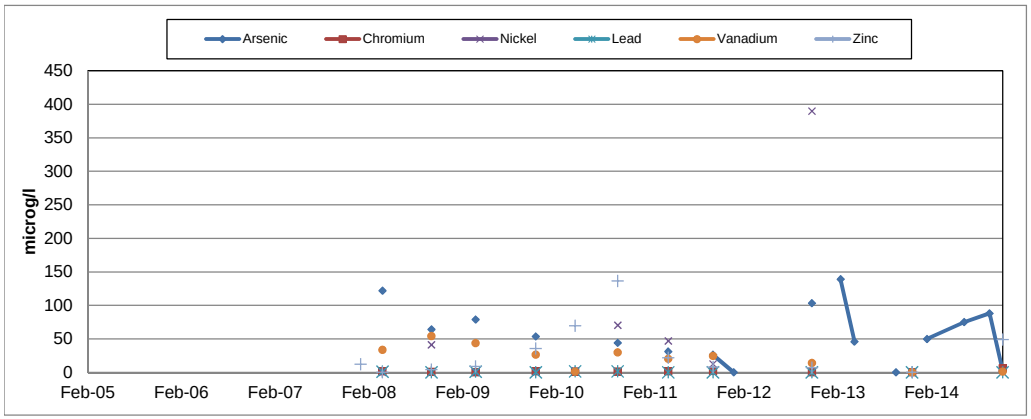

Trigger Level
Chloride mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

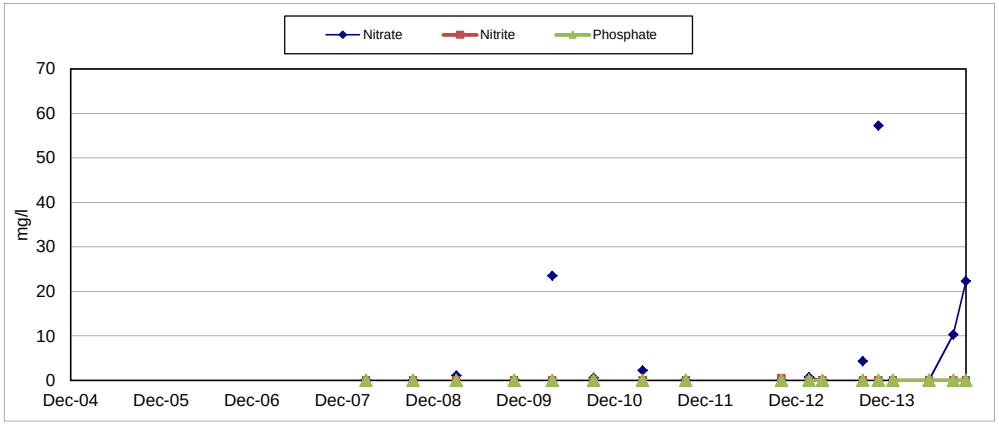

Trigger Level
Calcium mg/l
0
5000
10000
15000
20000
25000
30000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

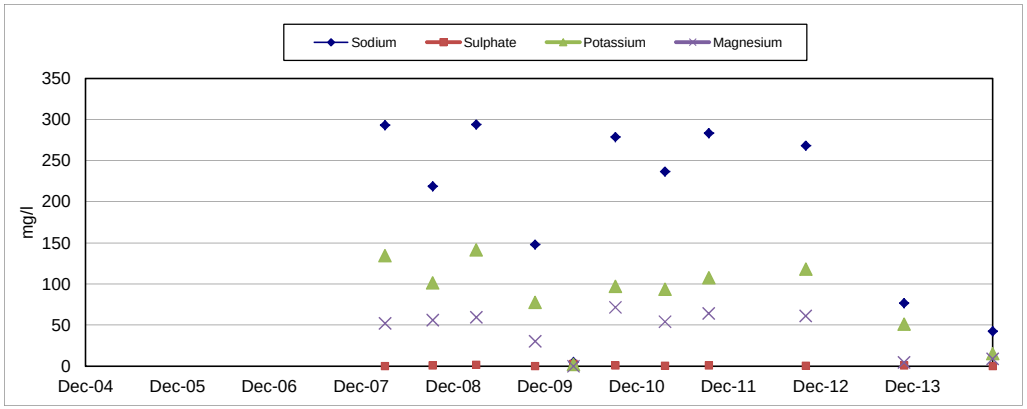

COD mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

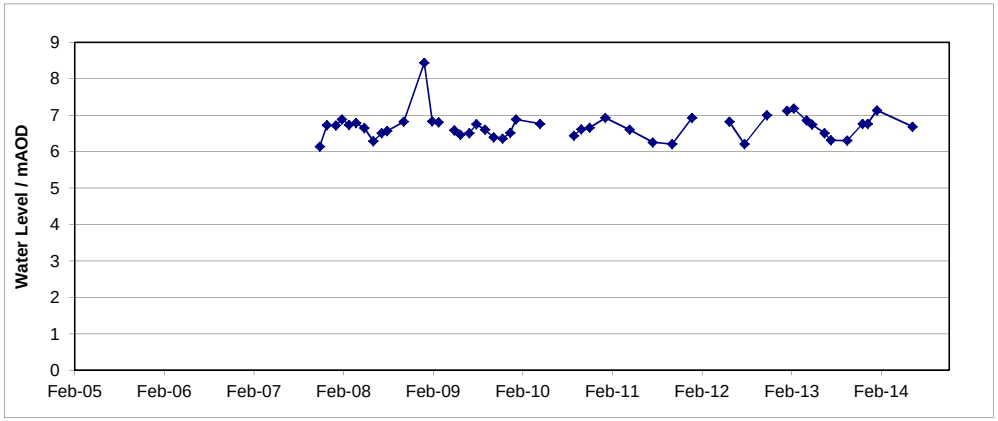

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

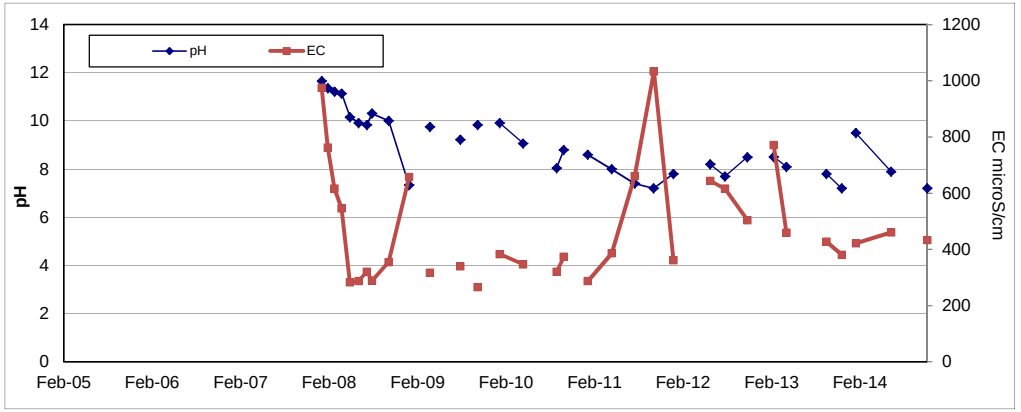

Alkalinity microg/l
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

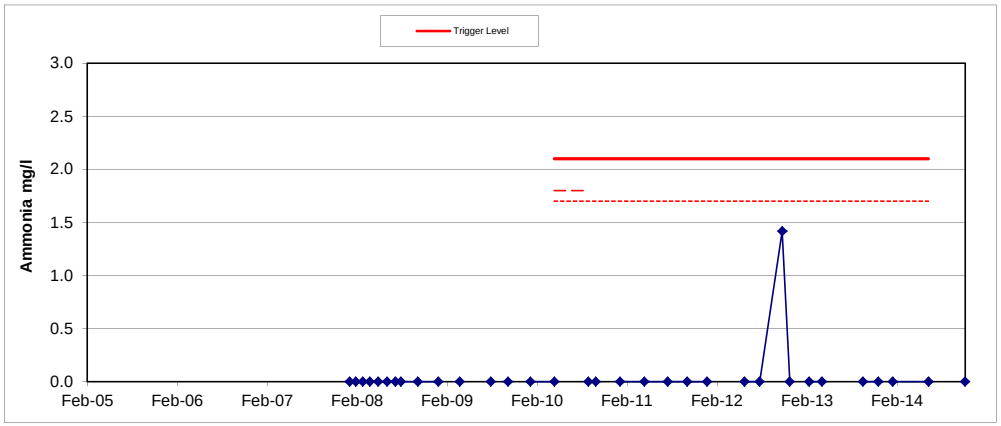

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

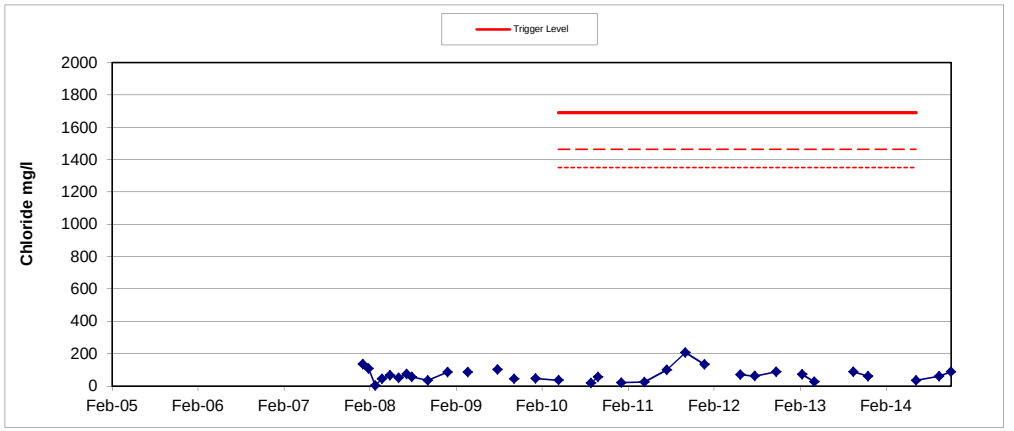

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

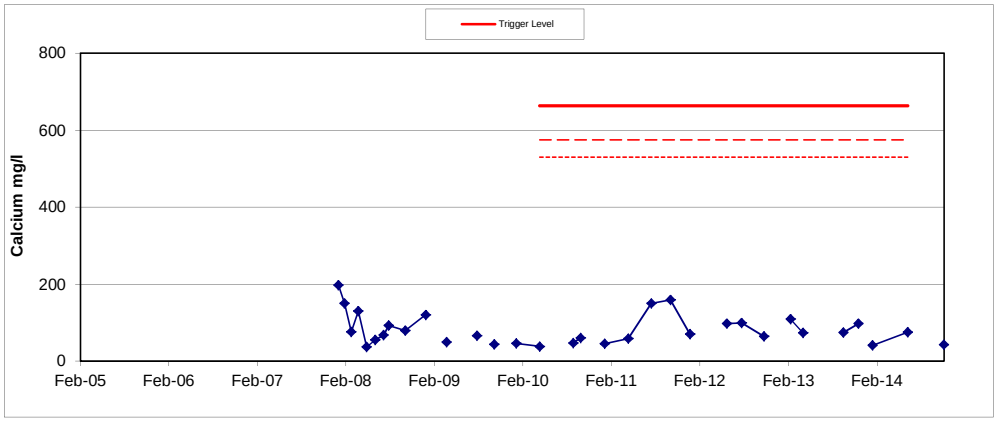

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
50
100
150
200
250
300
350
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

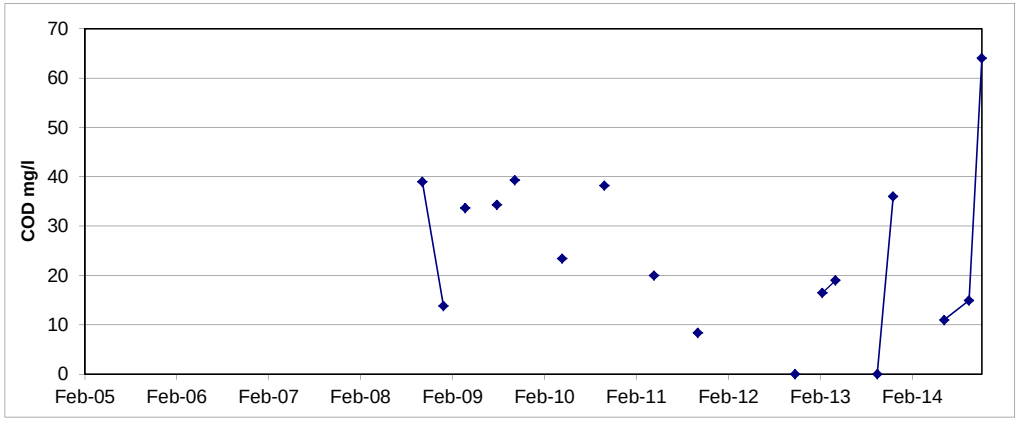

Water Level / mAOD
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

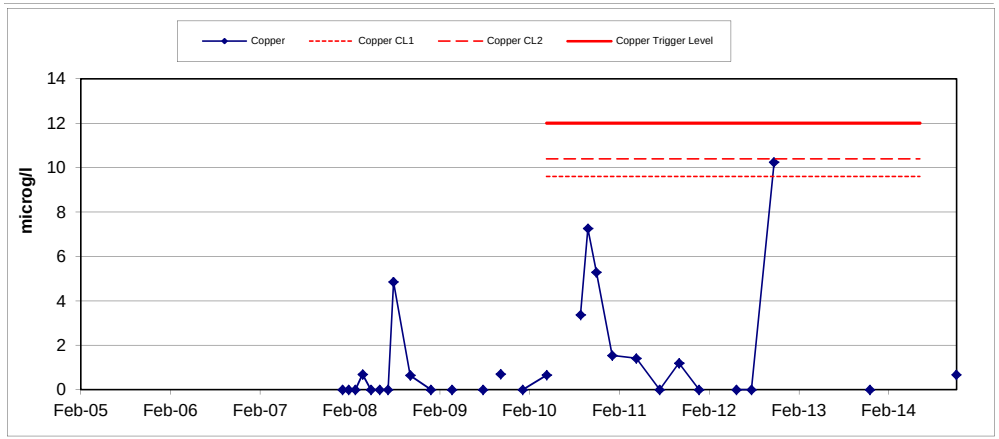

pH
EC
pH
EC microS/cm
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

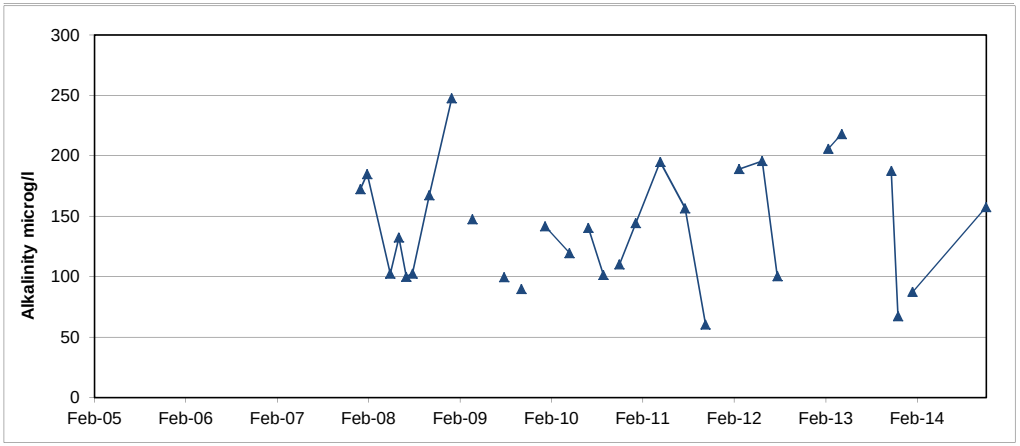

Trigger Level
Ammonia mg/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

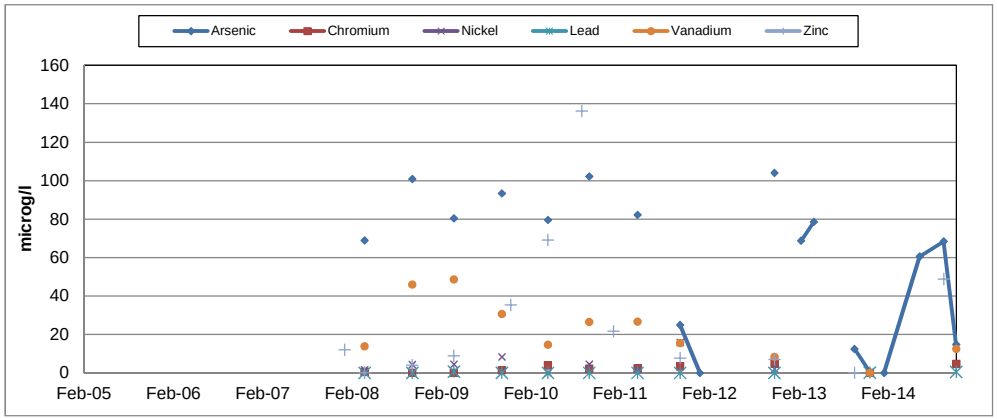

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

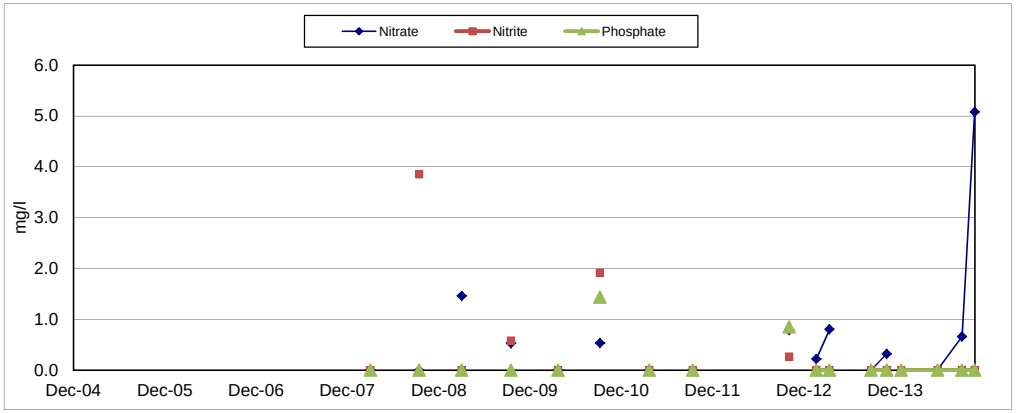

Trigger Level
Calcium mg/l
0
200
400
600
800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

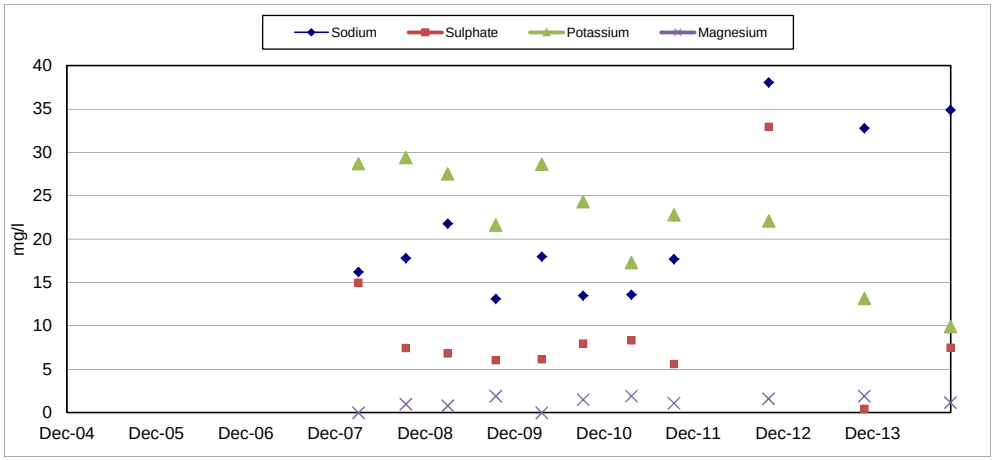

COD mg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

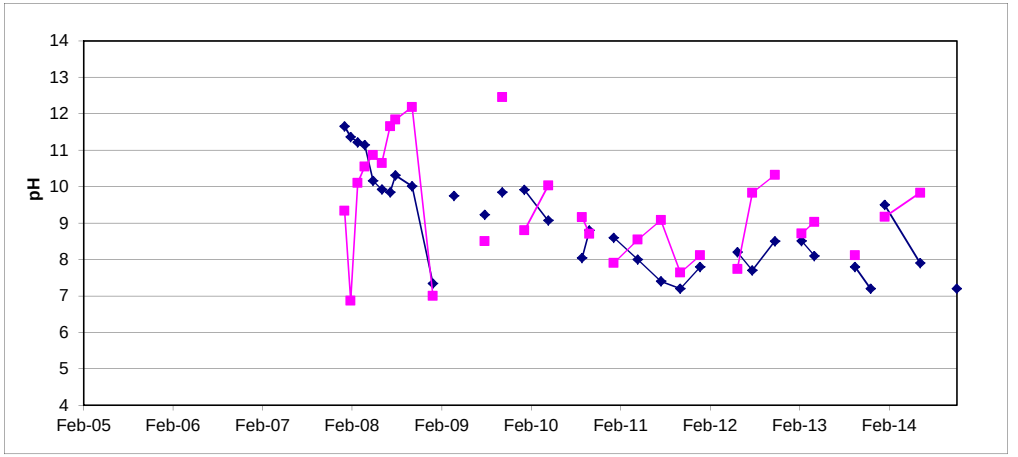

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

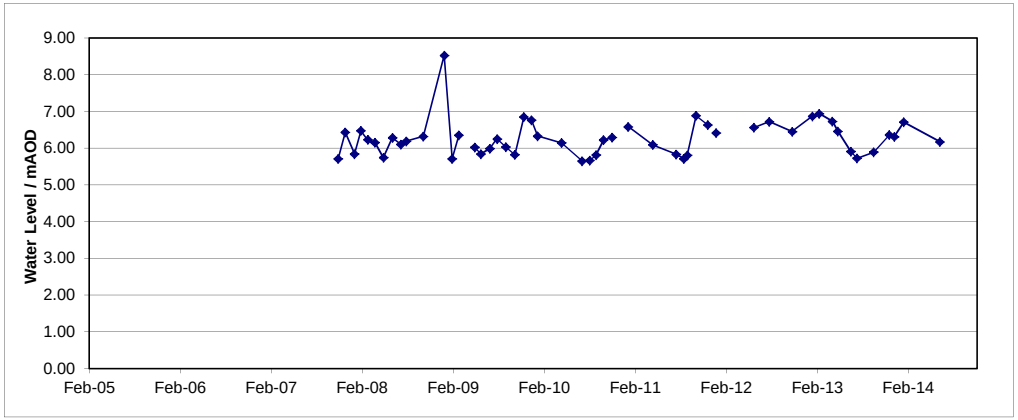

Alkalinity microg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

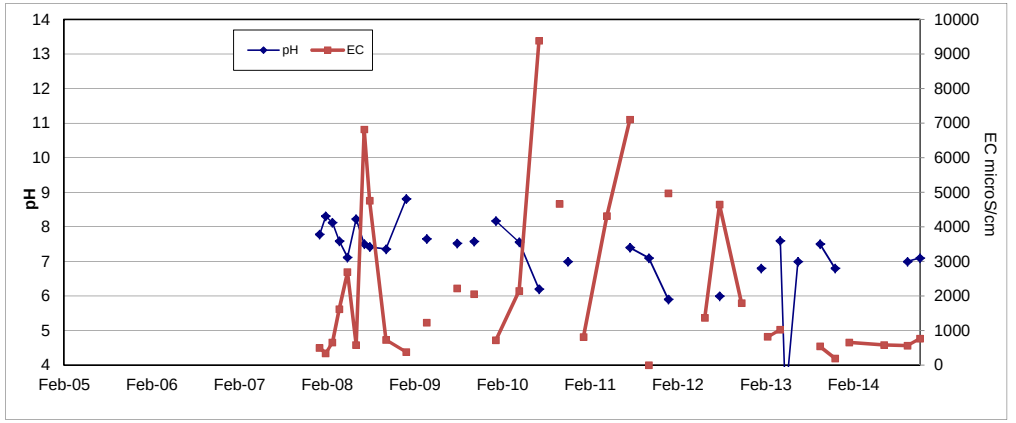

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
20
40
60
80
100
120
140
160
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

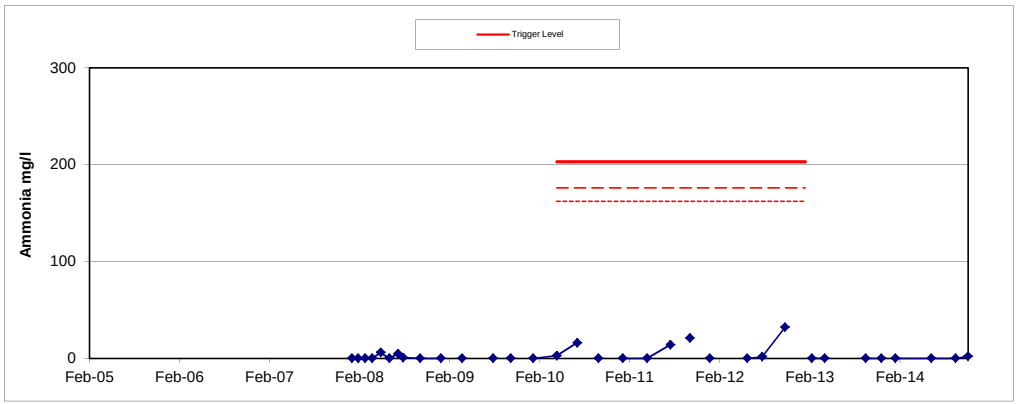

Nitrate
Nitrite
Phosphate
mg/l
0.0
1.0
2.0
3.0
4.0
5.0
6.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

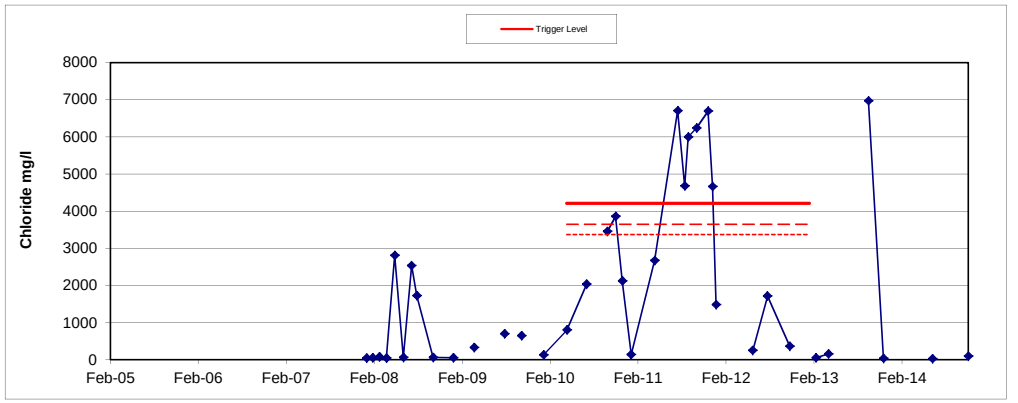

Sodium
Sulphate
Potassium
Magnesium
mg/l
0
5
10
15
20
25
30
35
40
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

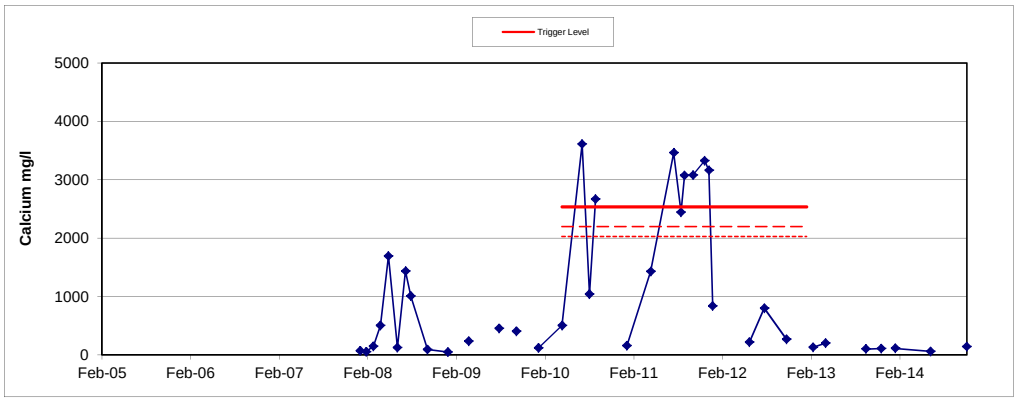

pH
4
5
6
7
8
9
10
11
12
13
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

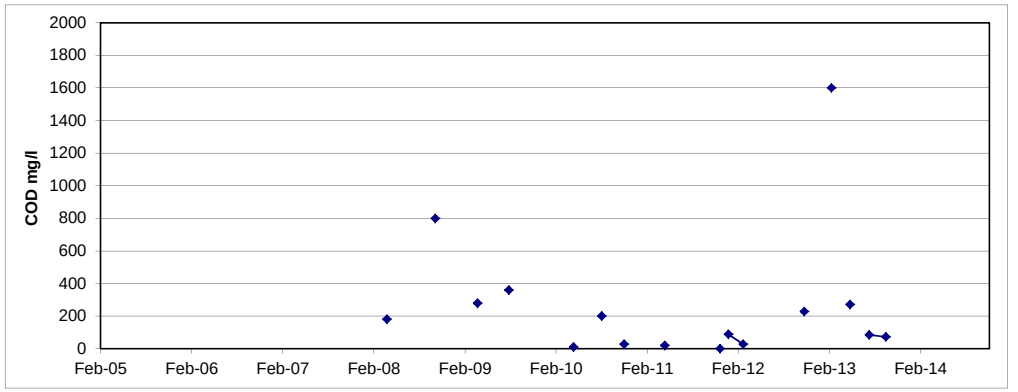

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

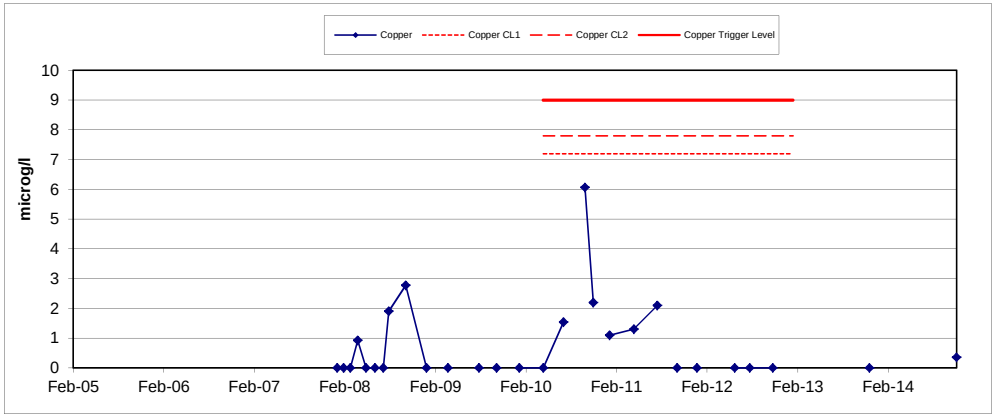

pH
EC
pH
EC micro S/cm
14 13 12 11 10 9 8 7 6 5 4
10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

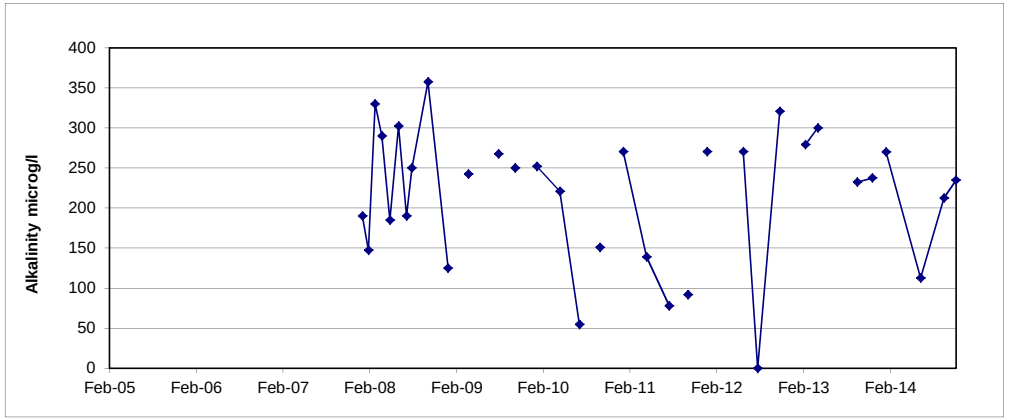

Trigger Level
Ammonia mg/l
300
200
100
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

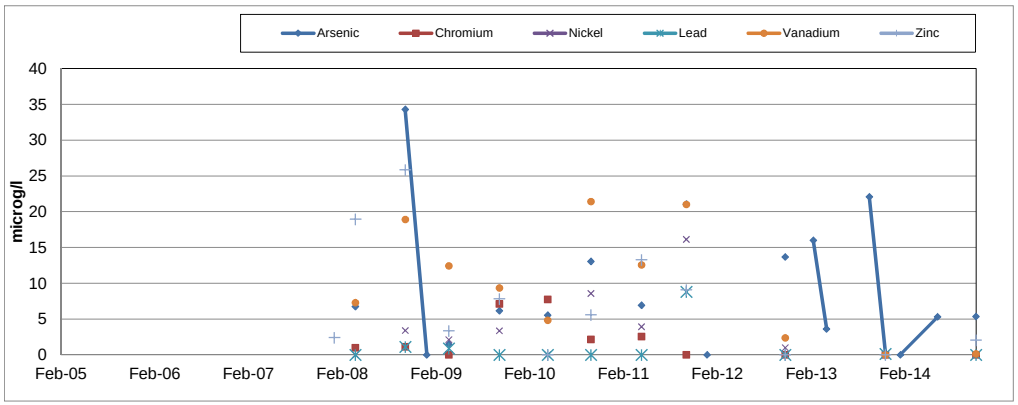

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

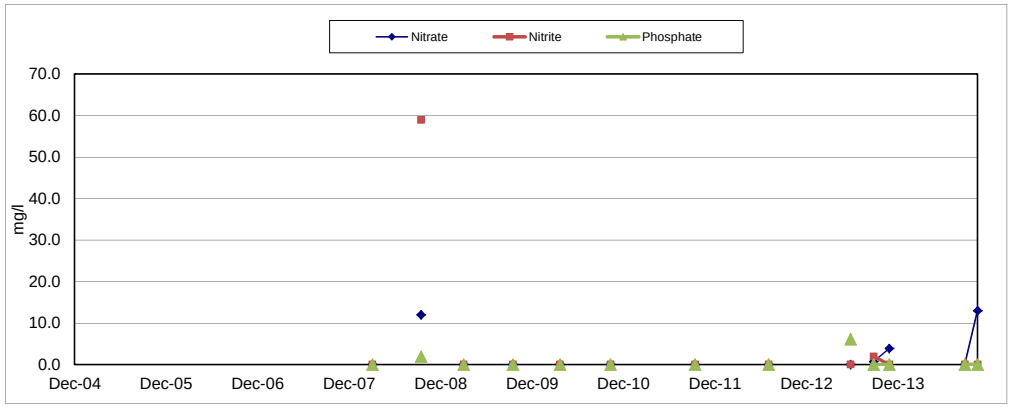

Trigger Level
Calcium mg/l
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

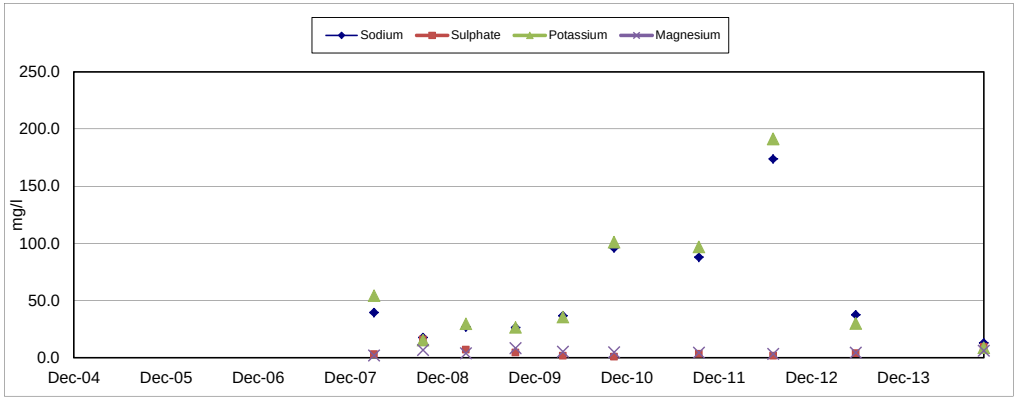

COD mg/l
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

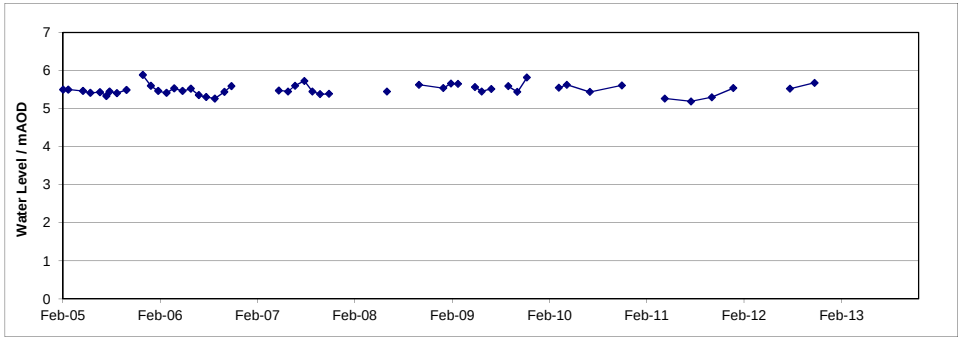

Copper
Copper CL1
Copper CL2
Copper Trigger Level
microg/l
0
1
2
3
4
5
6
7
8
9
10
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

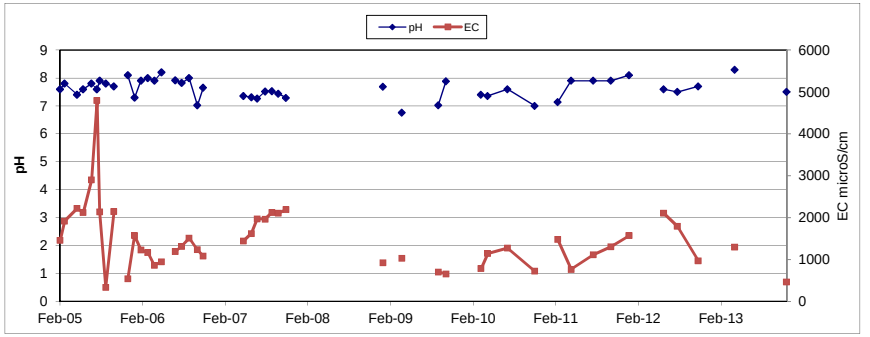

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

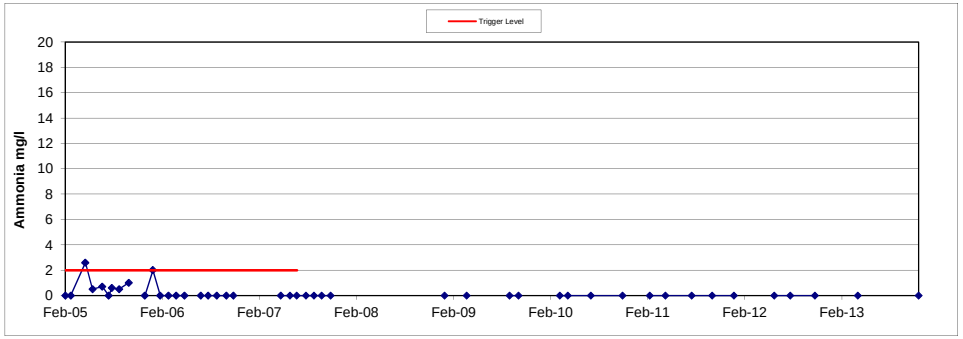

Arsenic
Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

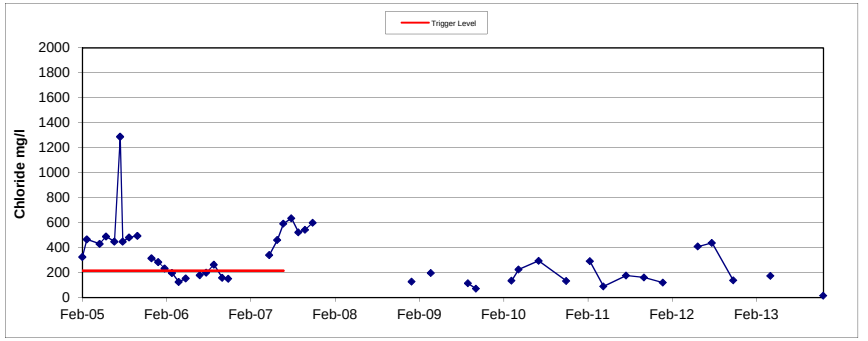

Nitrate
Nitrite
Phosphate
mg/l
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

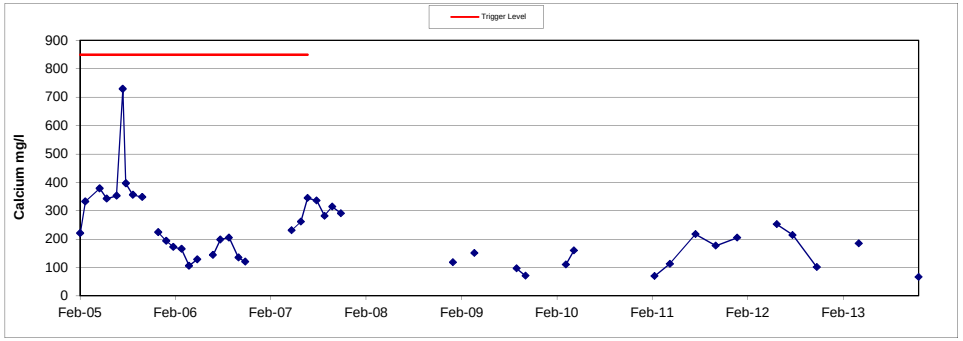

Sodium
Sulphate
Potassium
Magnesium
mg/l
0.0
50.0
100.0
150.0
200.0
250.0
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13

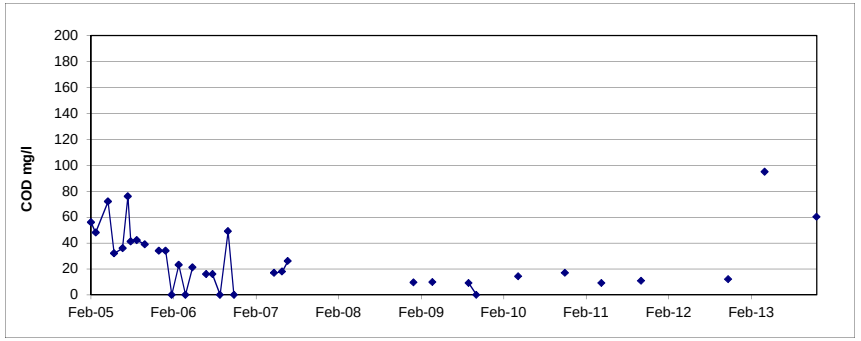

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

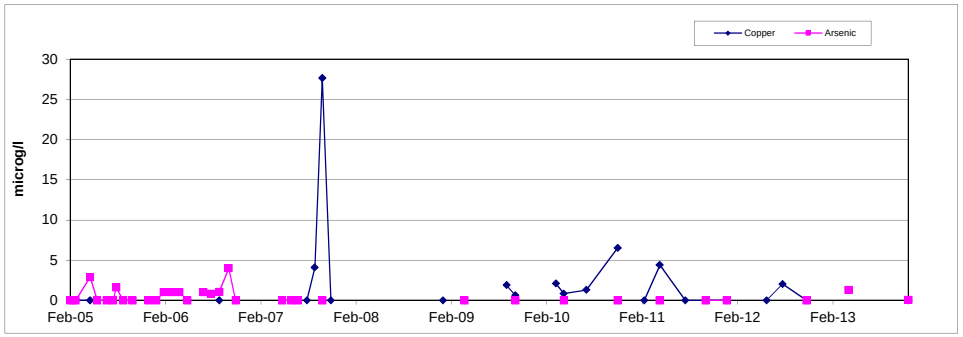

pH
EC
pH
EC microS/cm
0
1
2
3
4
5
6
7
8
9
0
1000
2000
3000
4000
5000
6000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

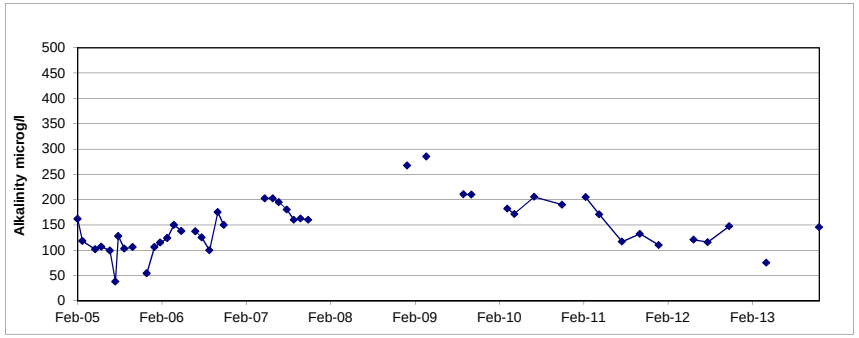

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

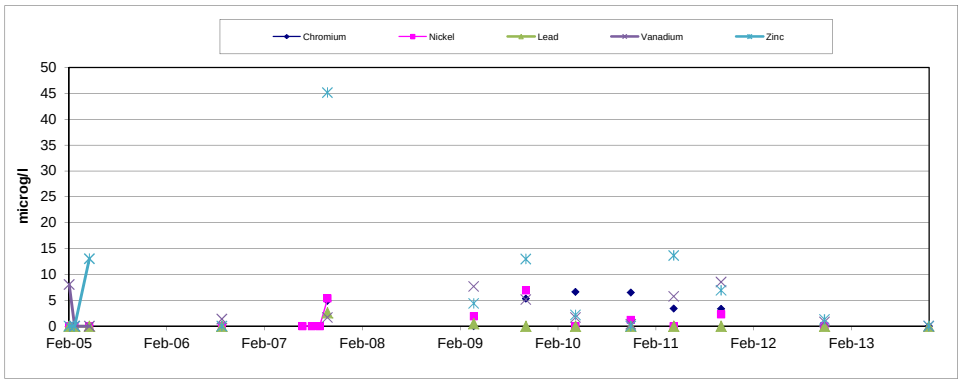

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

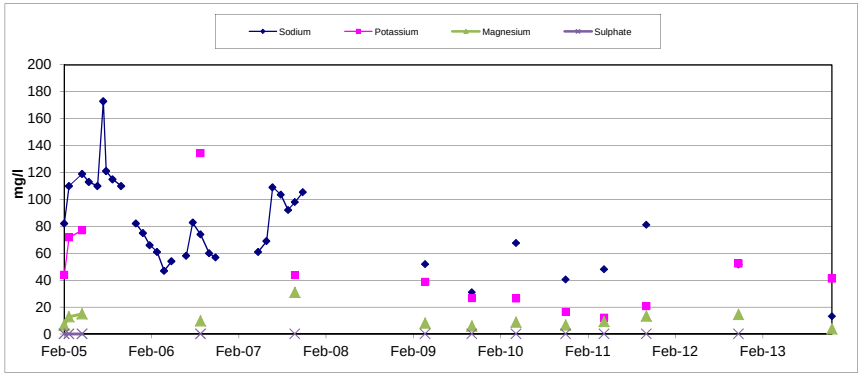

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

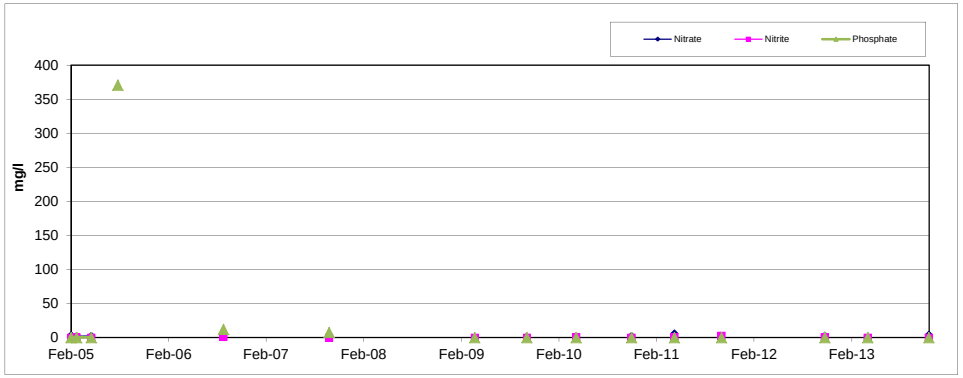

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

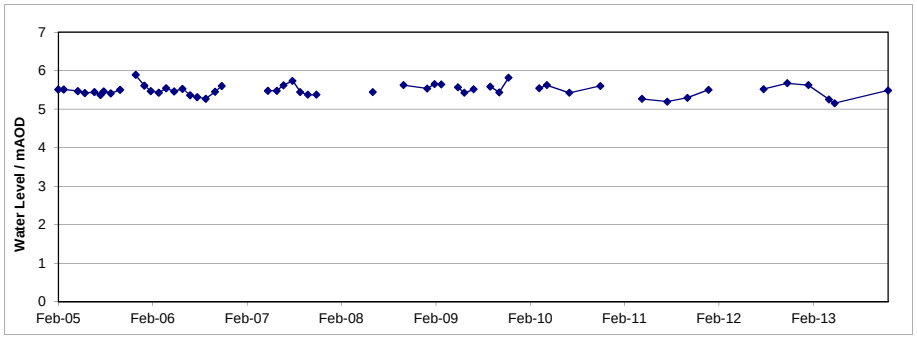

Copper
Arsenic
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

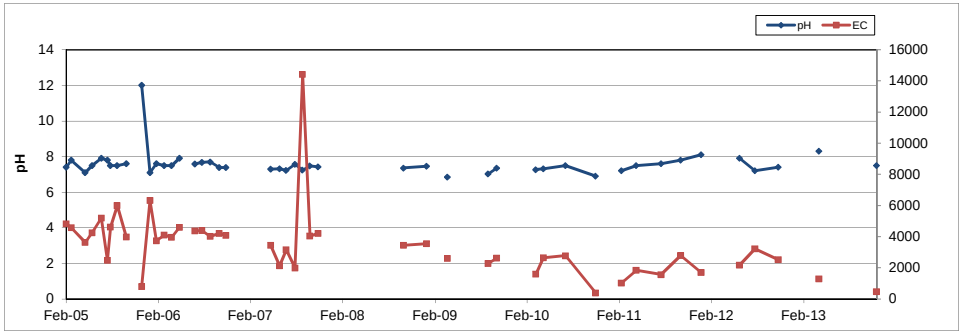

Alkalinity microg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

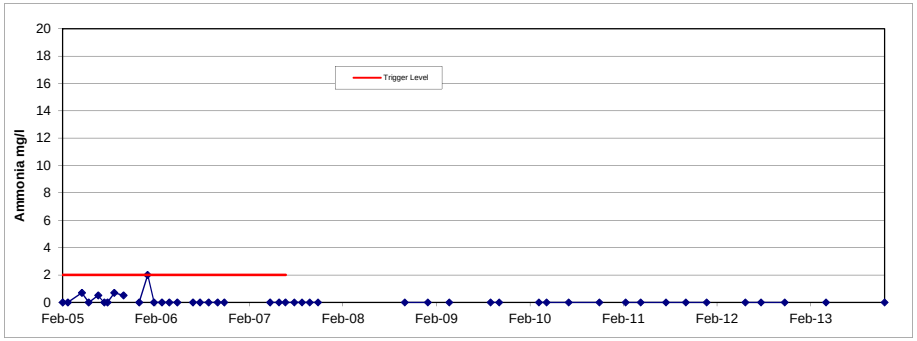

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

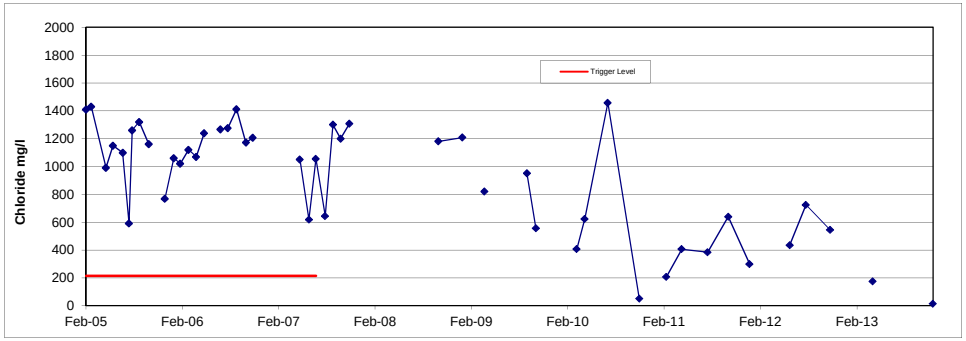

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

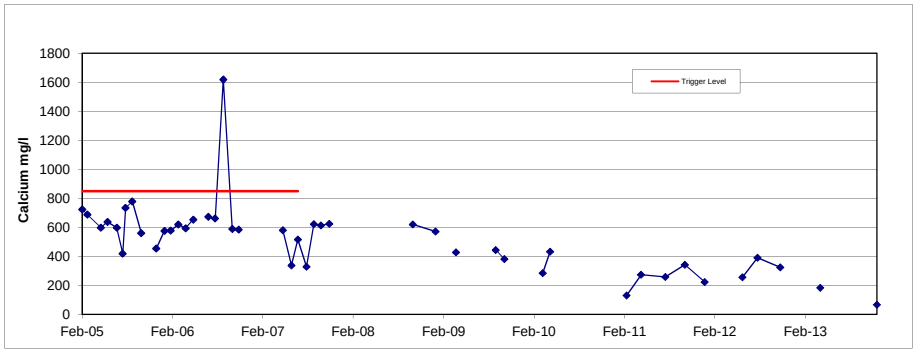

Nitrate
Nitrite
Phosphate
mg/l
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

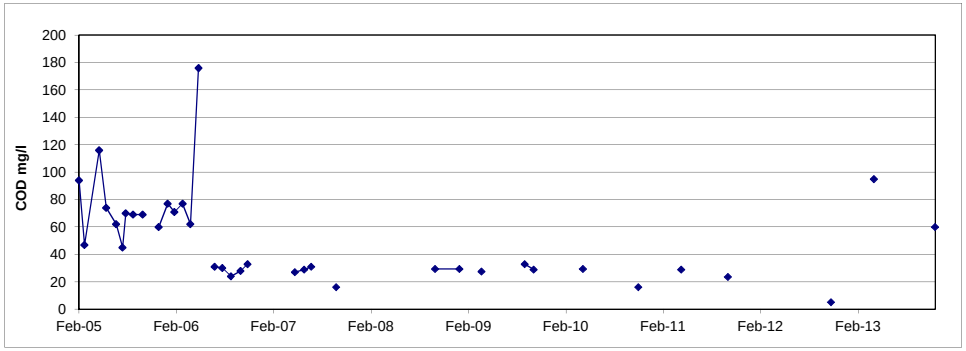

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

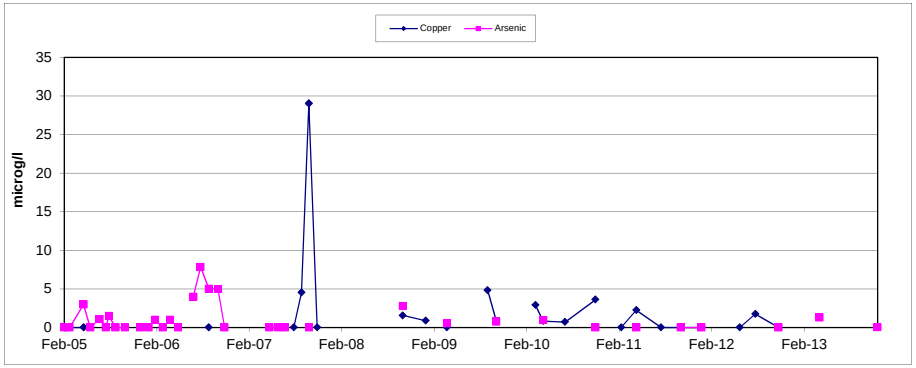

pH
EC
pH
0
2
4
6
8
10
12
14
0
2000
4000
6000
8000
10000
12000
14000
16000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

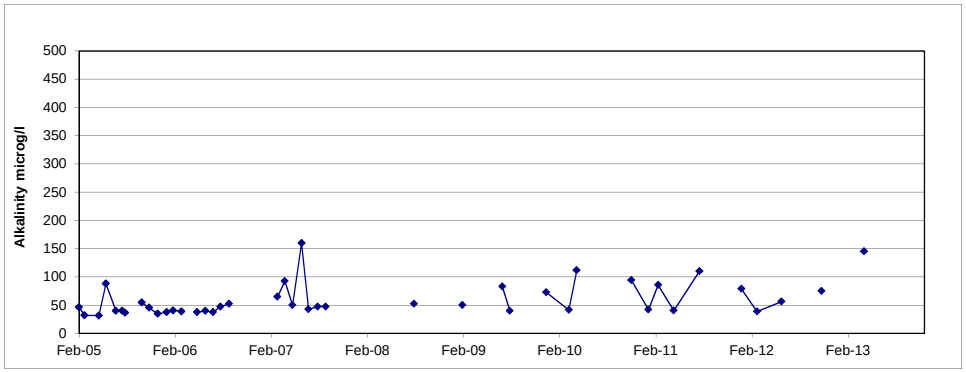

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

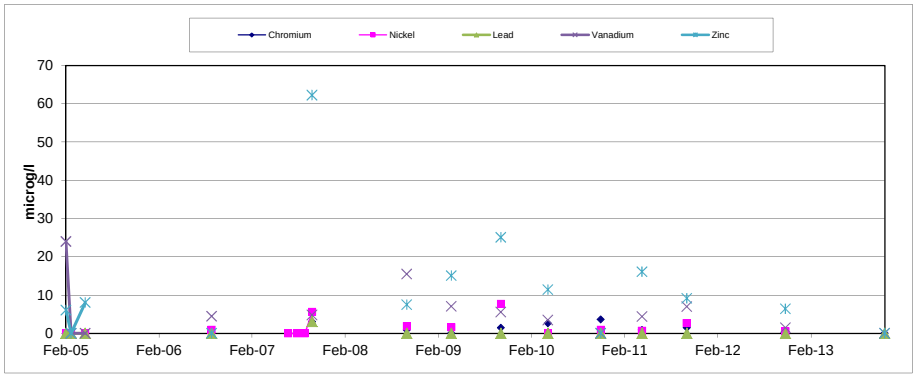

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

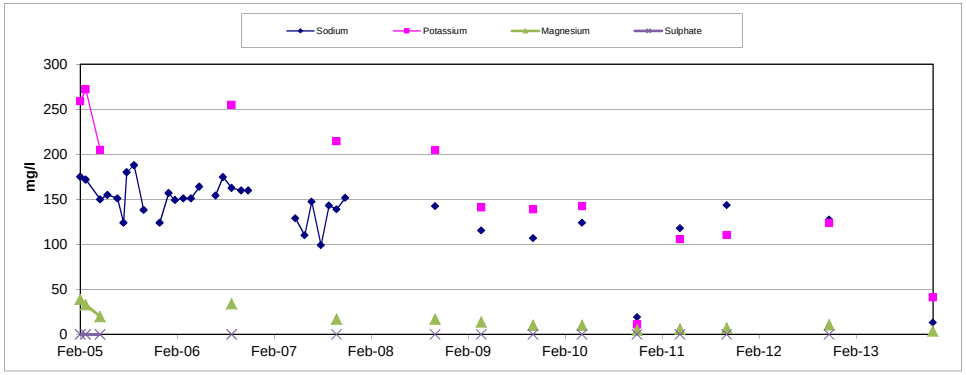

Trigger Level
Calcium mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

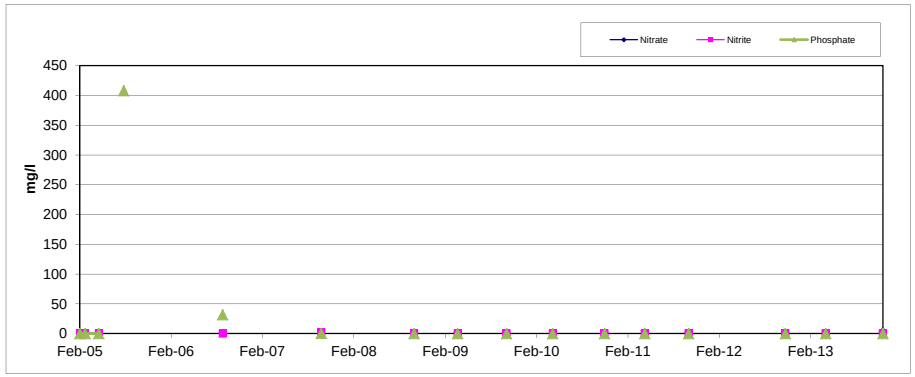

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

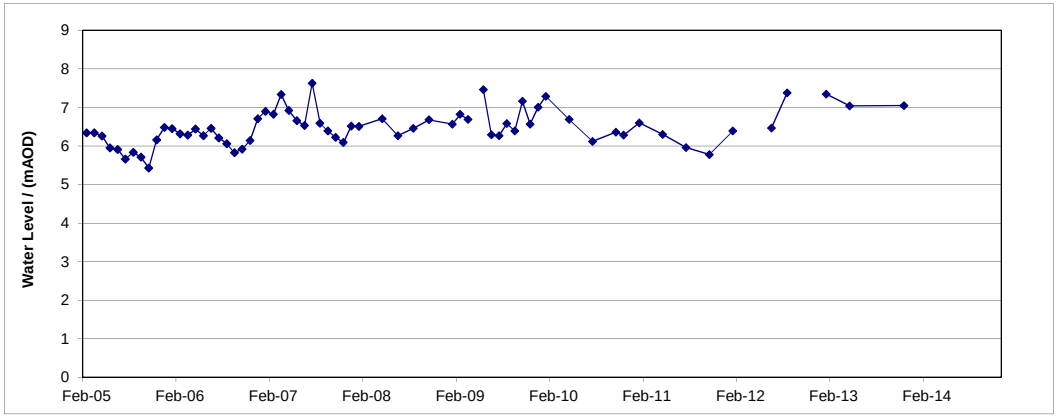

Copper
Arsenic
microg/l
0
5
10
15
20
25
30
35
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

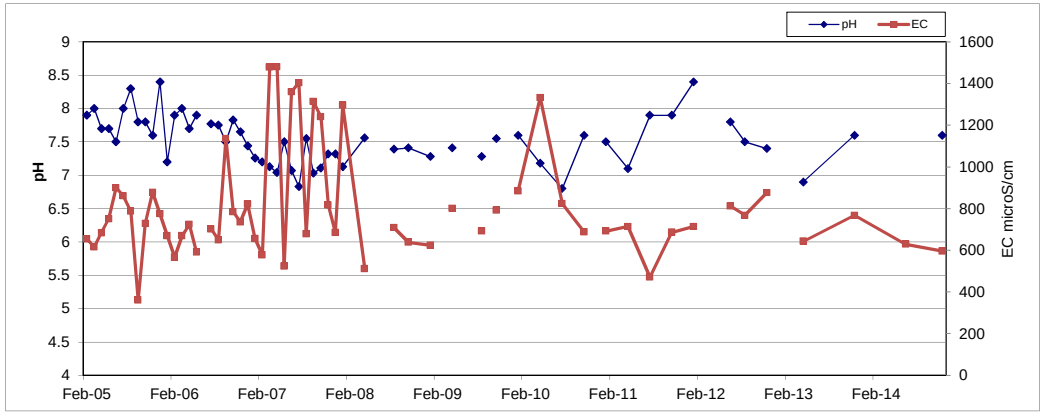

Alkalinity microg/l
0
50
100
150
200
250
300
350
400
450
500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

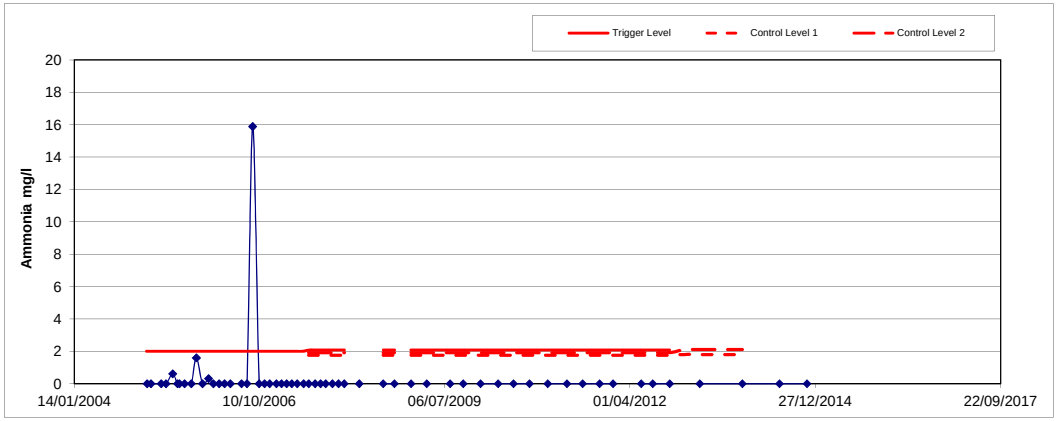

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

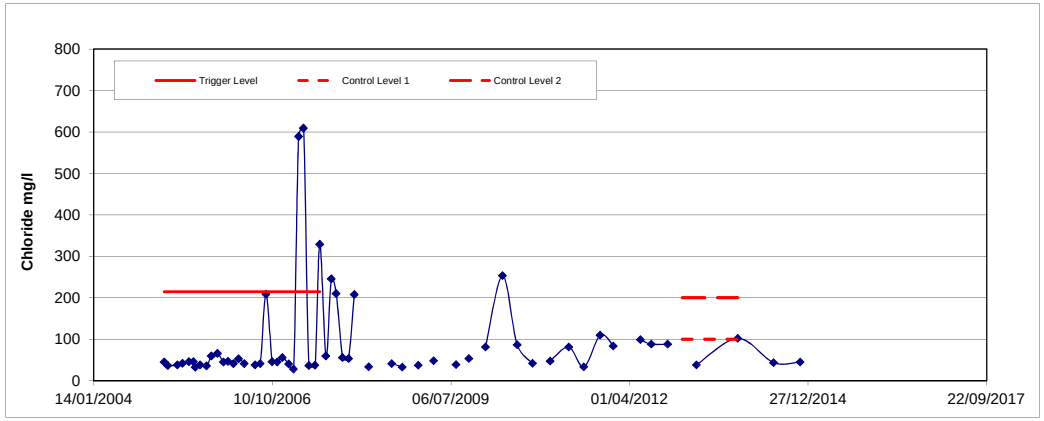

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

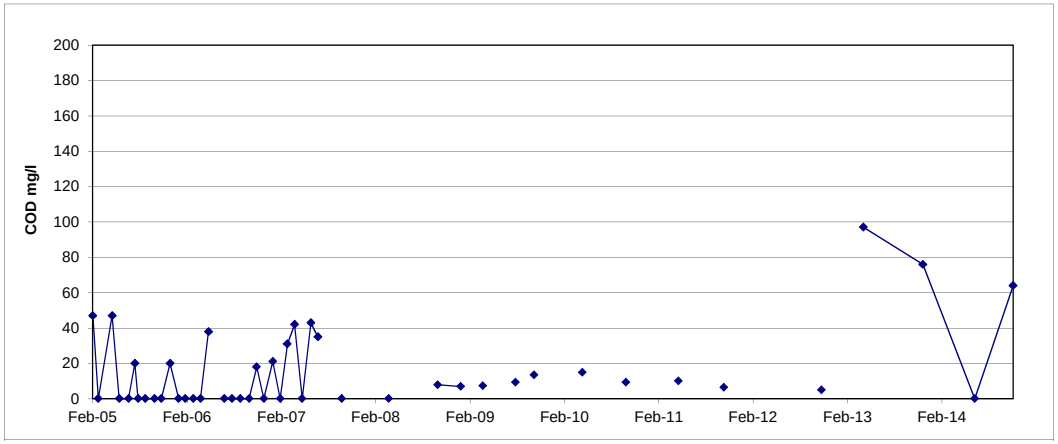

Nitrate
Nitrite
Phosphate
mg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13

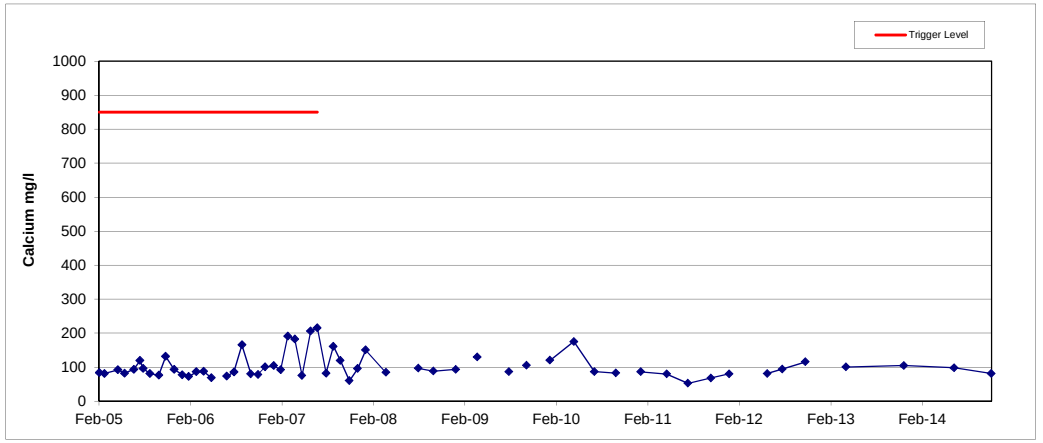

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

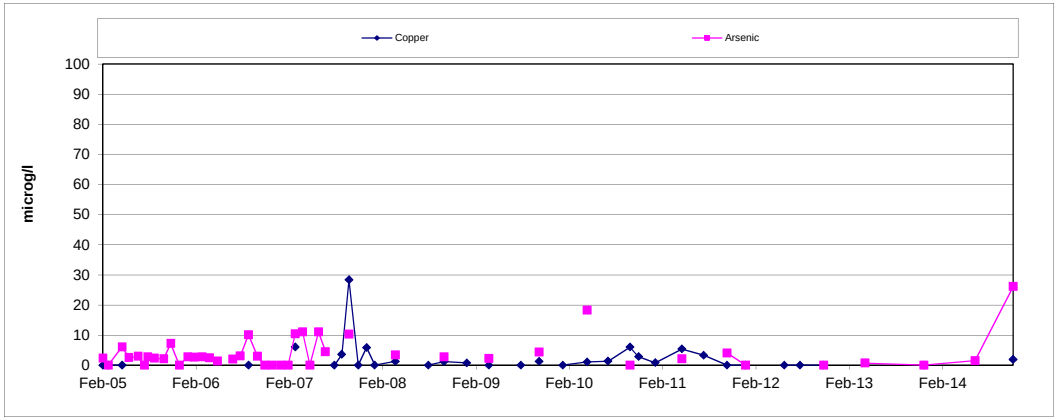

pH
EC
pH
EC micro S/cm
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
0
200
400
600
800
1000
1200
1400
1600
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

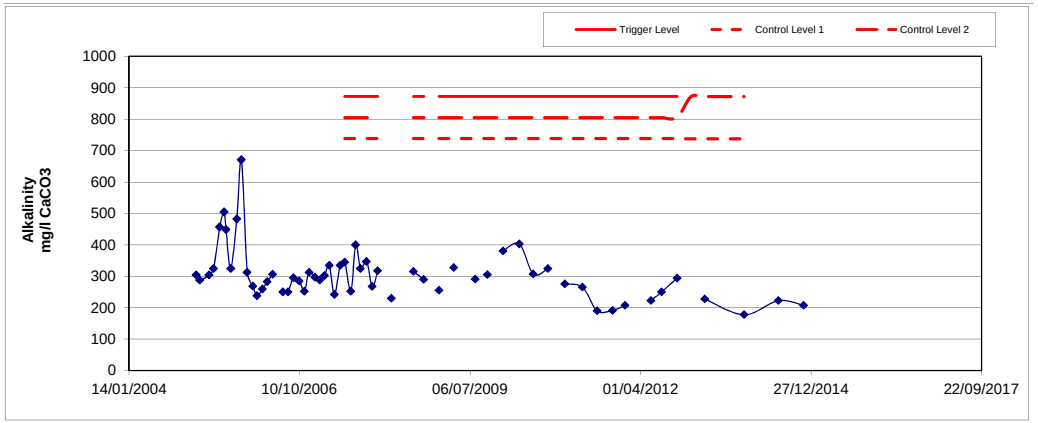

Trigger Level
Control Level 1
Control Level 2
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

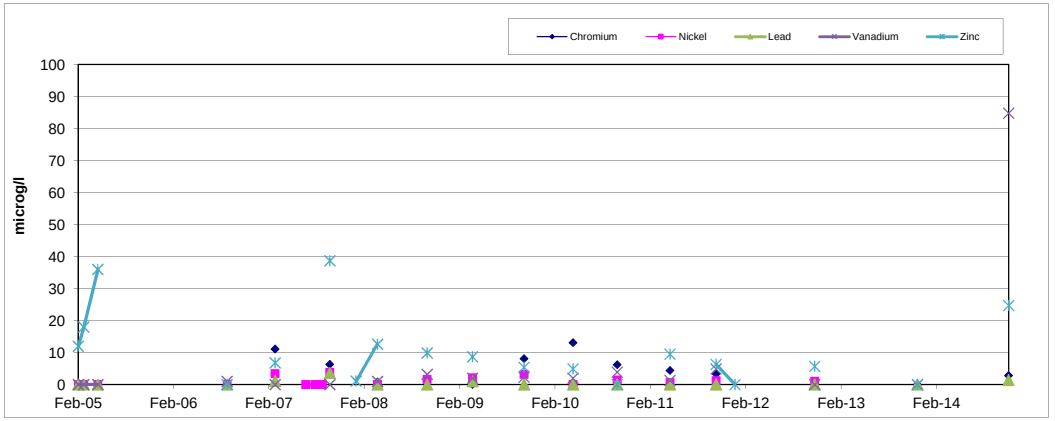

Trigger Level
Control Level 1
Control Level 2
Chloride mg/l
0
100
200
300
400
500
600
700
800
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

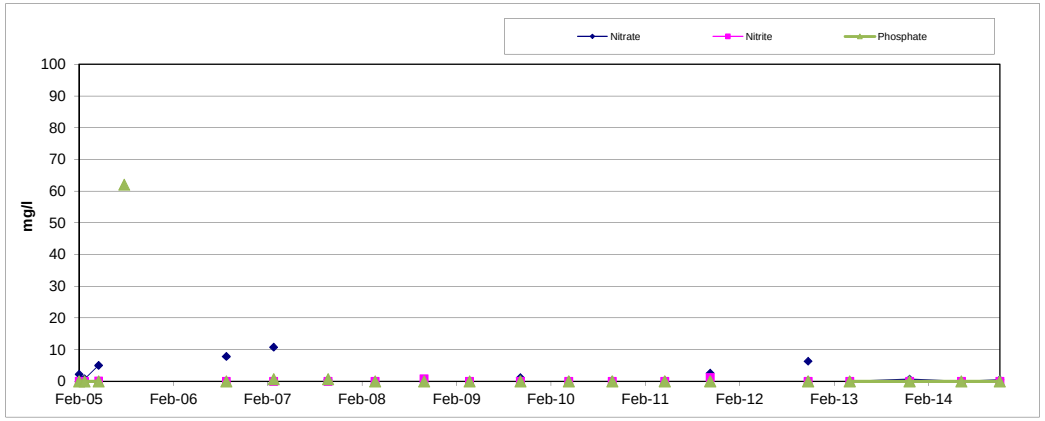

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

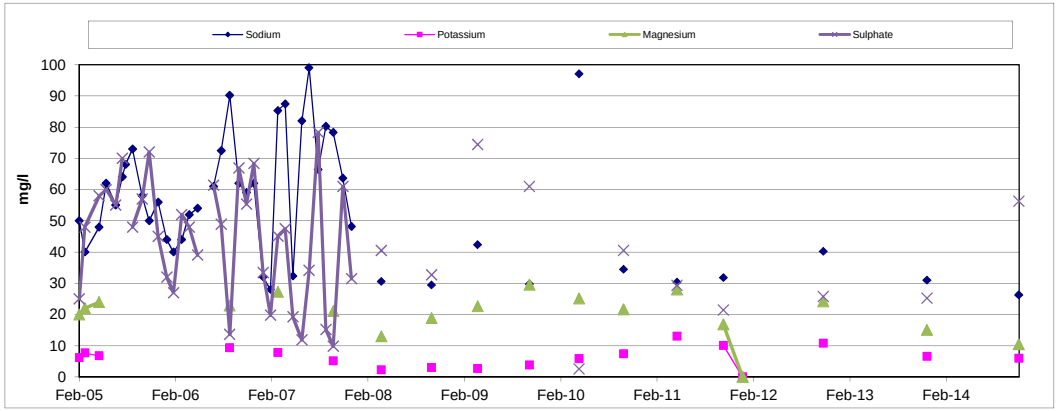

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

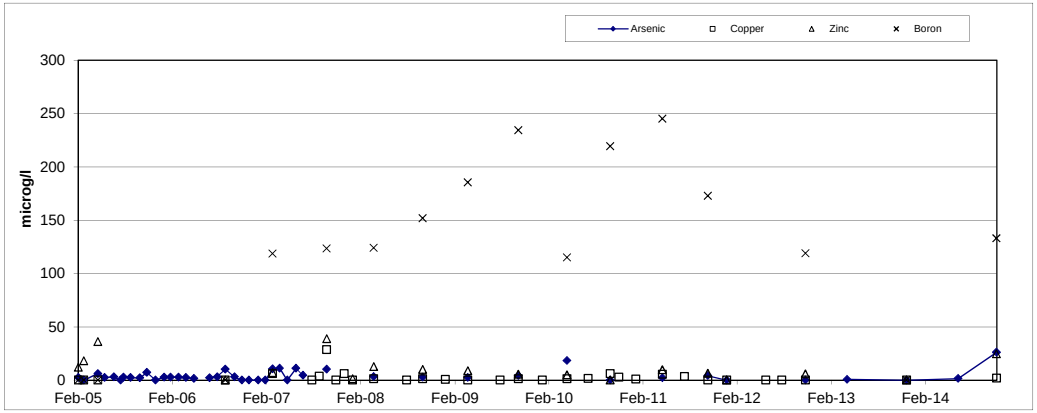

Copper
Arsenic
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

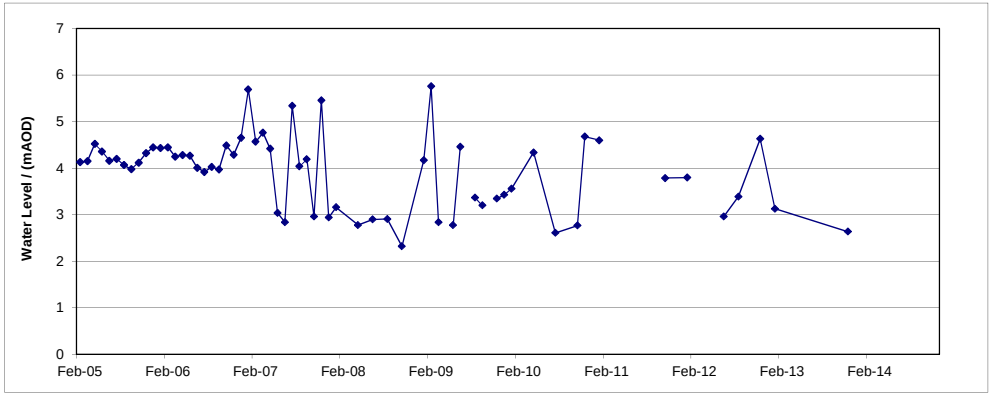

Trigger Level
Control Level 1
Control Level 2
Alkalinity
mg/l CaCO3
1000
900
800
700
600
500
400
300
200
100
0
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

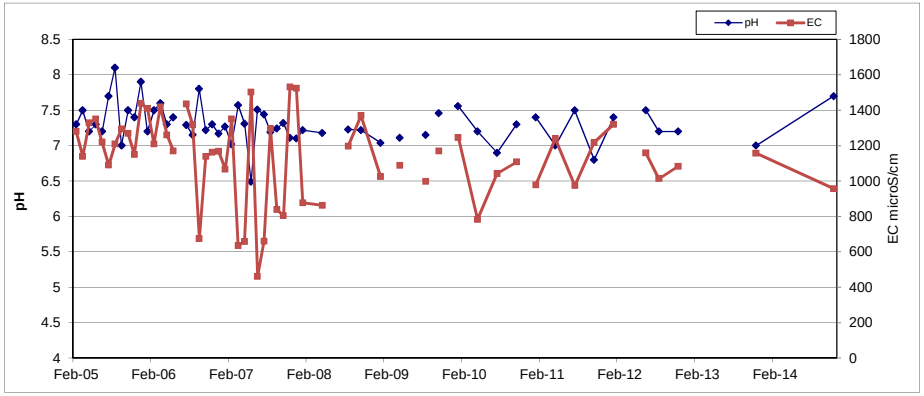

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

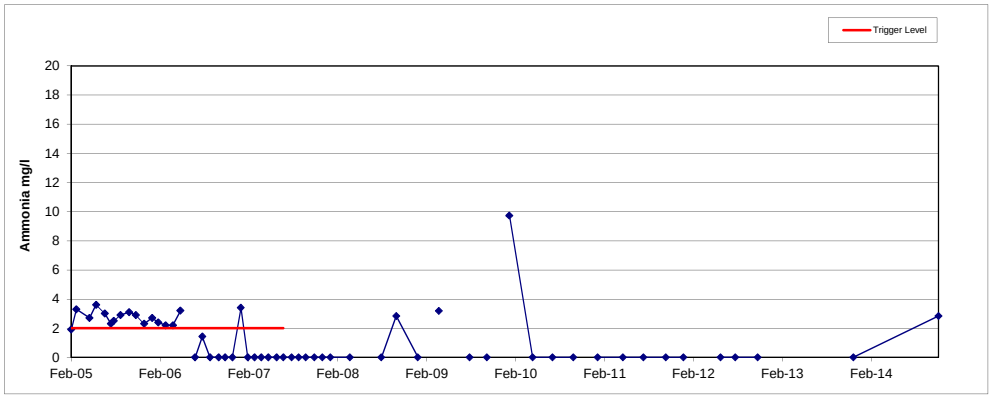

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

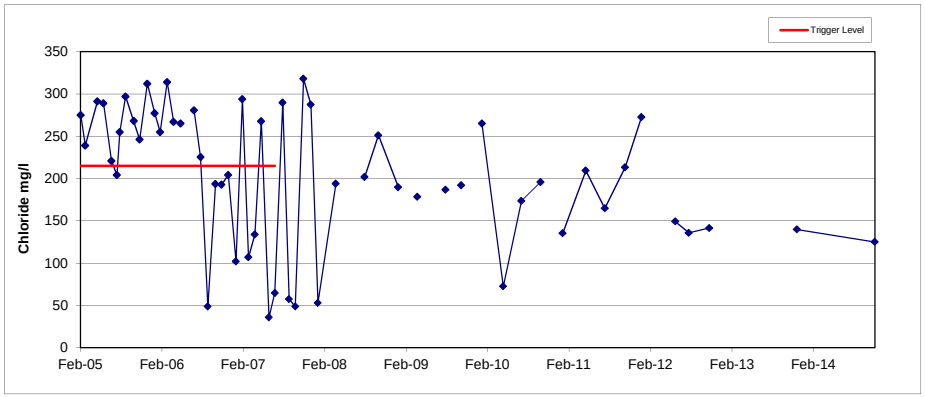

Sodium
Potassium
Magnesium
Sulphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

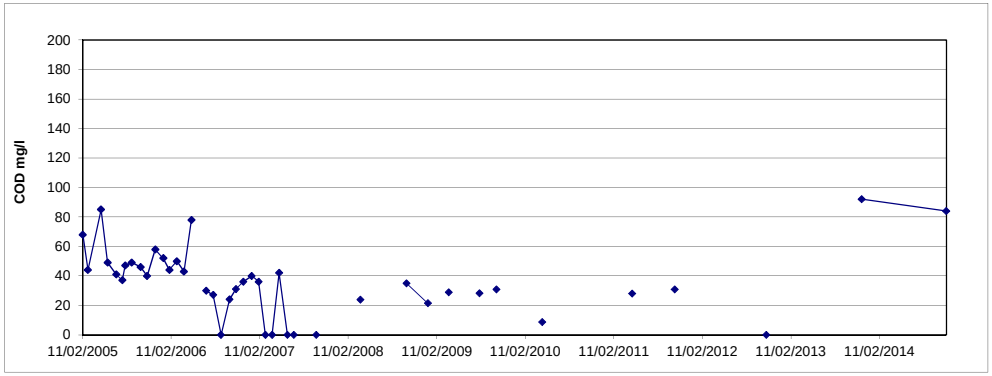

Arsenic
Copper
Zinc
Boron
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

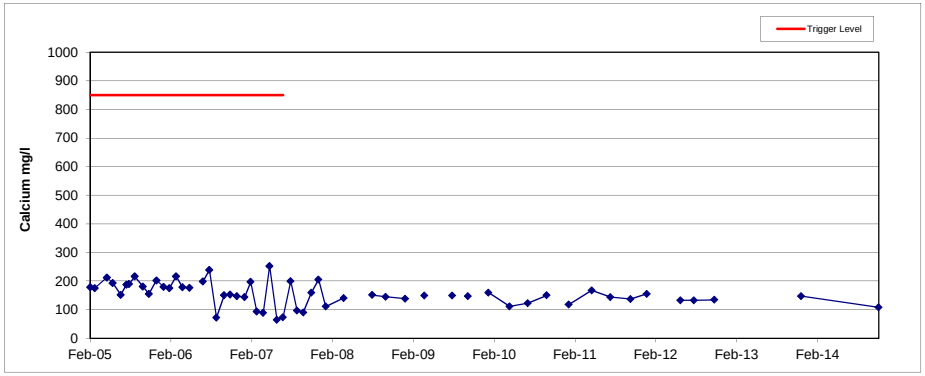

Water Level / (mAOD)
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

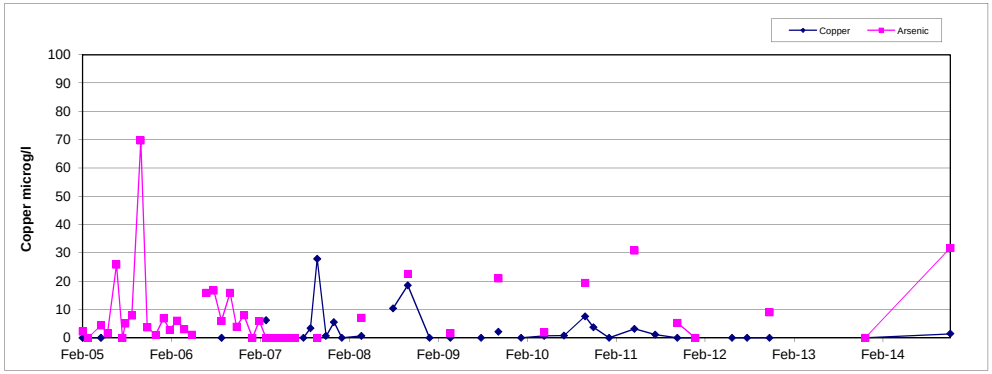

pH
EC
pH
EC microS/cm
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
0
200
400
600
800
1000
1200
1400
1600
1800
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

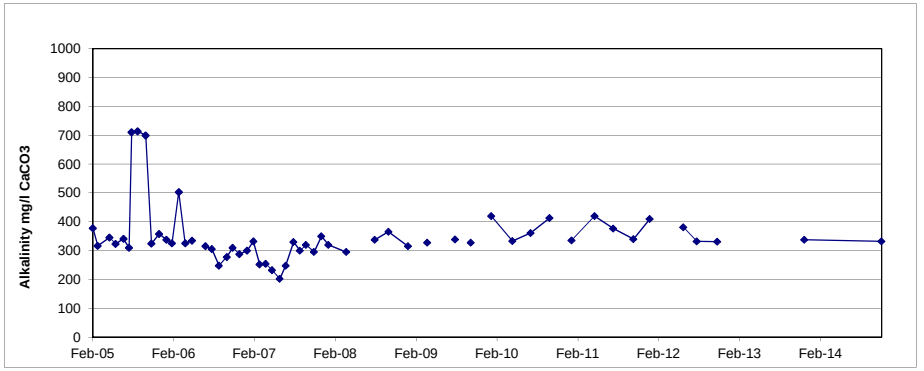

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

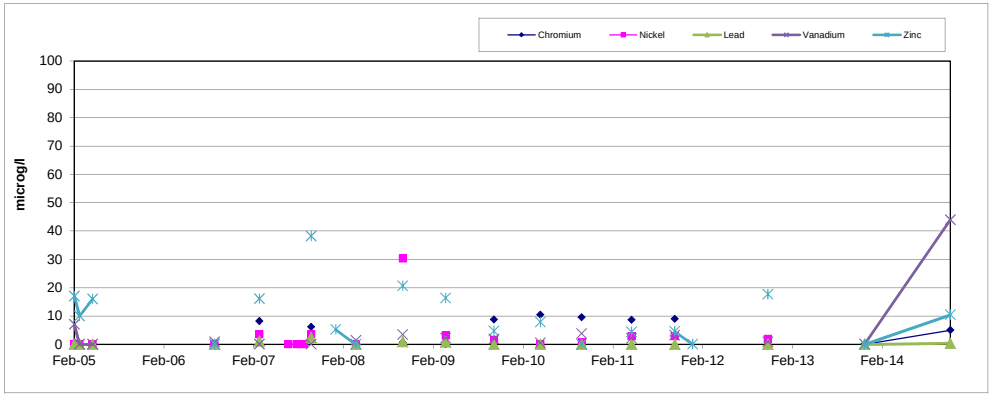

Trigger Level
Chloride mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

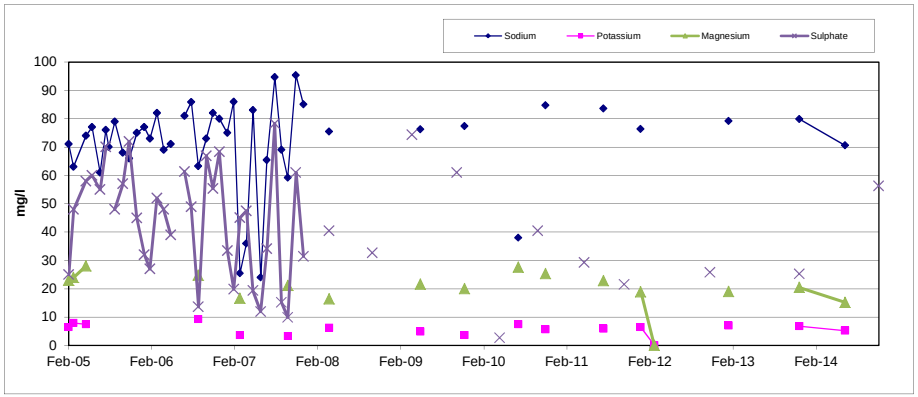

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

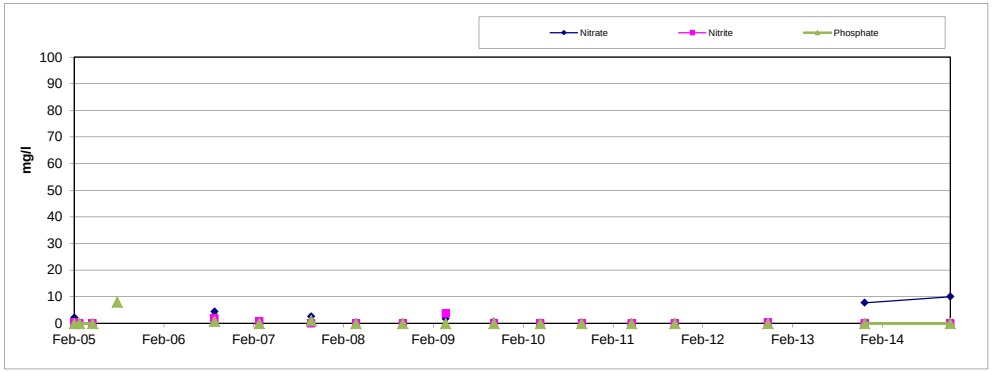

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

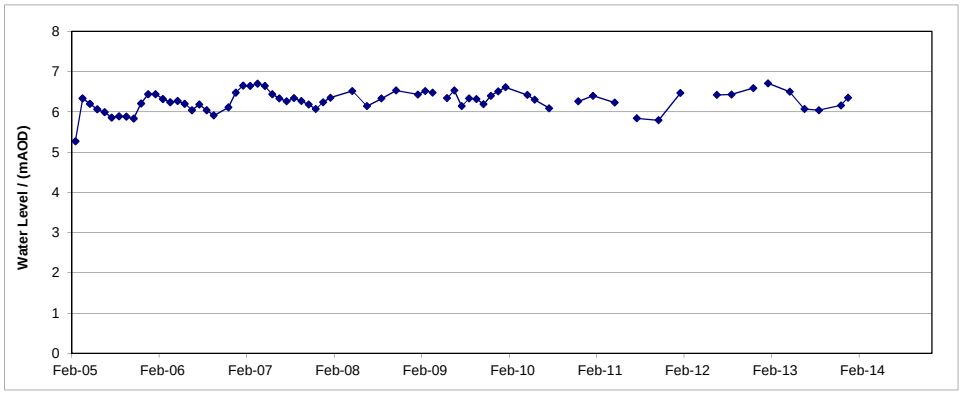

Copper
Arsenic
Copper microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

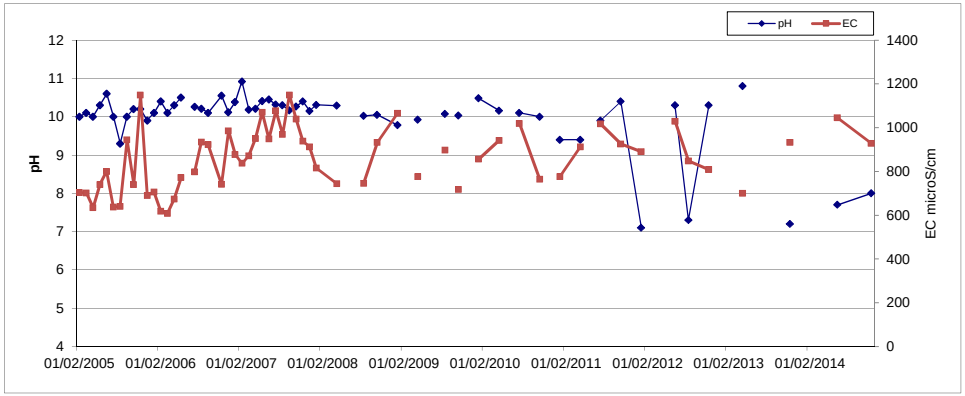

Alkalinity mg/l CaCO3
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

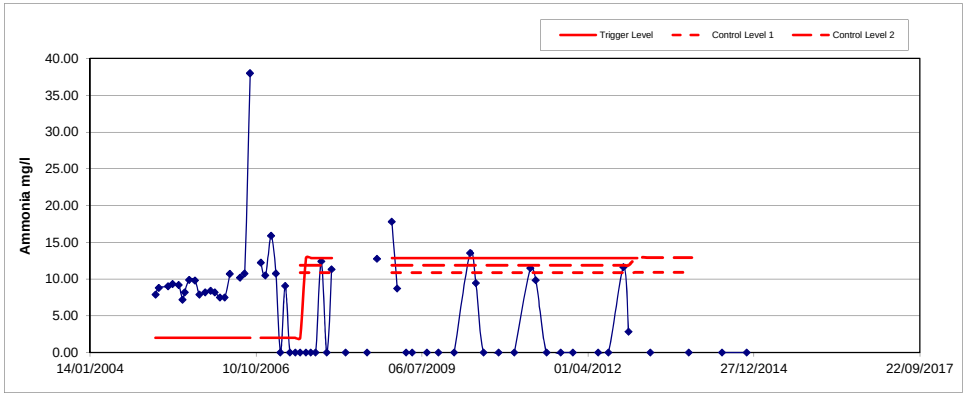

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

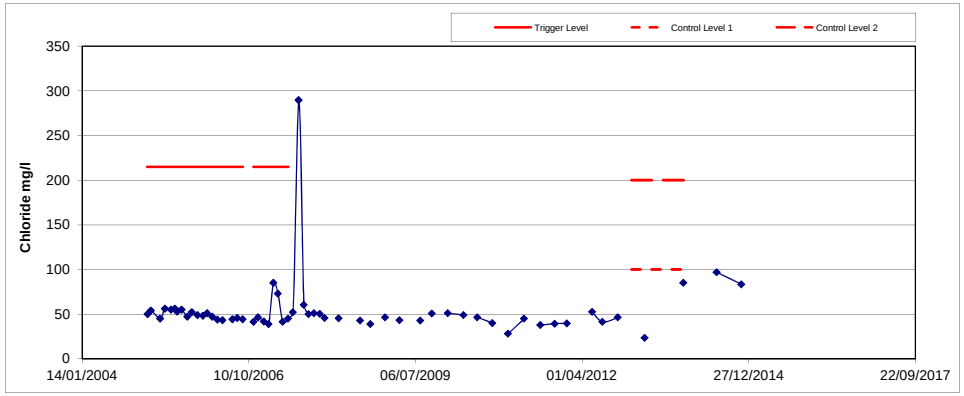

Sodium
Potassium
Magnesium
Sulphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

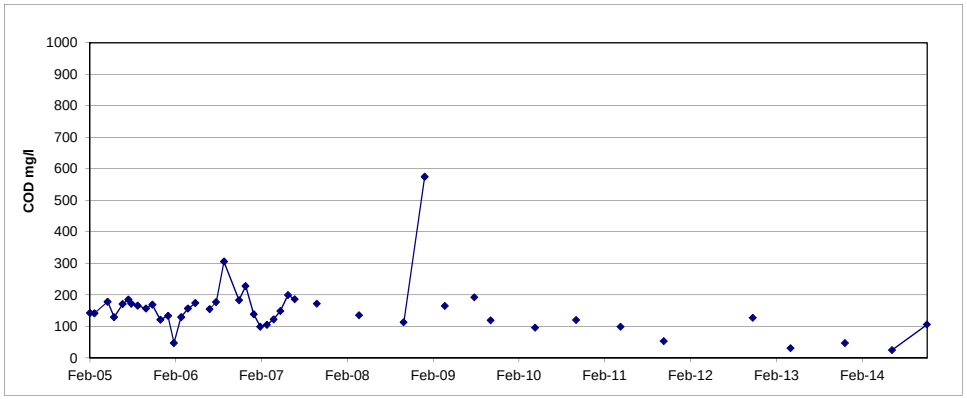

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

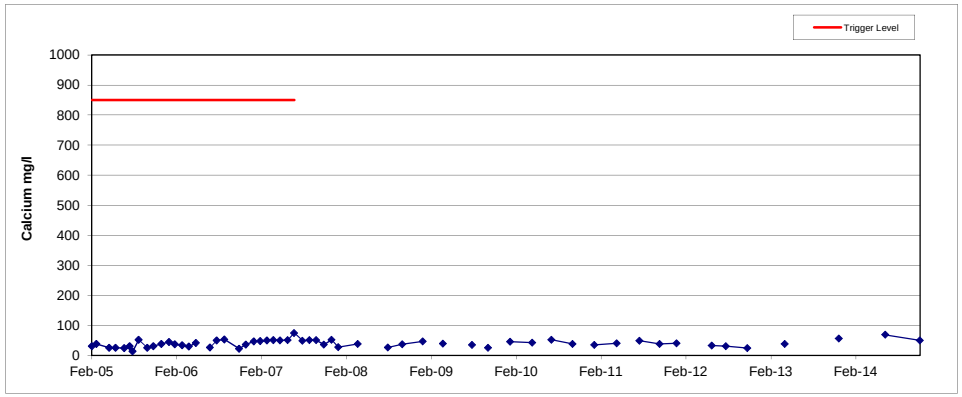

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

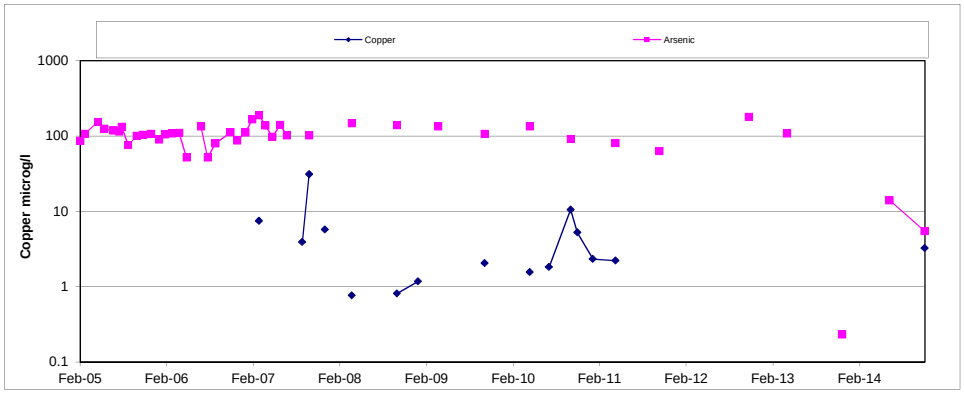

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
0
200
400
600
800
1000
1200
1400
01/02/2005
01/02/2006
01/02/2007
01/02/2008
01/02/2009
01/02/2010
01/02/2011
01/02/2012
01/02/2013
01/02/2014

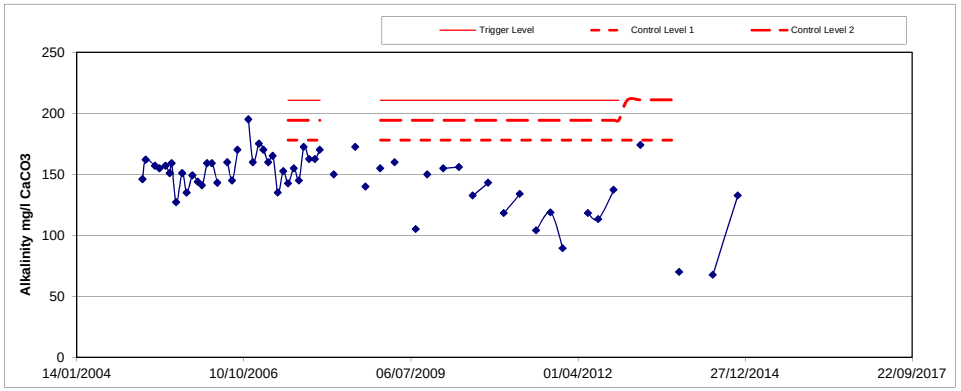

Trigger Level
Control Level 1
Control Level 2
Ammonia mg/l
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

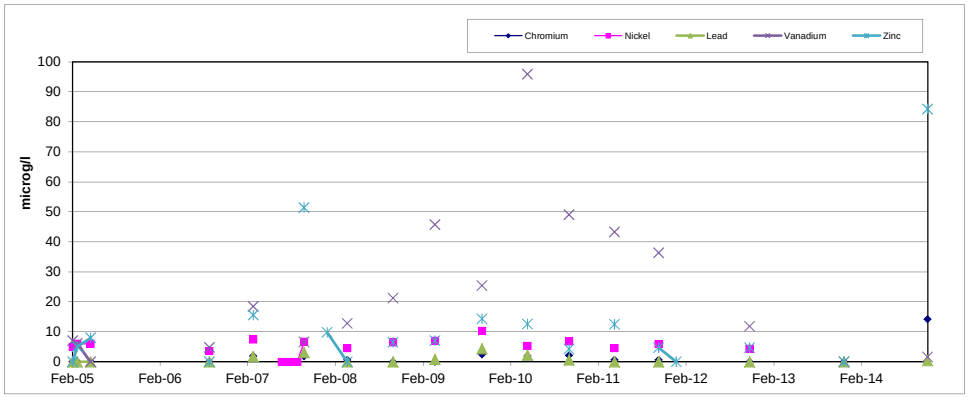

Trigger Level
Control Level 1
Control Level 2
Chloride mg/l
0
50
100
150
200
250
300
350
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

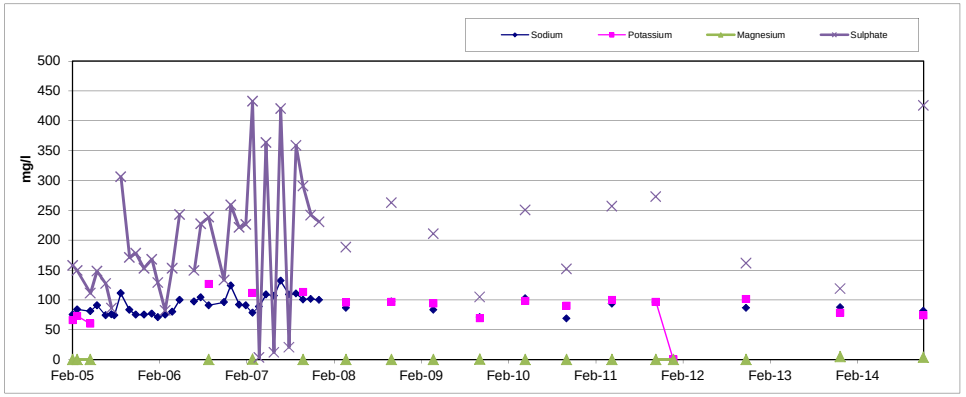

COD mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

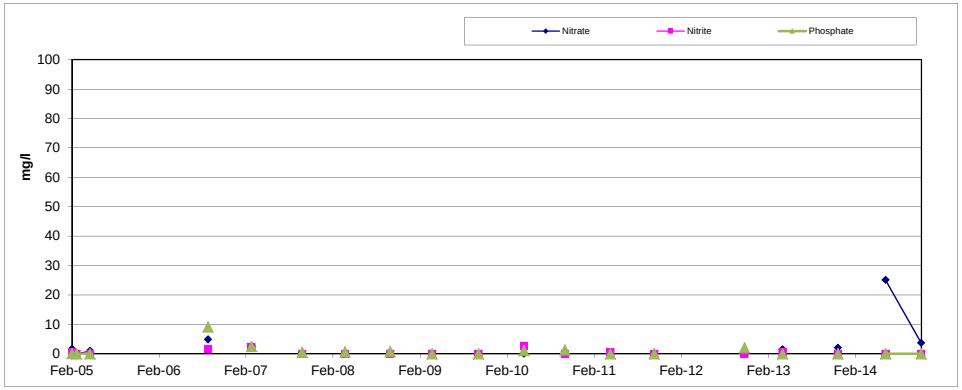

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

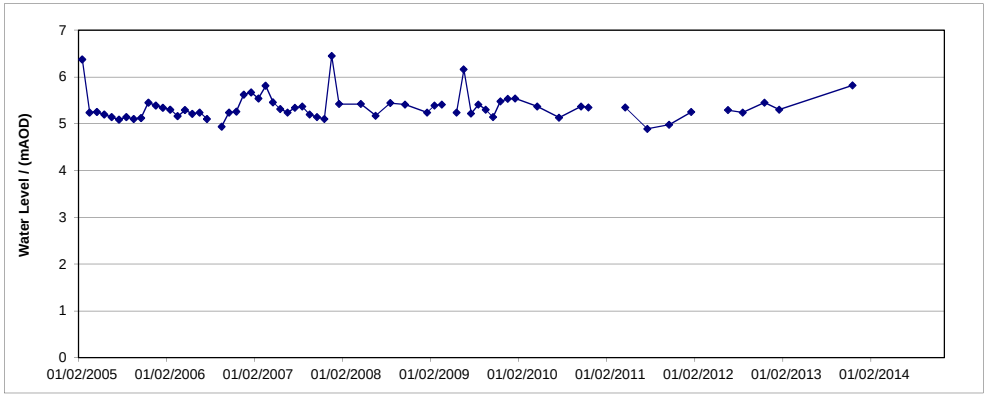

Copper
Arsenic
Copper microg/l
1000
100
10
1
0.1
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

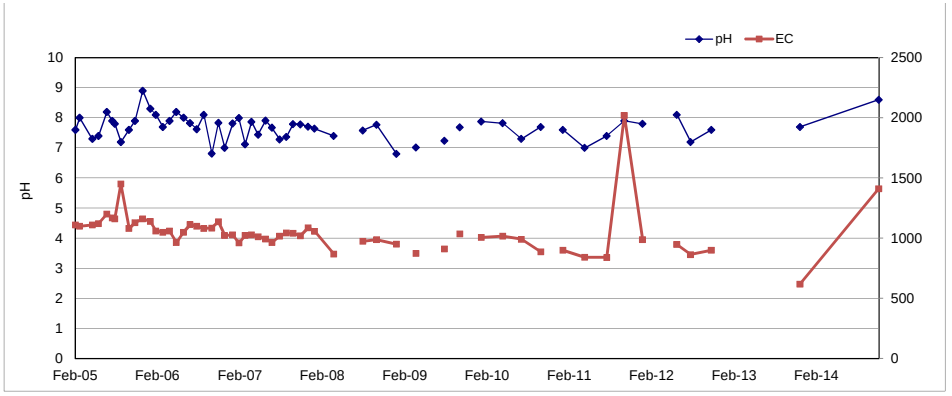

Trigger Level
Control Level 1
Control Level 2
Alkalinity mg/l CaCO3
250
200
150
100
50
0
14/01/2004
10/10/2006
06/07/2009
01/04/2012
27/12/2014
22/09/2017

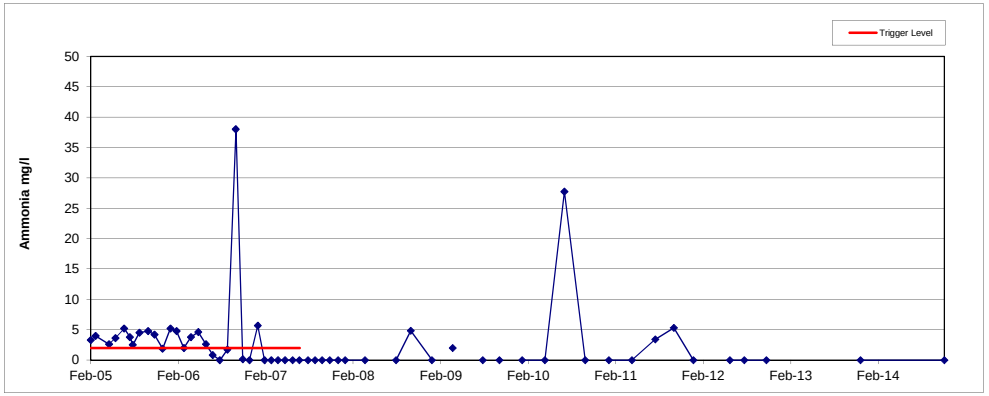

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

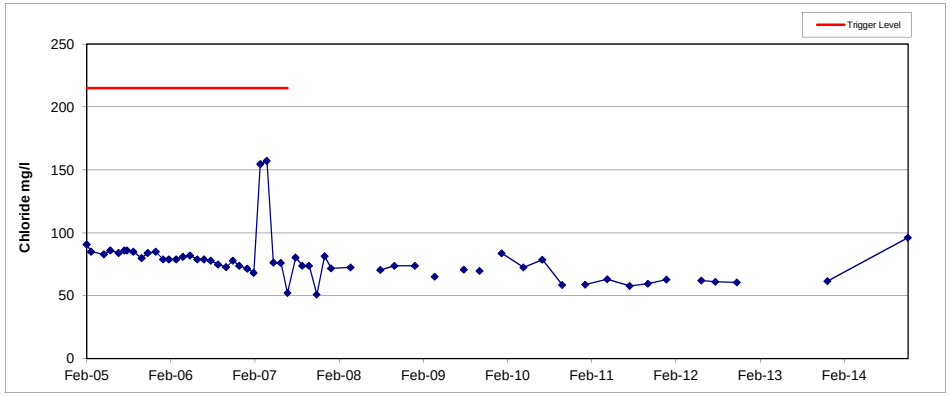

Sodium
Potassium
Magnesium
Sulphate
mg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

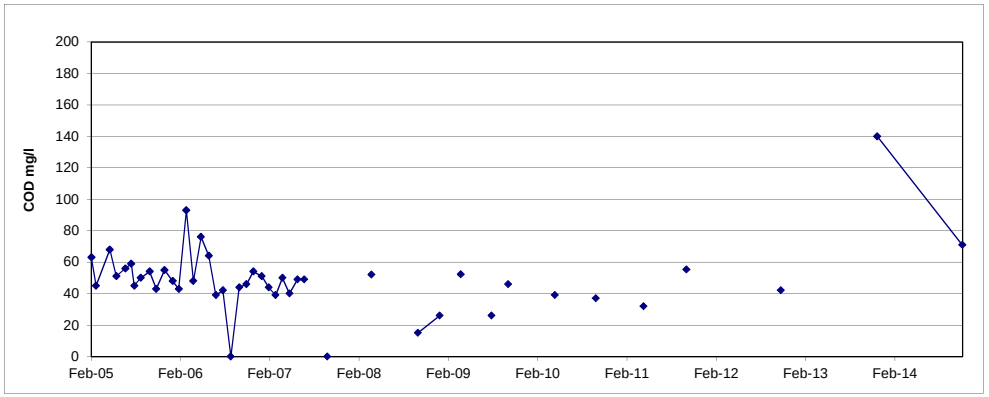

Nitrate
Nitrite
Phosphate
mg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

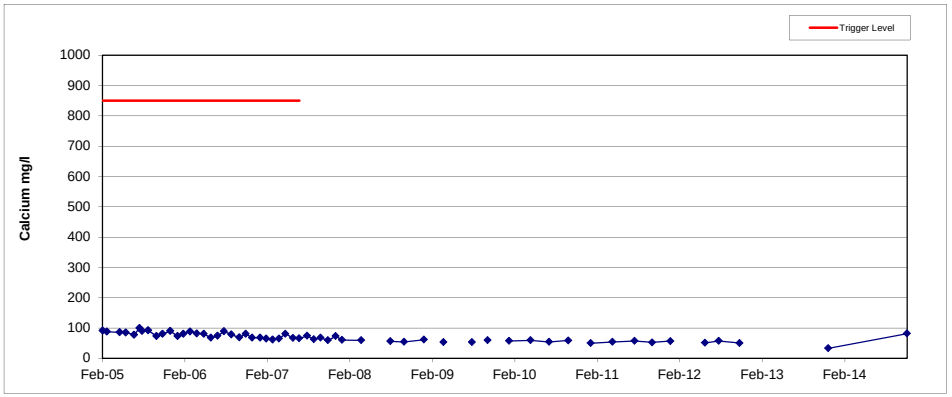

Water Level / (mAOD)
0
1
2
3
4
5
6
7
01/02/2005
01/02/2006
01/02/2007
01/02/2008
01/02/2009
01/02/2010
01/02/2011
01/02/2012
01/02/2013
01/02/2014

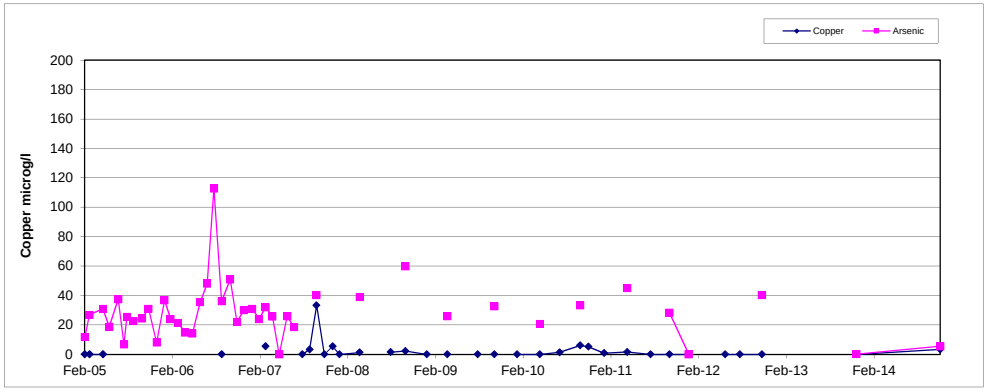

pH
EC
pH
0
1
2
3
4
5
6
7
8
9
10
0
500
1000
1500
2000
2500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

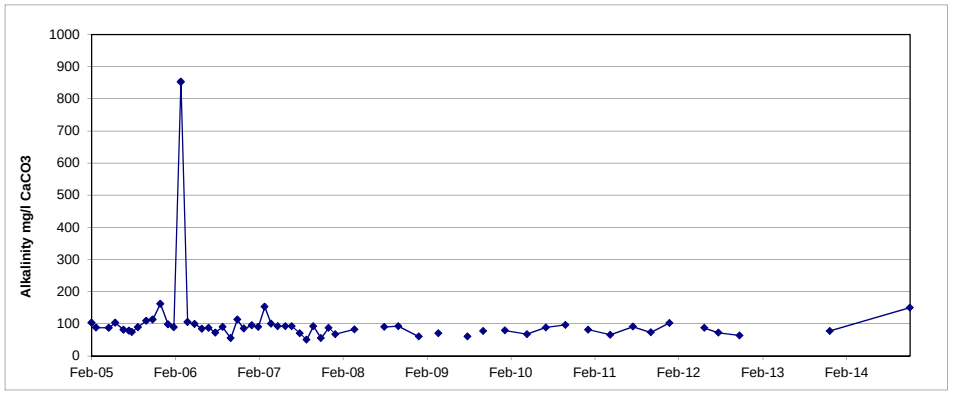

Trigger Level
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

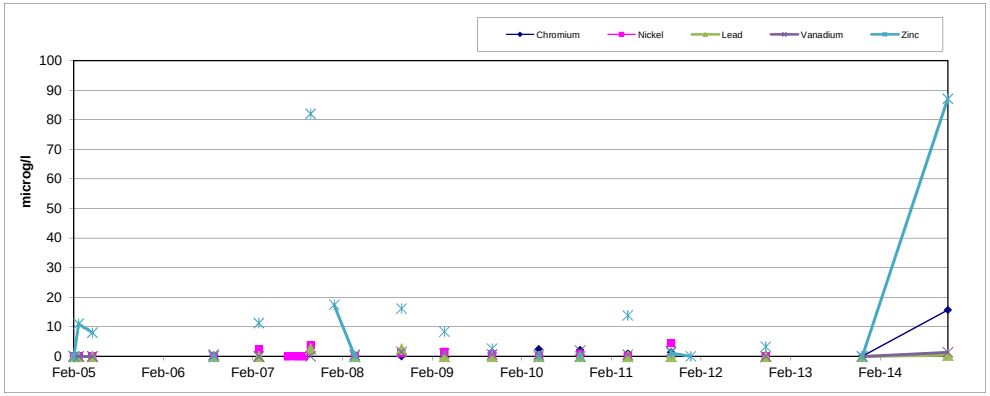

Trigger Level
Chloride mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

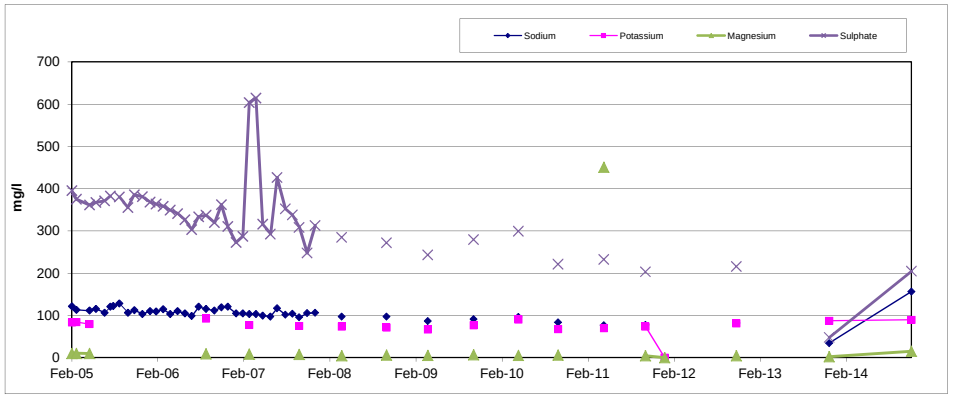

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

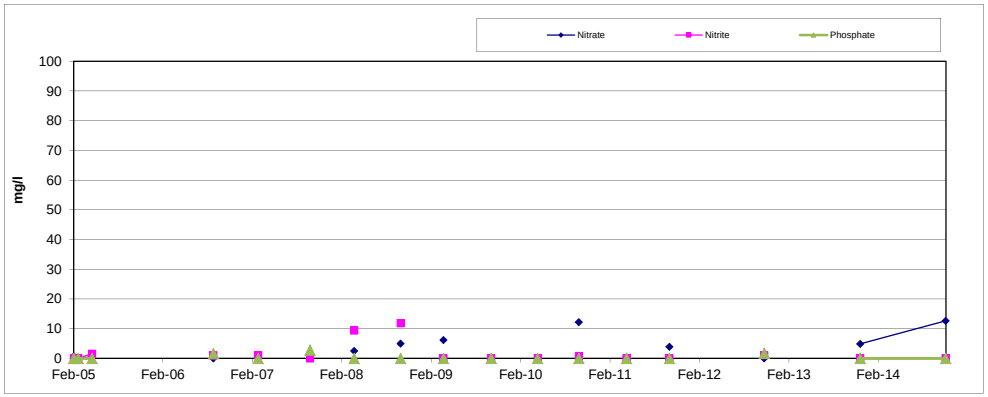

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

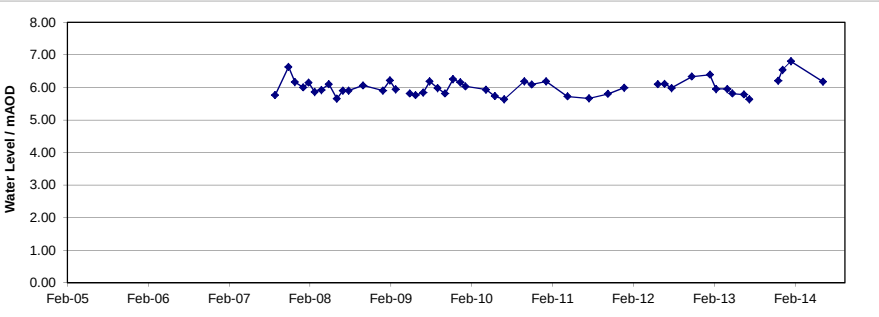

Copper
Arsenic
Copper microg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

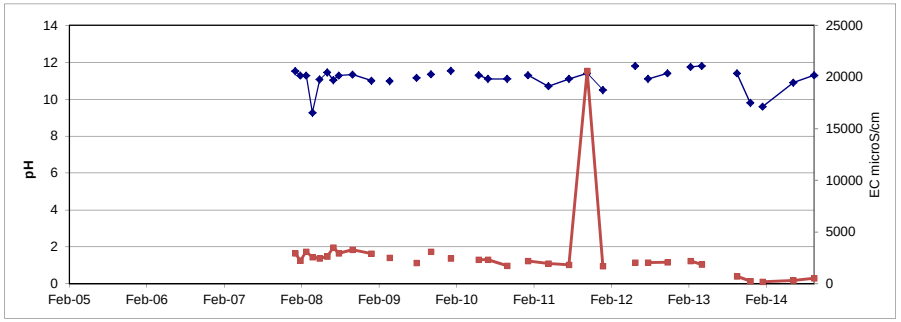

Alkalinity mg/l CaCO3
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

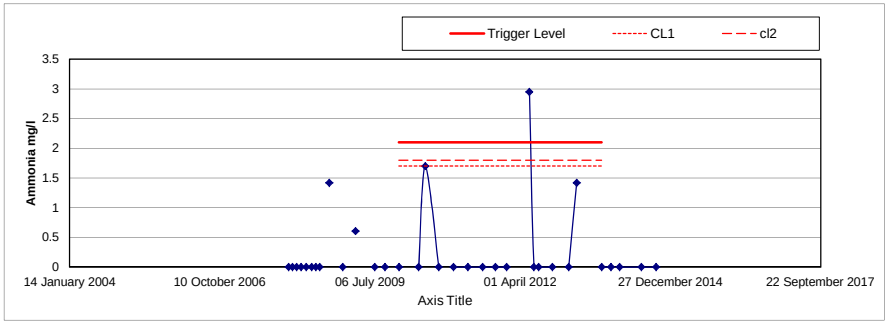

Chromium
Nickel
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
100
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

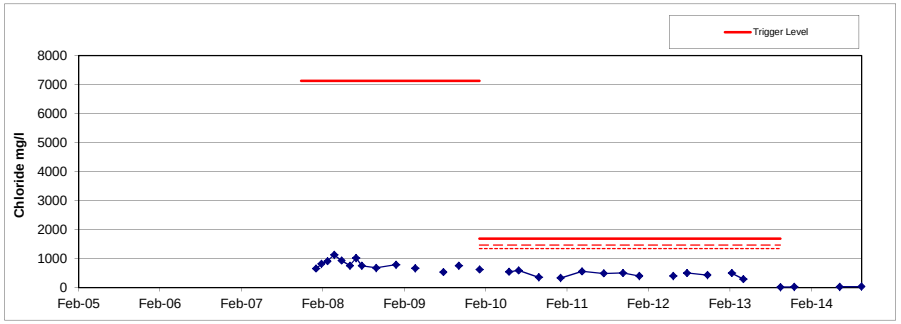

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
100
200
300
400
500
600
700
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

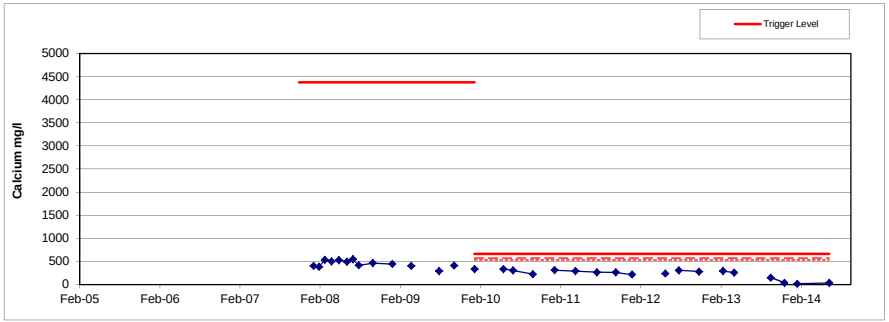

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
80
90
100
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

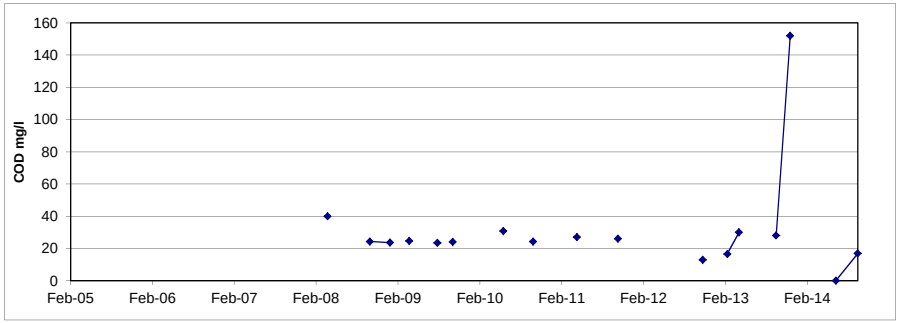

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

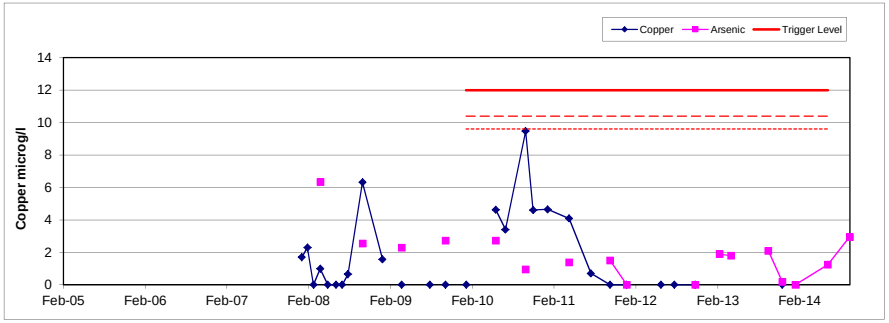

pH
EC microS/cm
14
12
10
8
6
4
2
0
25000
20000
15000
10000
5000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

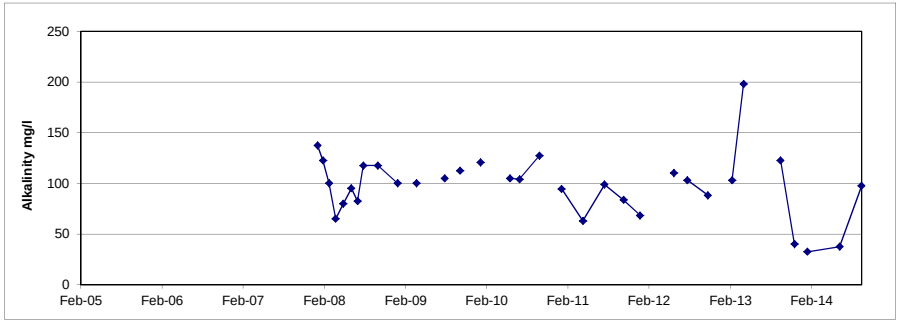

Trigger Level
CL1
cl2
Ammonia mg/l
3.5
3
2.5
2
1.5
1
0.5
0
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017
Axis Title

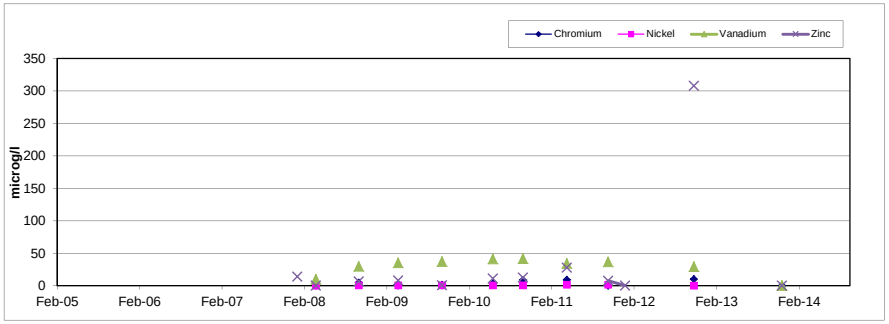

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

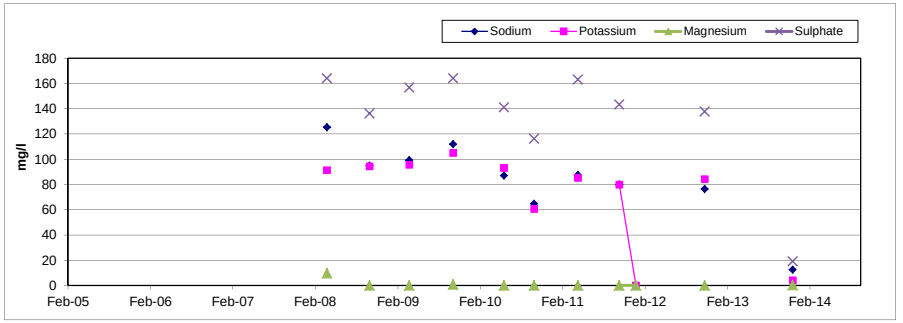

Trigger Level
Calcium mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

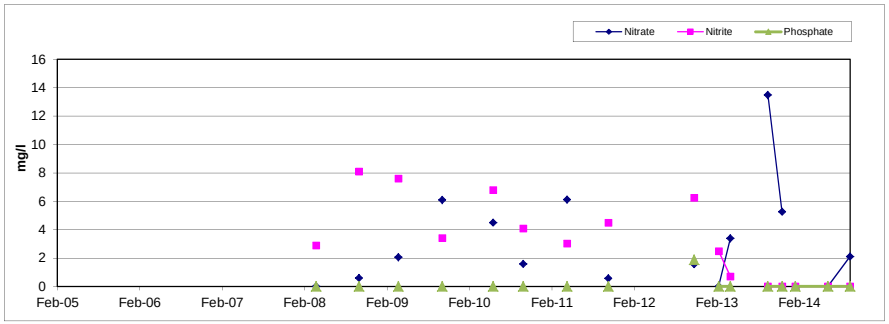

COD mg/l
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

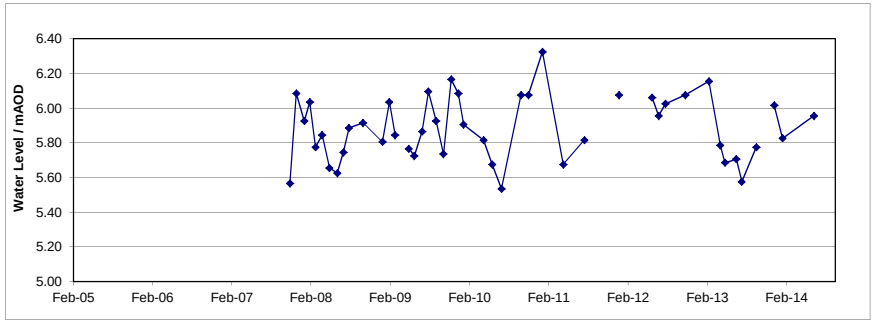

Copper
Arsenic
Trigger Level
Copper microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

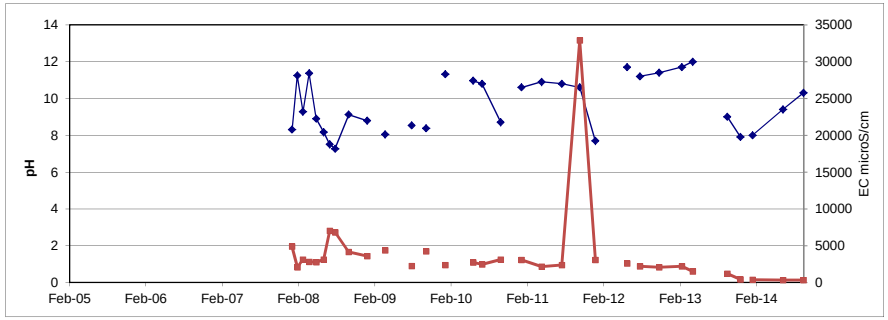

Alkalinity mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

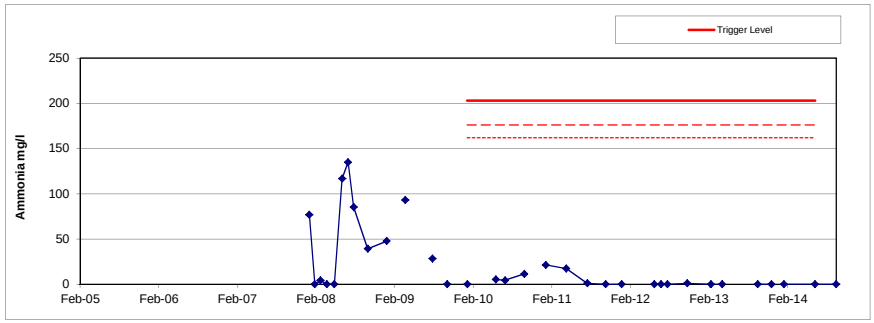

Chromium
Nickel
Vanadium
Zinc
microg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

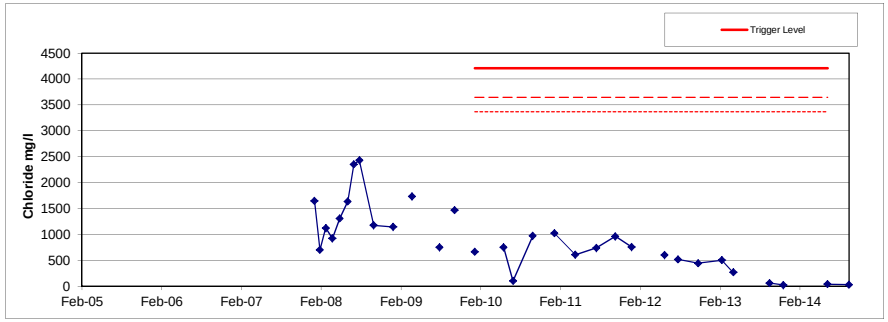

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
20
40
60
80
100
120
140
160
180
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

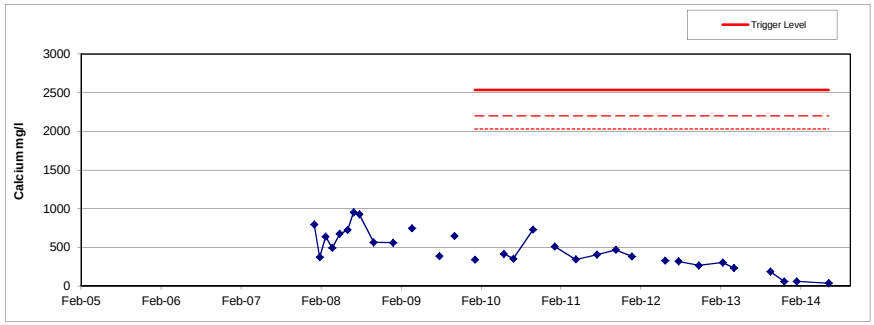

Nitrate
Nitrite
Phosphate
mg/l
0
2
4
6
8
10
12
14
16
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

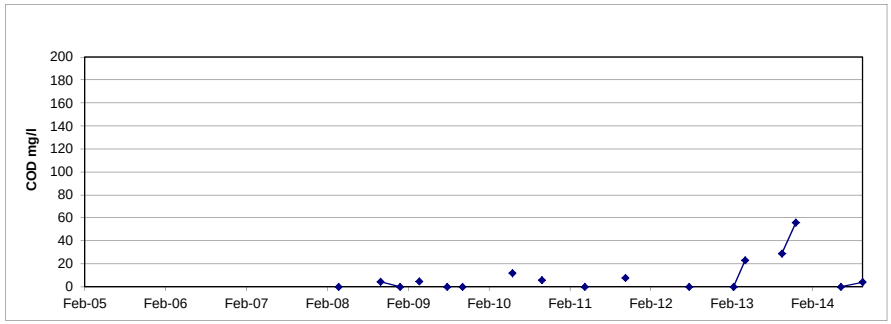

Water Level / mAOD
6.40
6.20
6.00
5.80
5.60
5.40
5.20
5.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

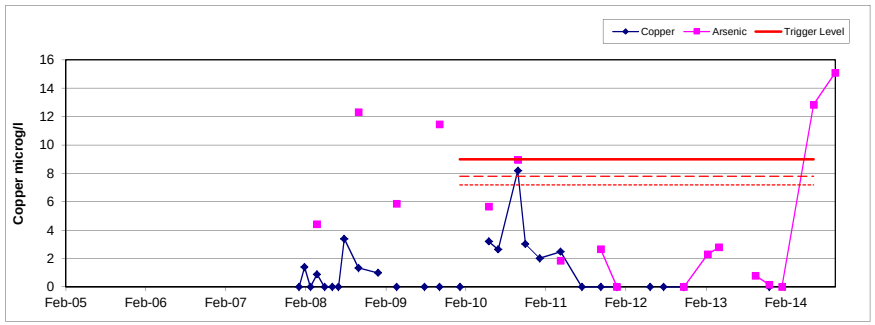

pH
EC microS/cm
14
12
10
8
6
4
2
0
35000
30000
25000
20000
15000
10000
5000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

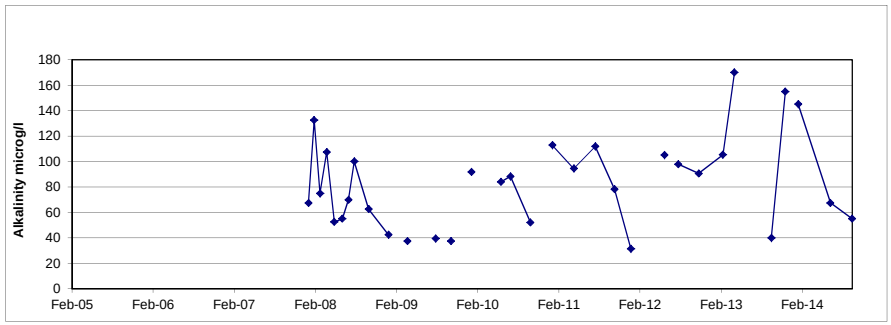

Trigger Level
Ammonia mg/l
250
200
150
100
50
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

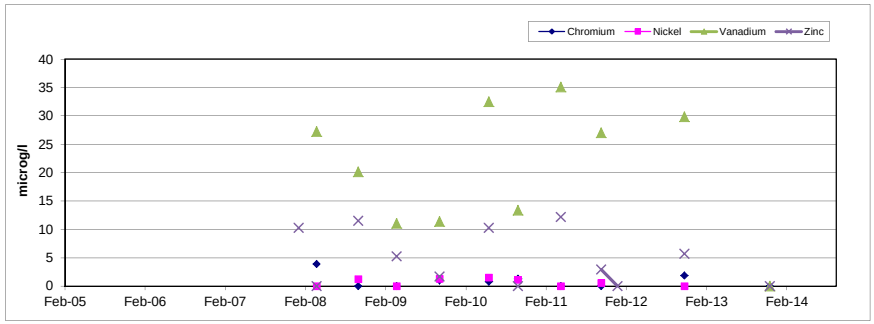

Trigger Level
Chloride mg/l
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

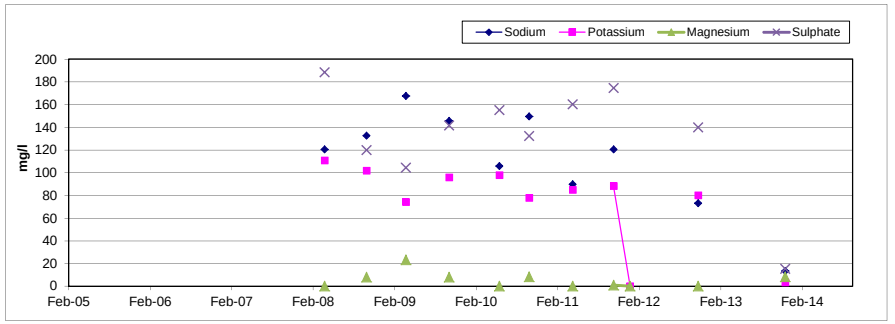

Trigger Level
Calcium mg/l
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

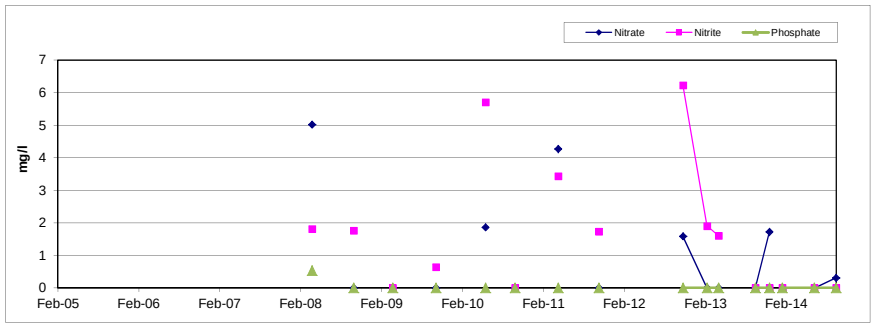

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

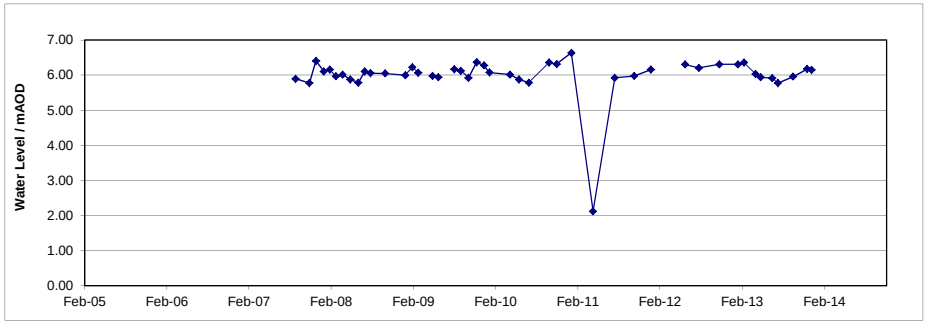

Copper
Arsenic
Trigger Level
Copper microg/l
16
14
12
10
8
6
4
2
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

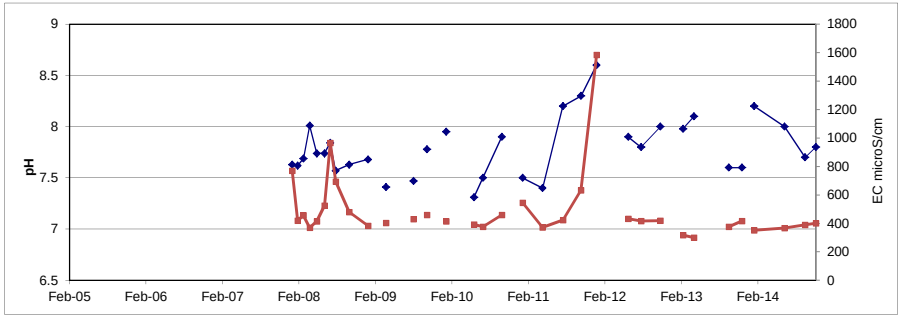

Alkalinity microg/l
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

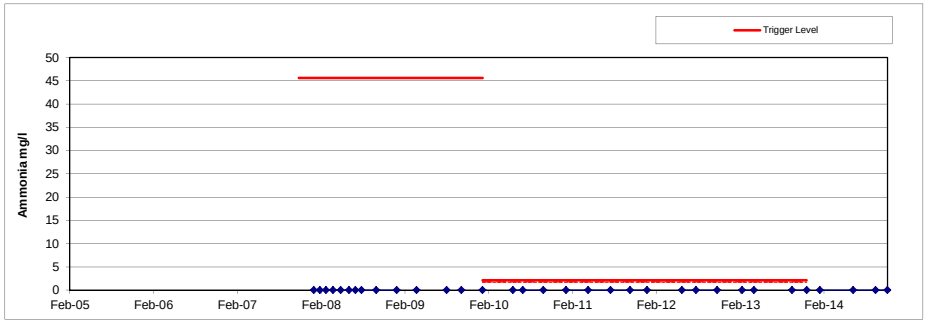

Chromium
Nickel
Vanadium
Zinc
microg/l
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

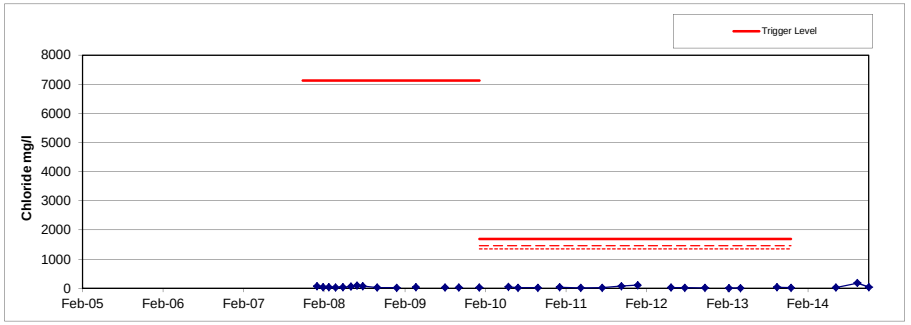

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

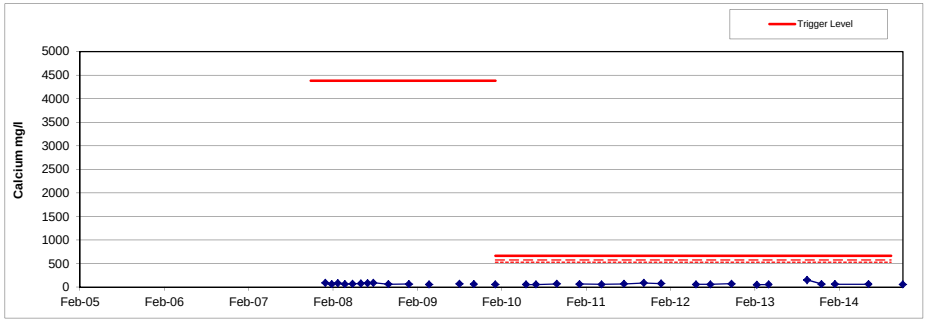

Nitrate
Nitrite
Phosphate
mg/l
7
6
5
4
3
2
1
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

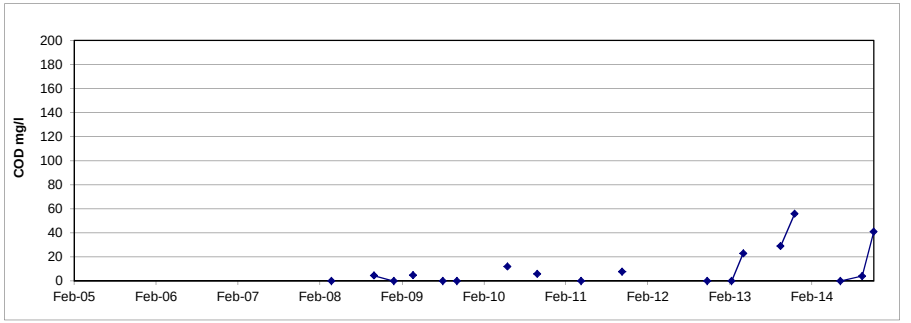

Water Level / mAOD
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

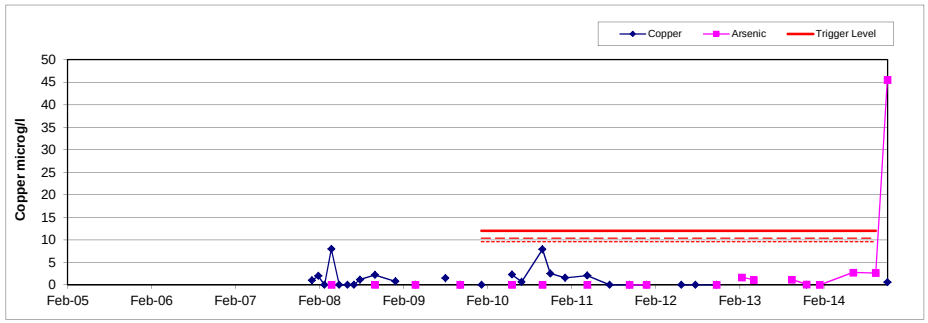

pH
EC microS/cm
9
8.5
8
7.5
7
6.5
1800
1600
1400
1200
1000
800
600
400
200
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

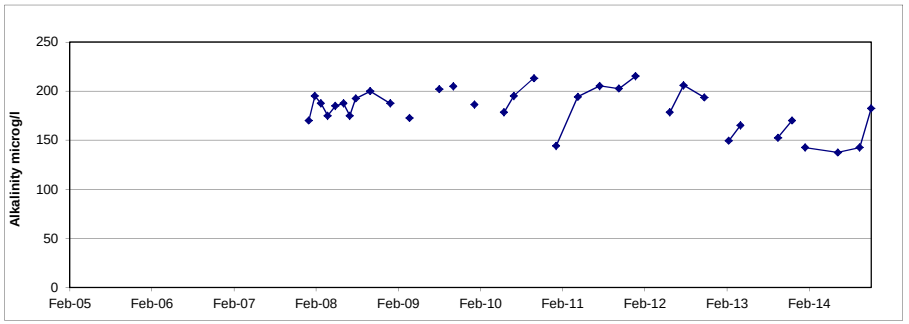

Trigger Level
Ammonia mg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

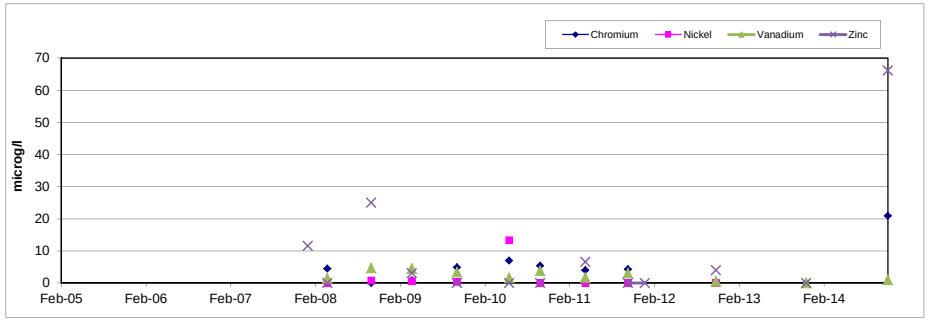

Trigger Level
Chloride mg/l
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

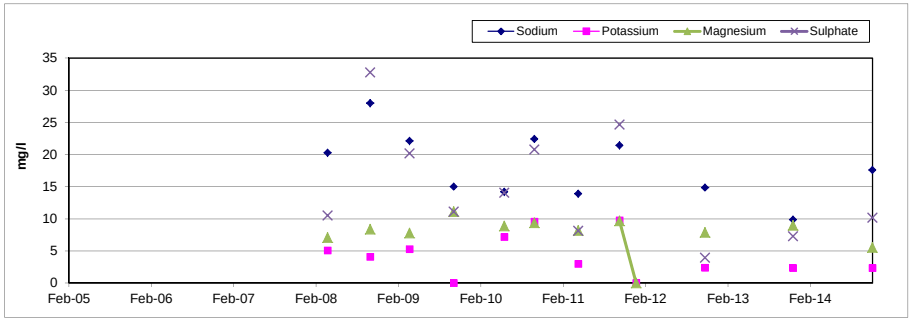

Trigger Level
Calcium mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

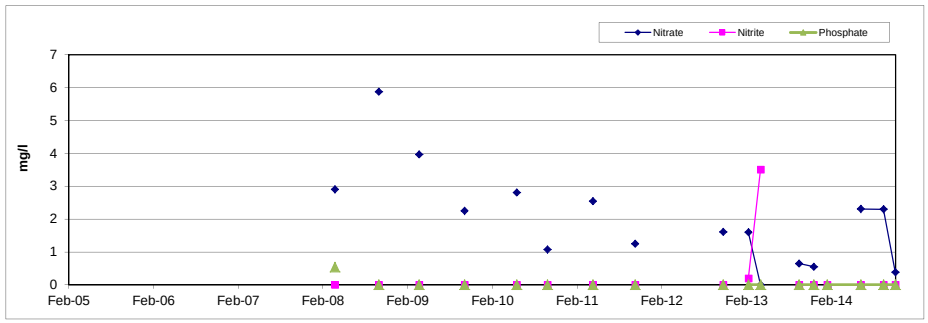

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

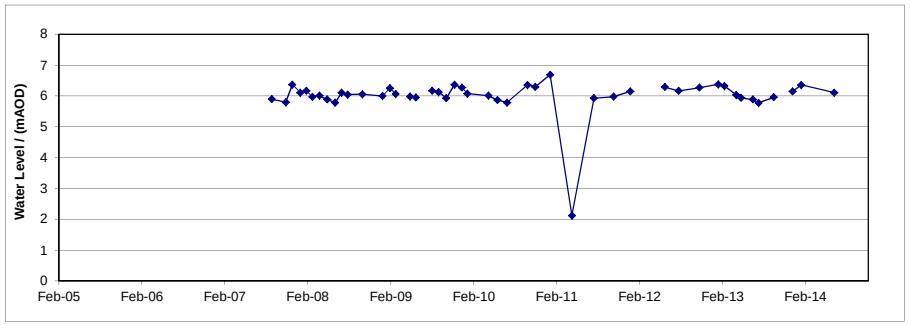

Copper
Arsenic
Trigger Level
Copper microg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

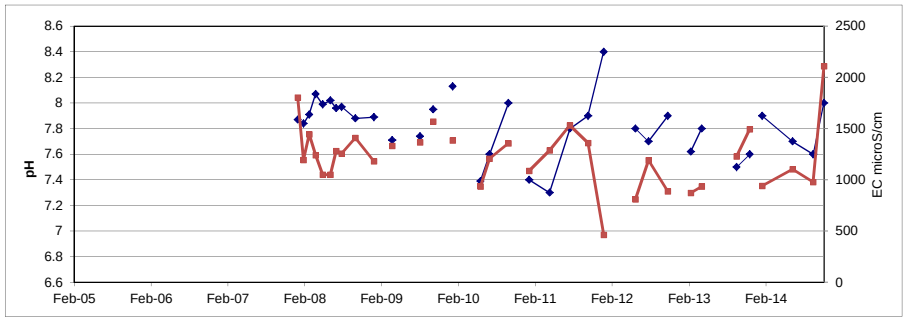

Alkalinity microg/l
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

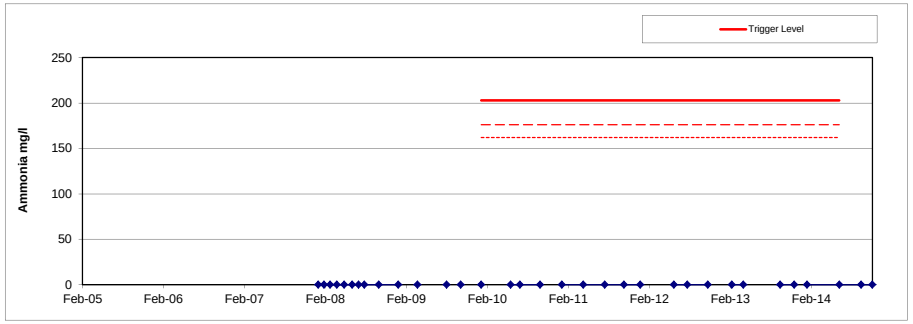

Chromium
Nickel
Vanadium
Zinc
microg/l
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

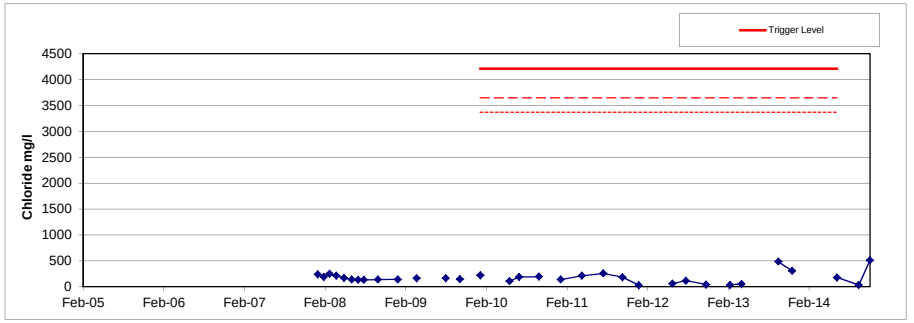

Sodium
Potassium
Magnesium
Sulphate
mg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

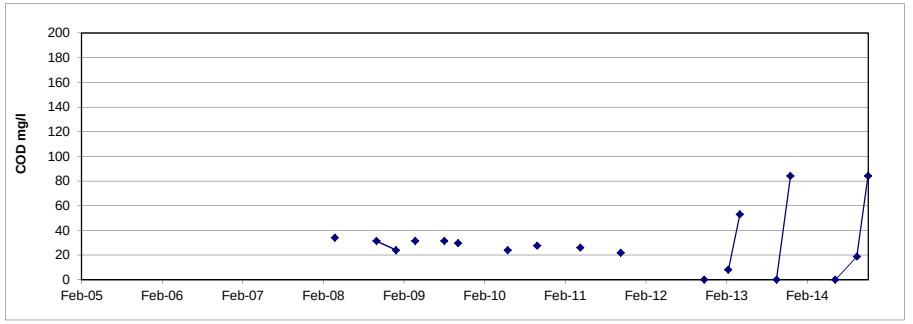

Nitrate
Nitrite
Phosphate
mg/l
7
6
5
4
3
2
1
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

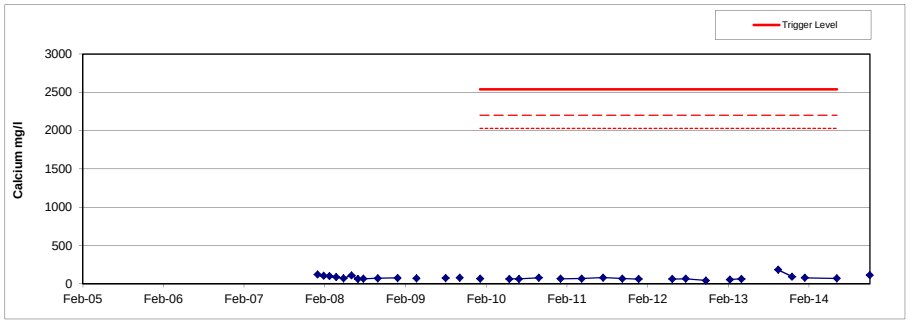

Water Level / (mAOD)
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

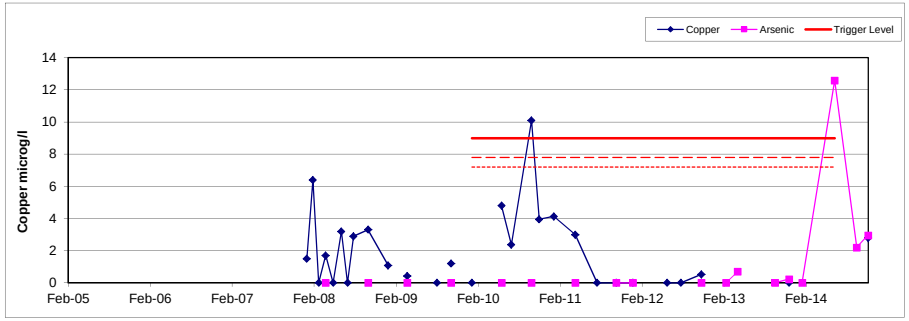

pH
6.6
6.8
7
7.2
7.4
7.6
7.8
8
8.2
8.4
8.6
EC microS/cm
0
500
1000
1500
2000
2500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

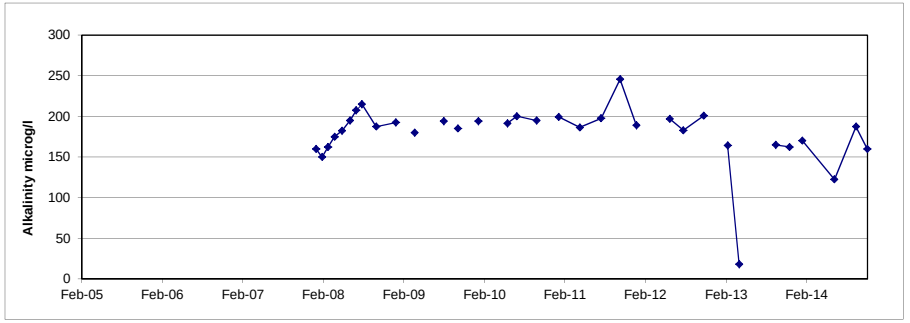

Trigger Level
Ammonia mg/l
0
50
100
150
200
250
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

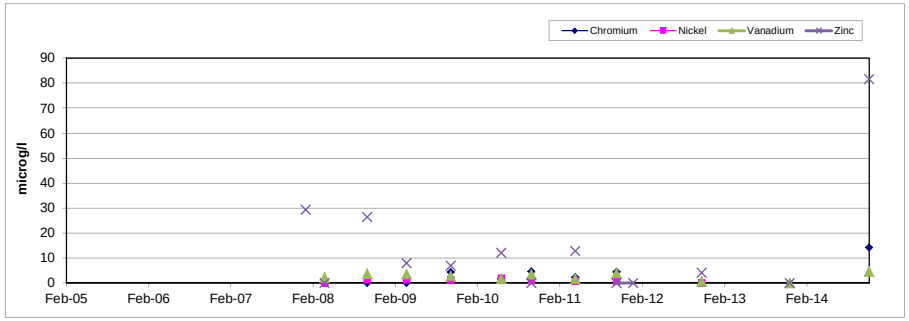

Trigger Level
Chloride mg/l
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

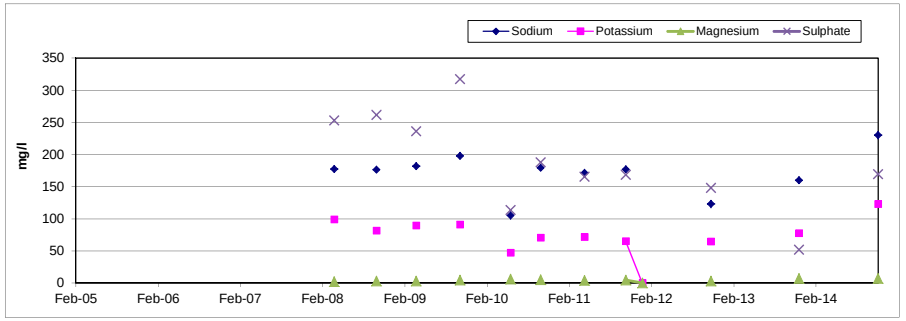

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

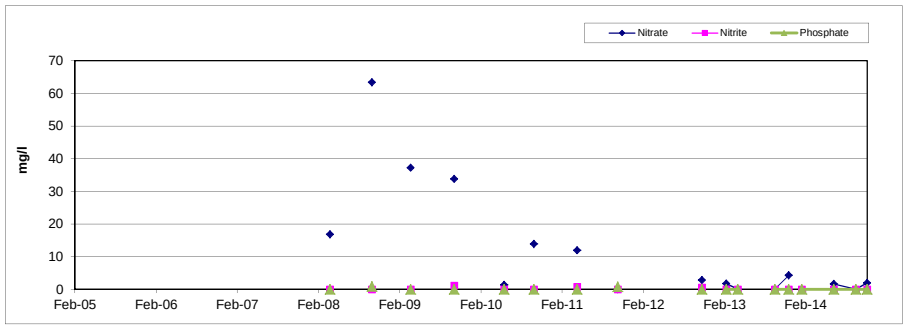

Trigger Level
Calcium mg/l
0
500
1000
1500
2000
2500
3000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

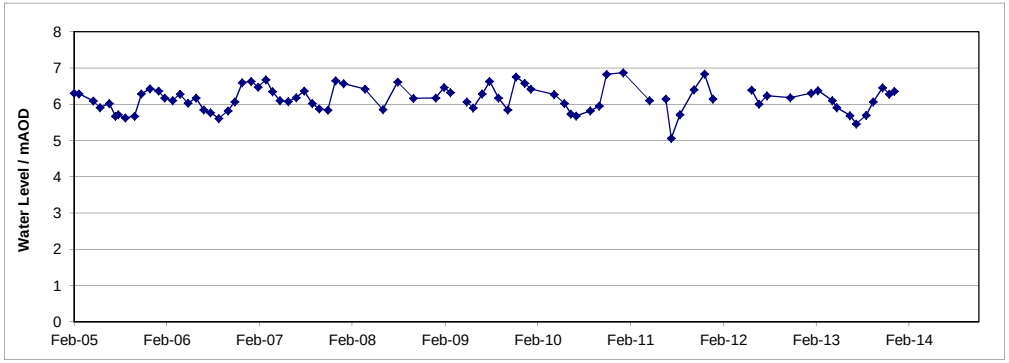

Copper
Arsenic
Trigger Level
Copper microg/l
0
2
4
6
8
10
12
14
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

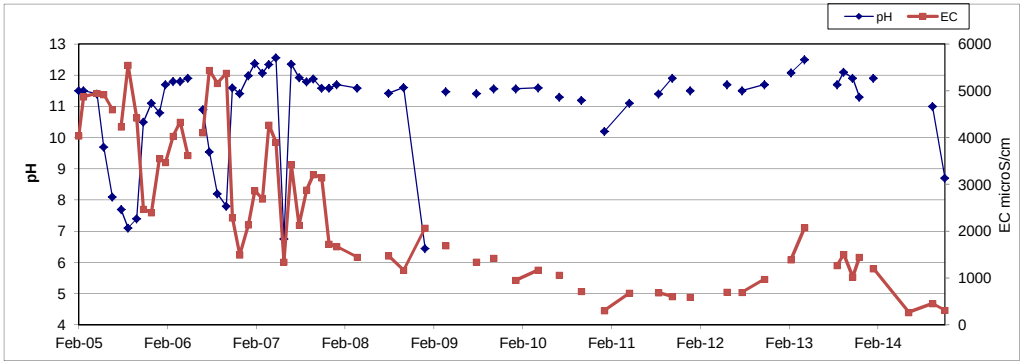

Alkalinity microg/l
0
50
100
150
200
250
300
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

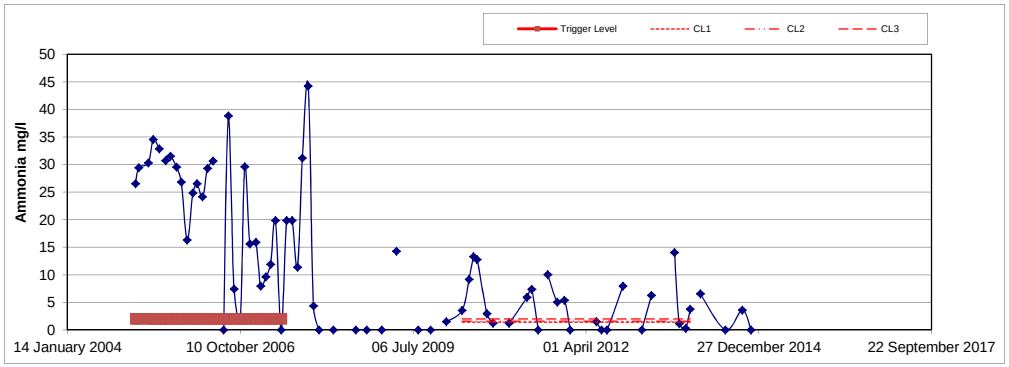

Chromium
Nickel
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
80
90
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

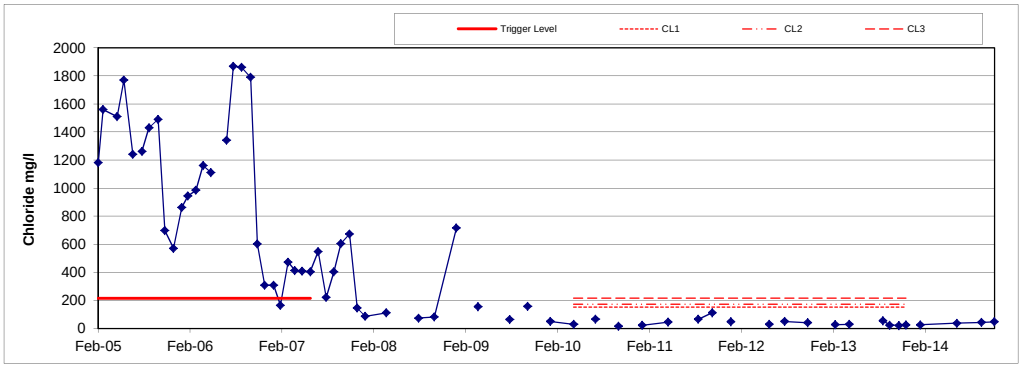

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

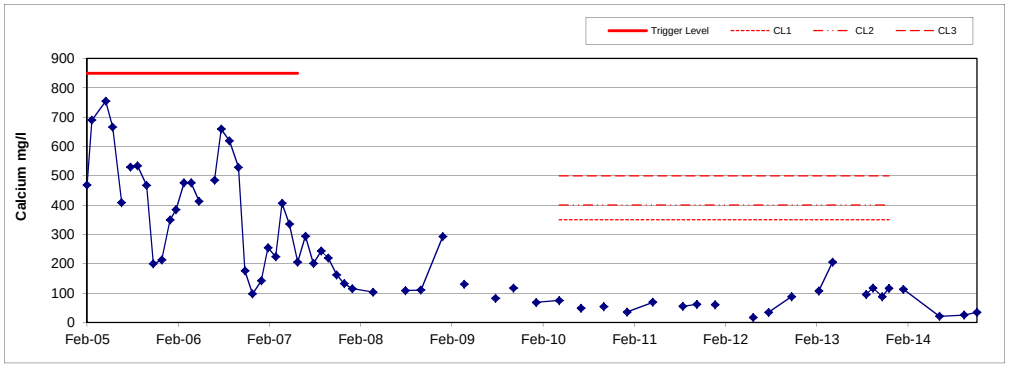

Nitrate
Nitrite
Phosphate
mg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

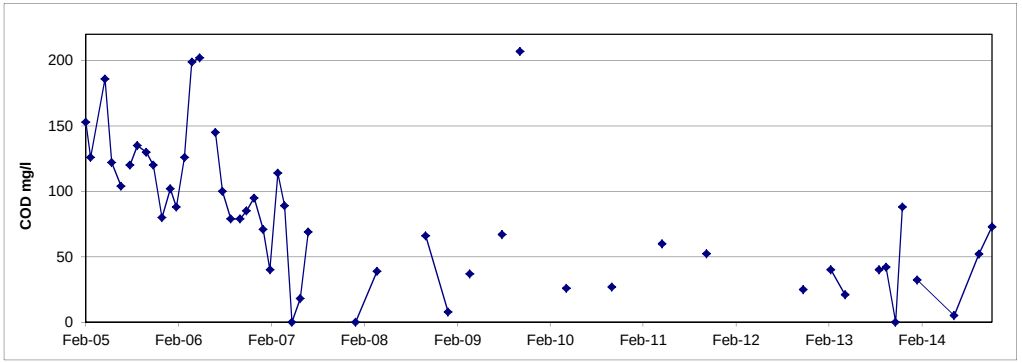

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

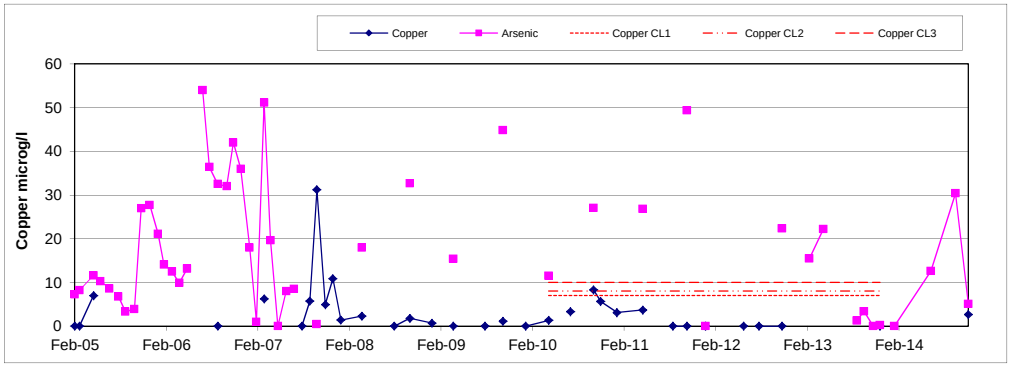

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
1000
2000
3000
4000
5000
6000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

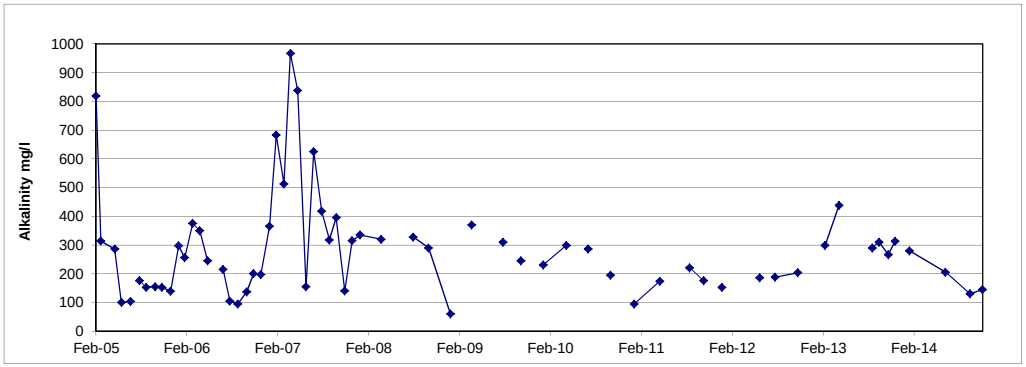

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

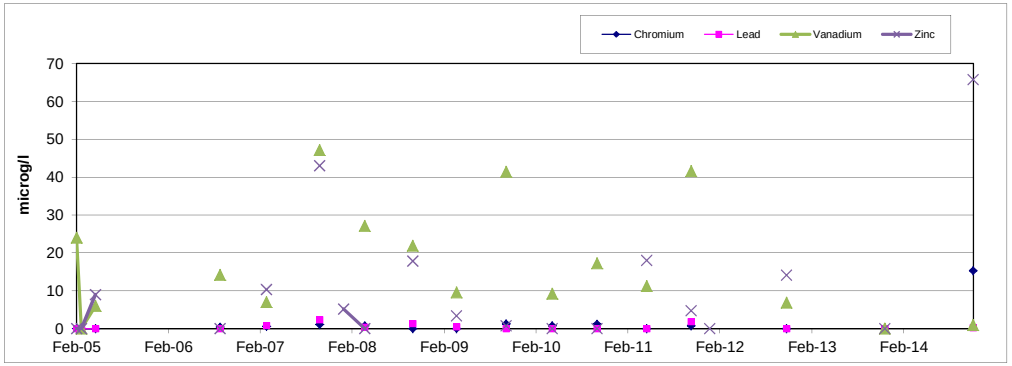

Trigger Level
CL1
CL2
CL3
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

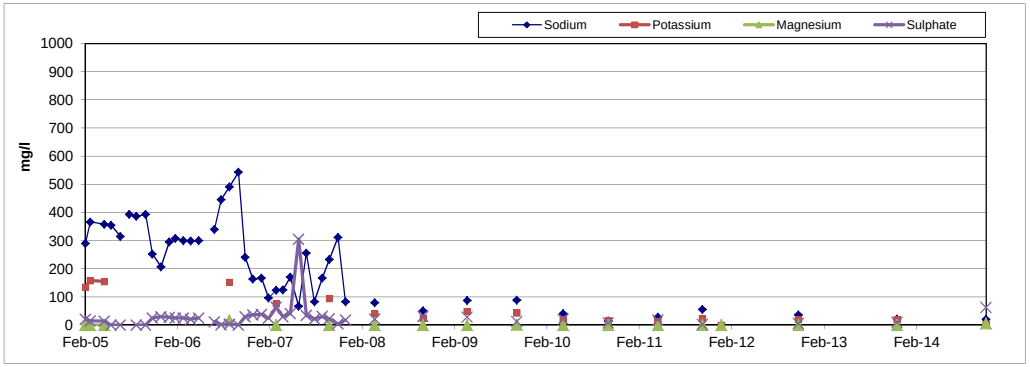

Trigger Level
CL1
CL2
CL3
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

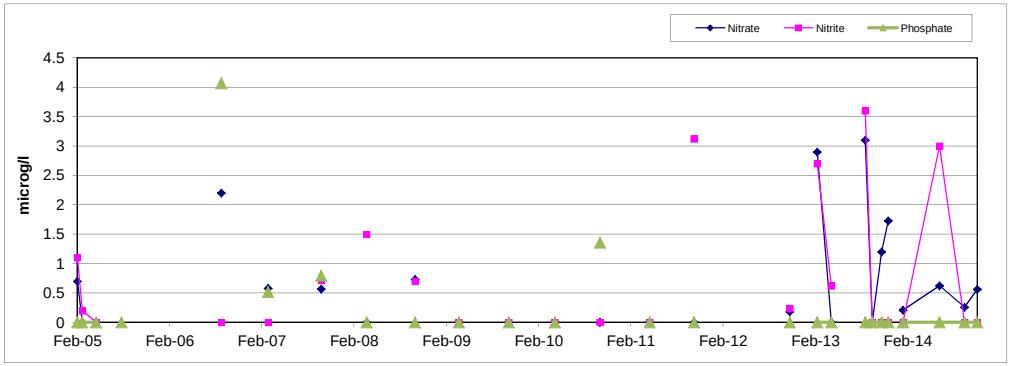

COD mg/l
0
50
100
150
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

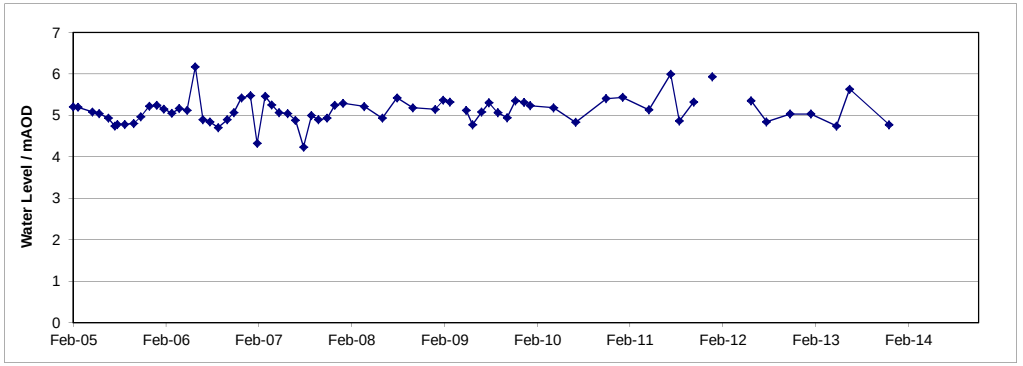

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
Copper microg/l
0
10
20
30
40
50
60
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

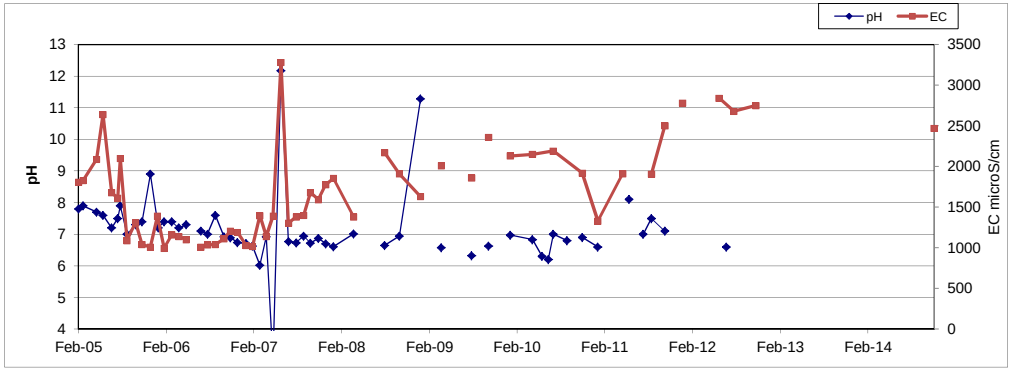

Alkalinity mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

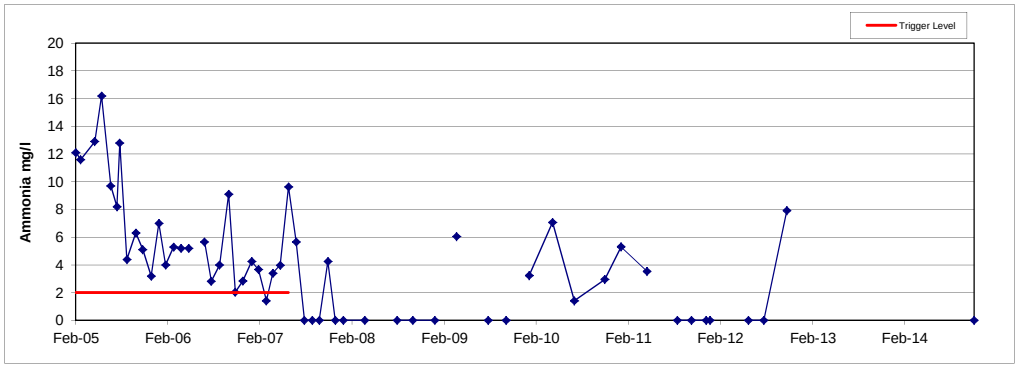

Chromium
Lead
Vanadium
Zinc
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

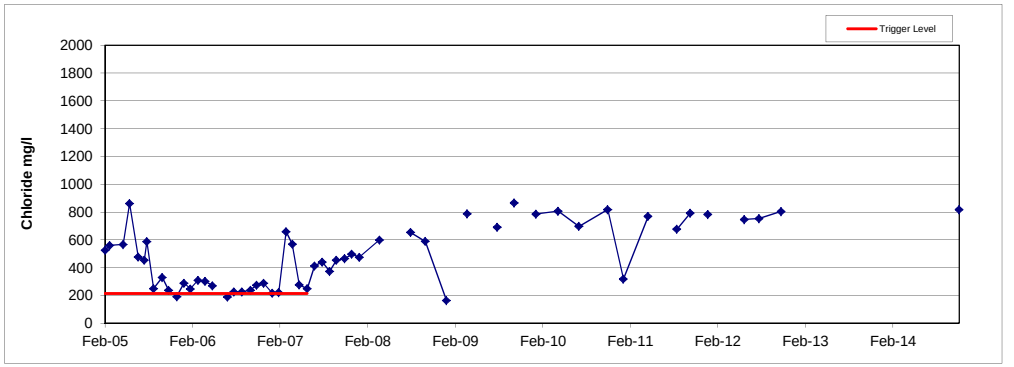

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

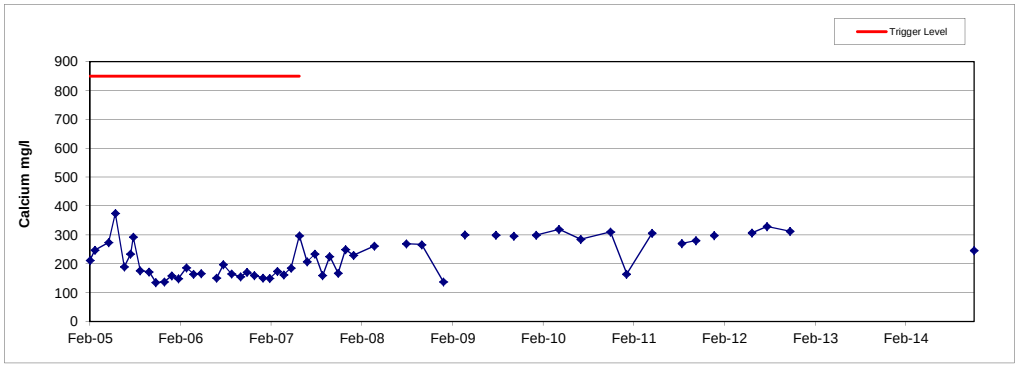

Nitrate
Nitrite
Phosphate
microg/l
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

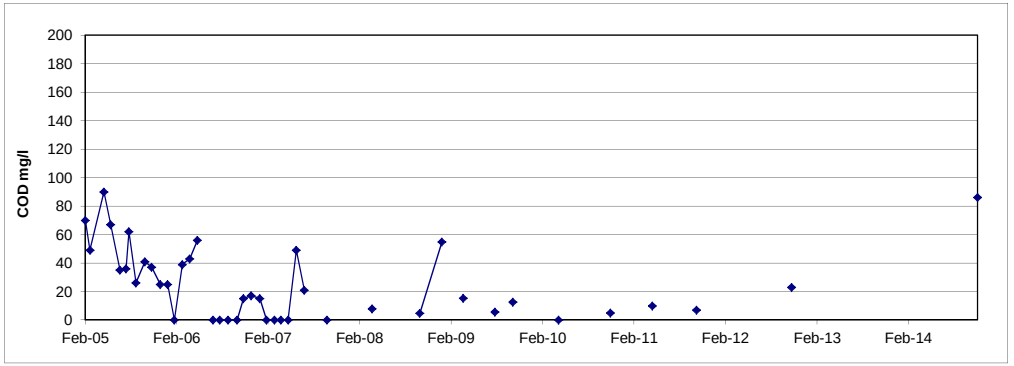

Water Level / mAOD
0
1
2
3
4
5
6
7
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

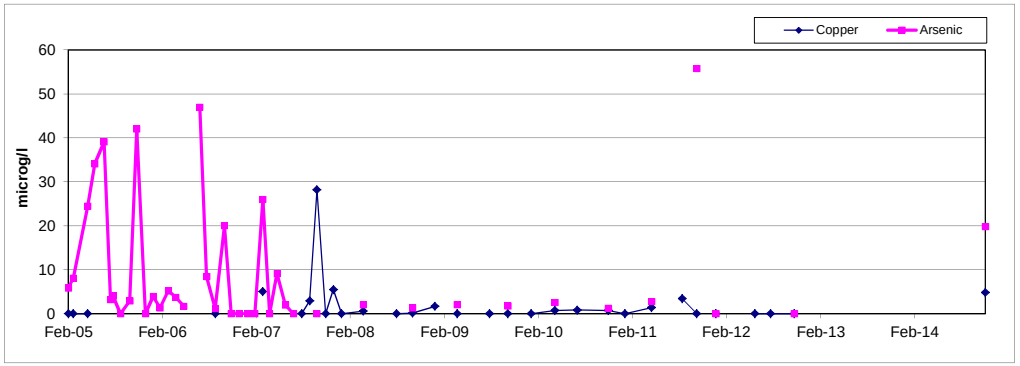

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
500
1000
1500
2000
2500
3000
3500
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

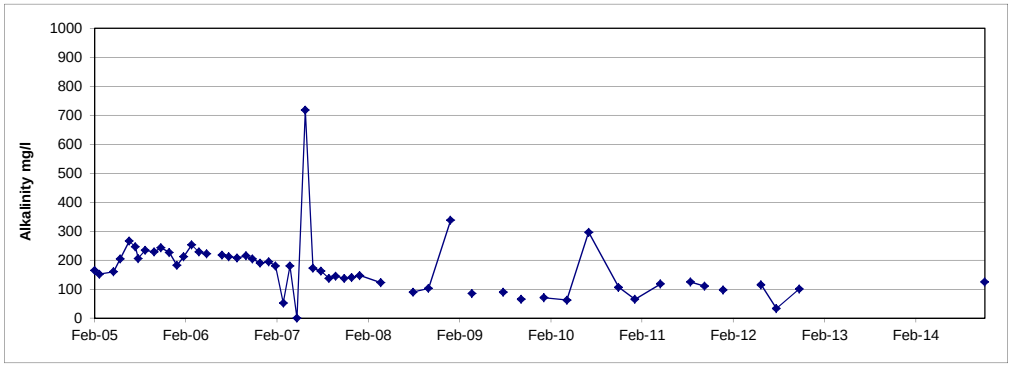

Trigger Level
Ammonia mg/l
0
2
4
6
8
10
12
14
16
18
20
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

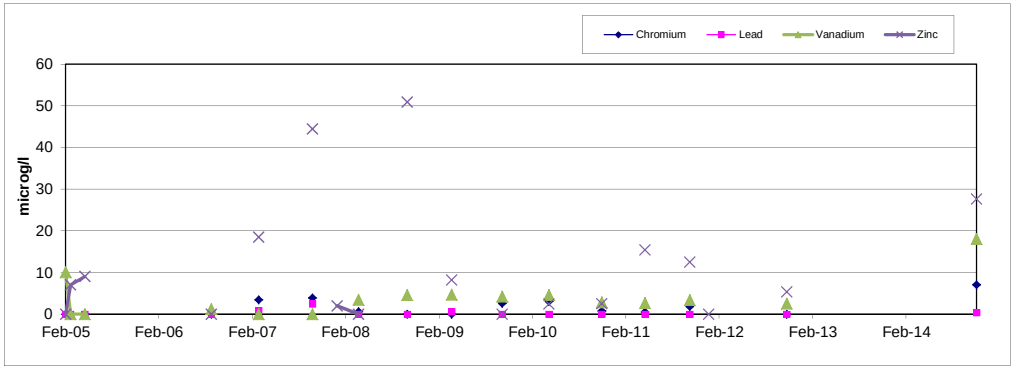

Trigger Level
Chloride mg/l
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

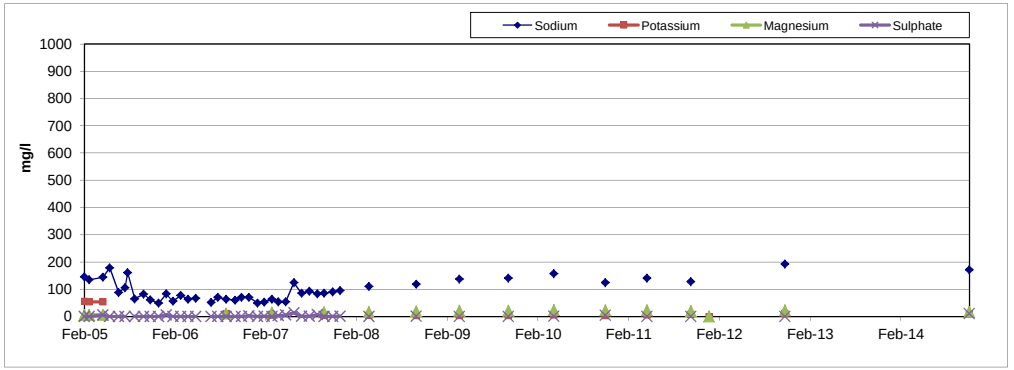

Trigger Level
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

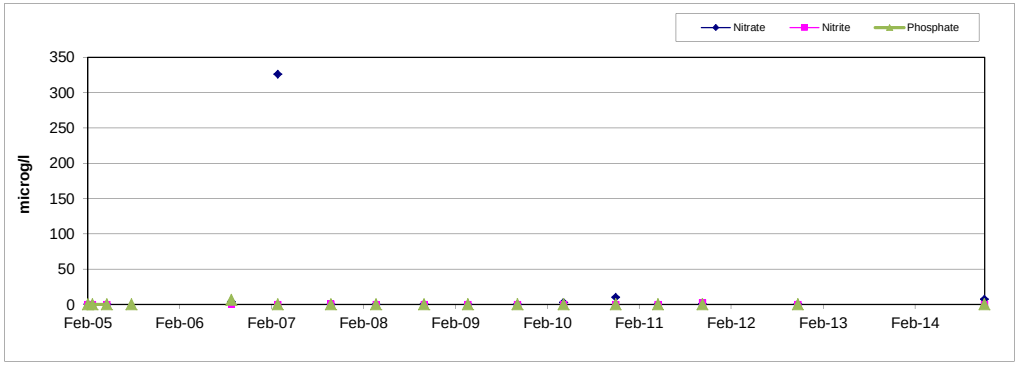

COD mg/l
0
20
40
60
80
100
120
140
160
180
200
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

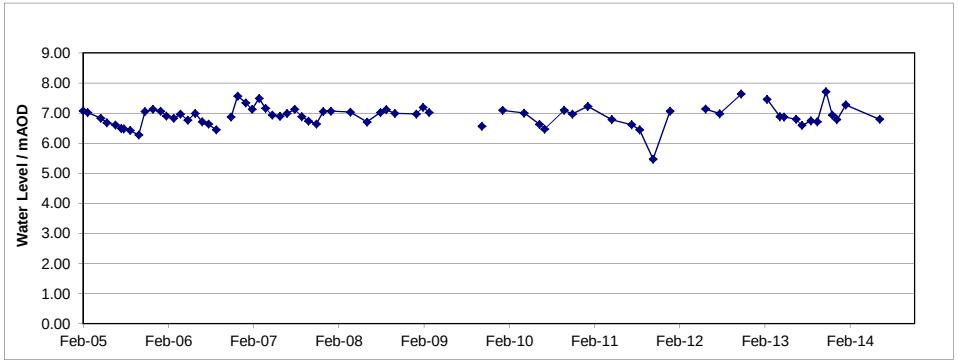

Copper
Arsenic
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

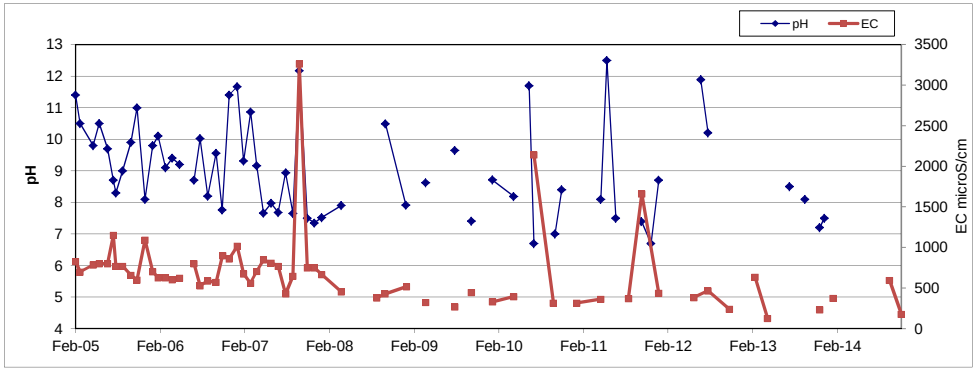

Alkalinity mg/l
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

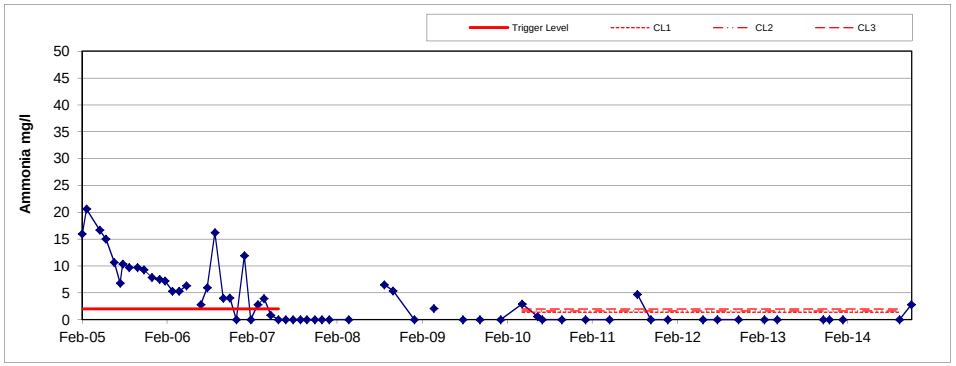

Chromium
Lead
Vanadium
Zinc
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

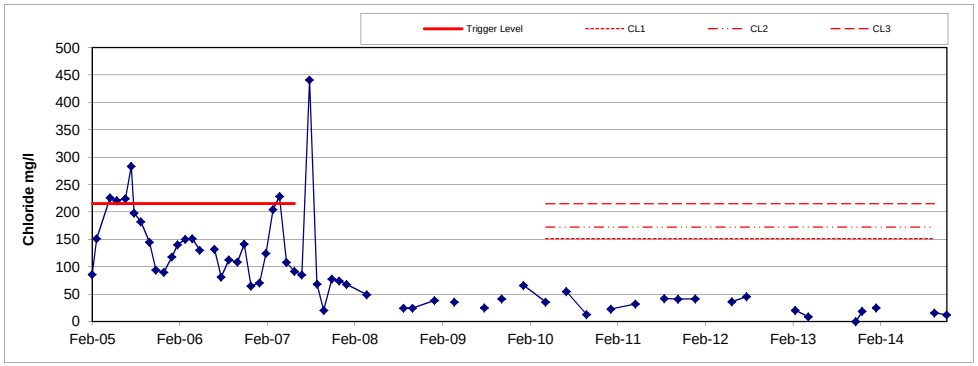

Sodium
Potassium
Magnesium
Sulphate
mg/l
1000
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

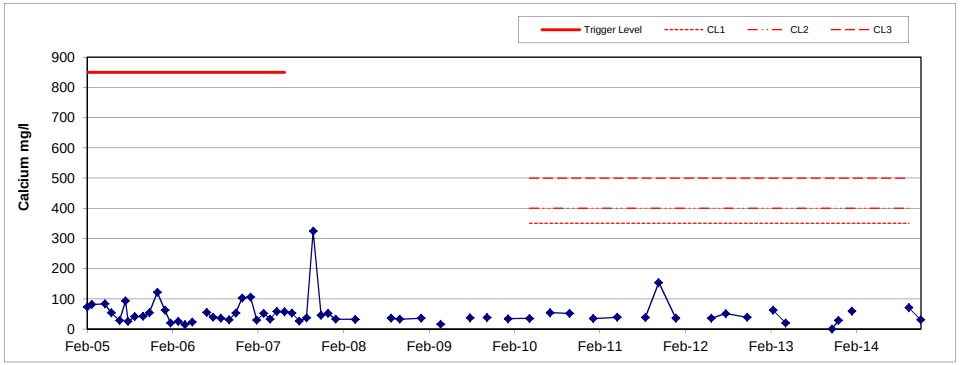

Nitrate
Nitrite
Phosphate
microg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

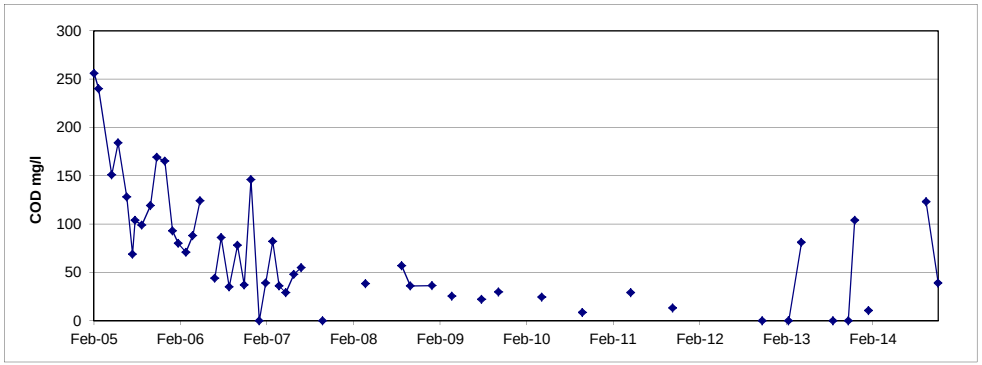

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

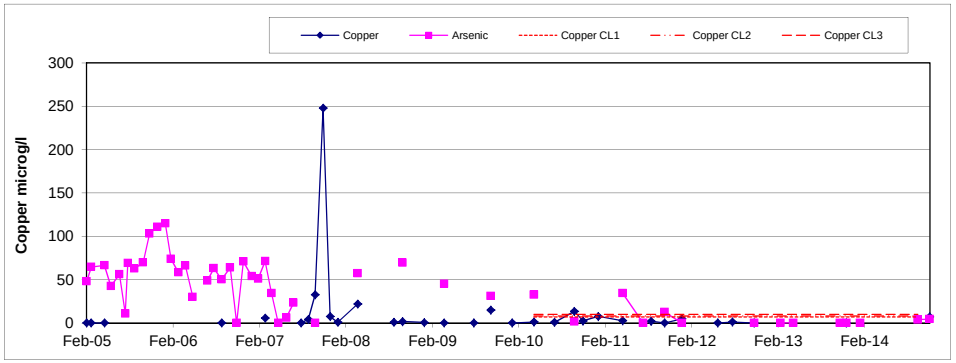

pH
EC
pH
EC microS/cm
13
12
11
10
9
8
7
6
5
4
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

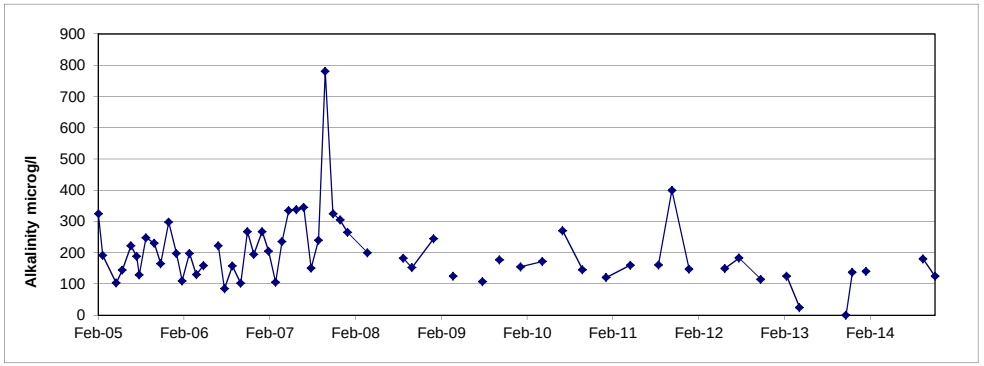

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
50
45
40
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

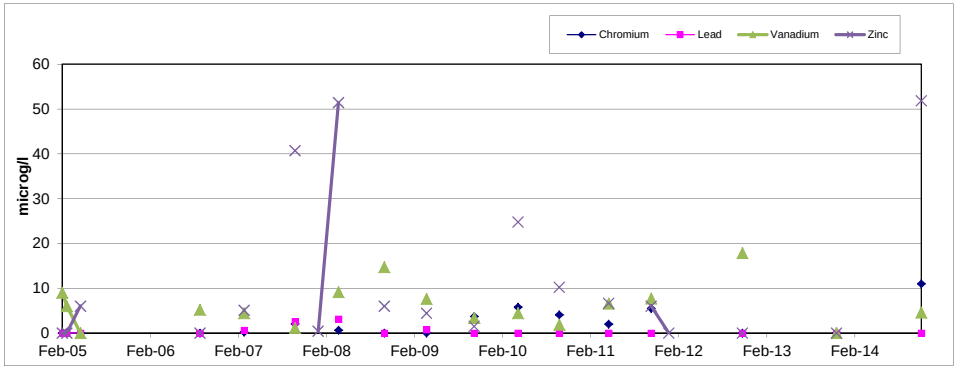

Trigger Level
CL1
CL2
CL3
Chloride mg/l
500
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

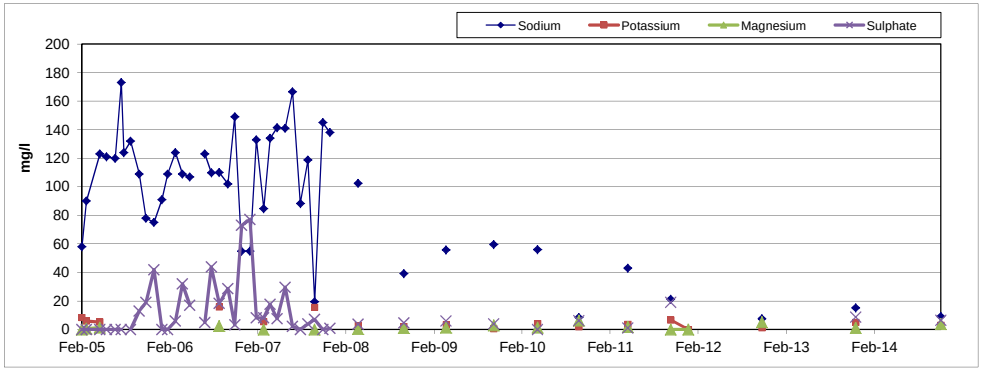

Trigger Level
CL1
CL2
CL3
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

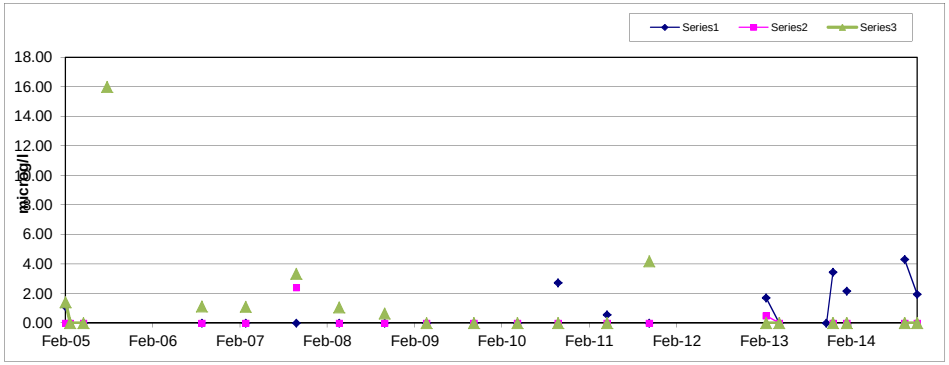

COD mg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

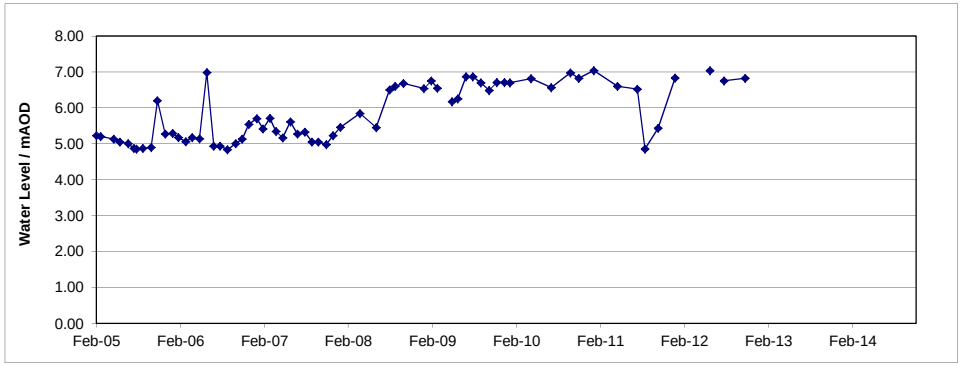

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
Copper microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

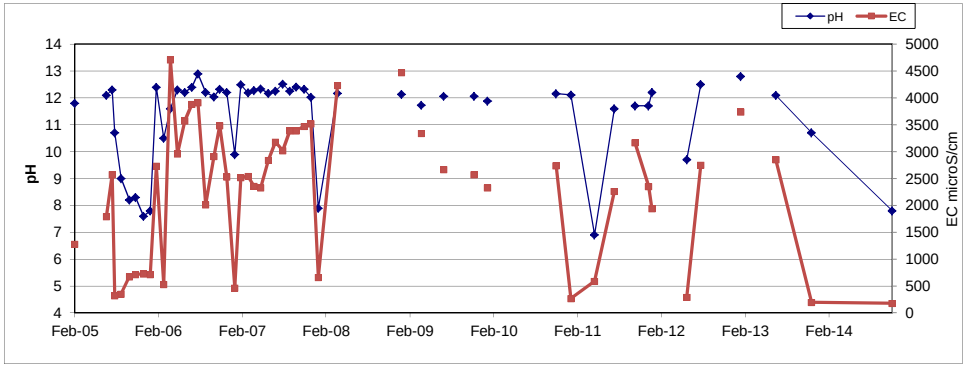

Alkalinity microg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

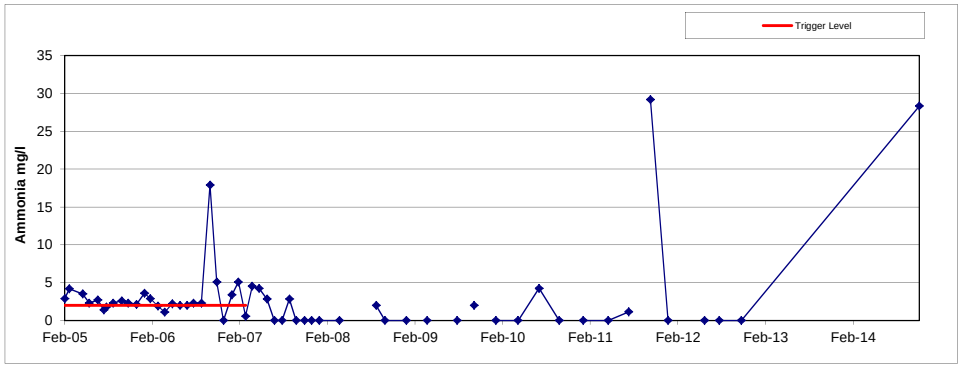

Chromium
Lead
Vanadium
Zinc
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

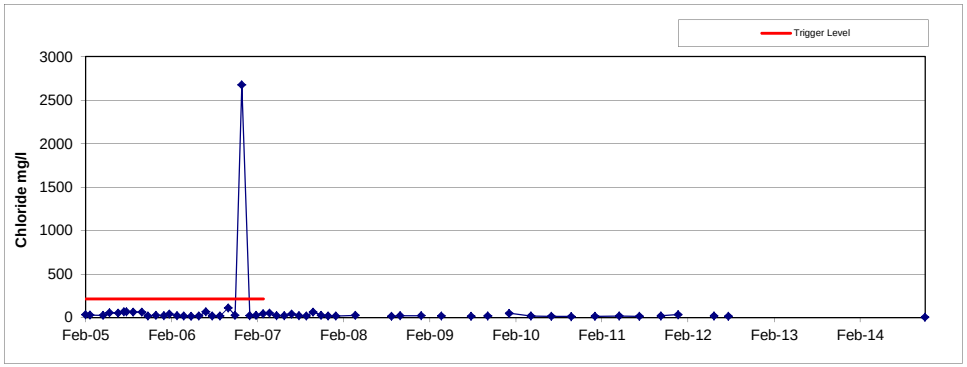

Sodium
Potassium
Magnesium
Sulphate
mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

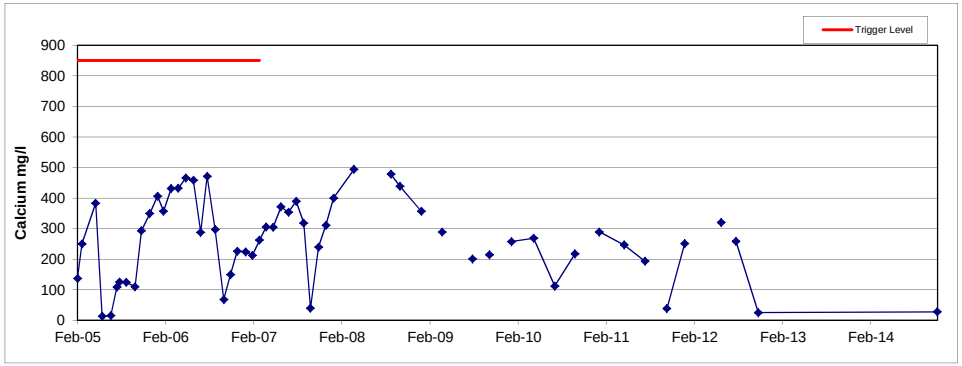

Series1
Series2
Series3
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

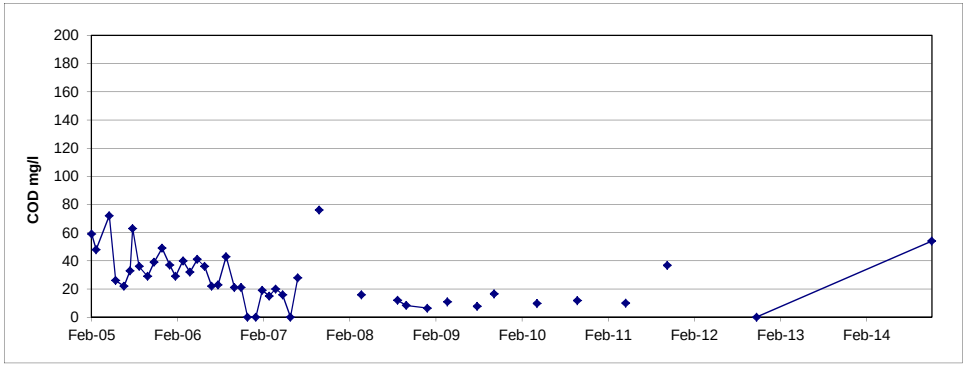

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

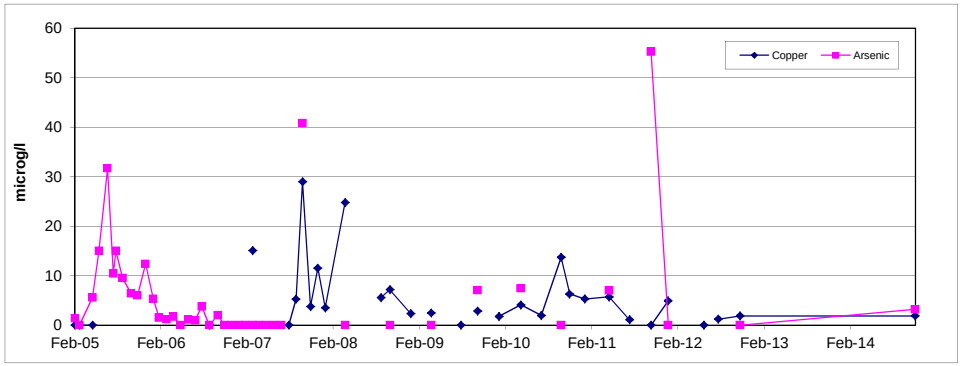

pH
EC
pH
EC microS/cm
14
13
12
11
10
9
8
7
6
5
4
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

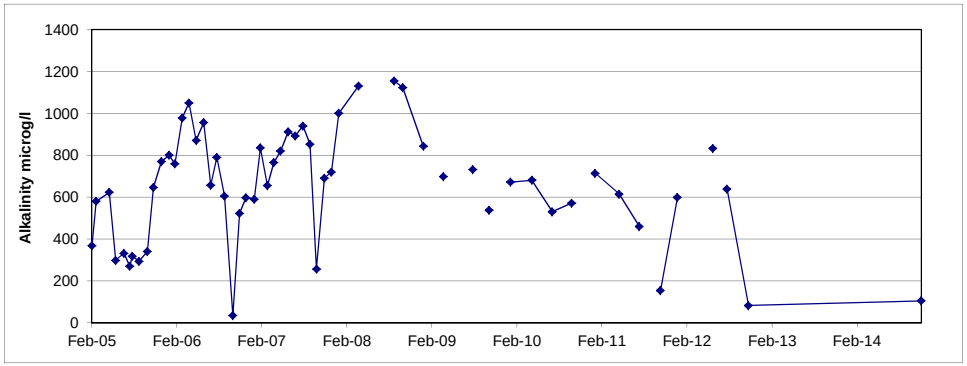

Trigger Level
Ammonia mg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

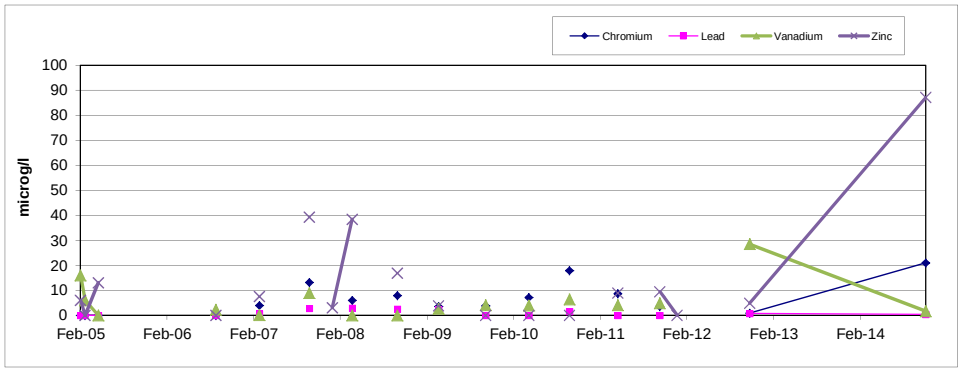

Trigger Level
Chloride mg/l
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

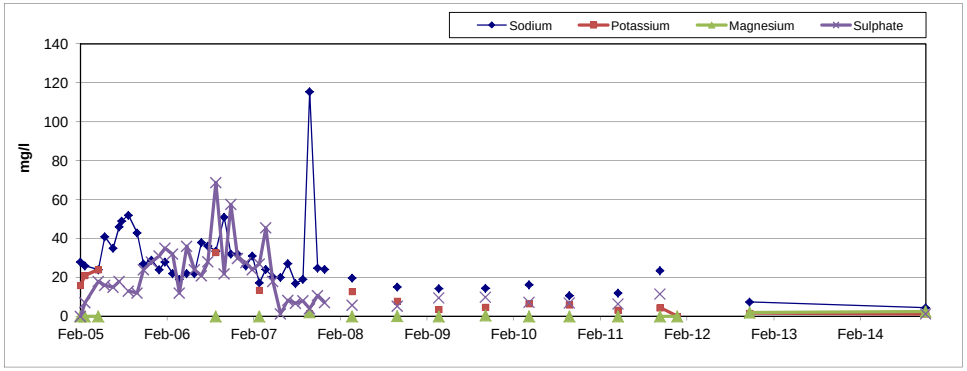

Trigger Level
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

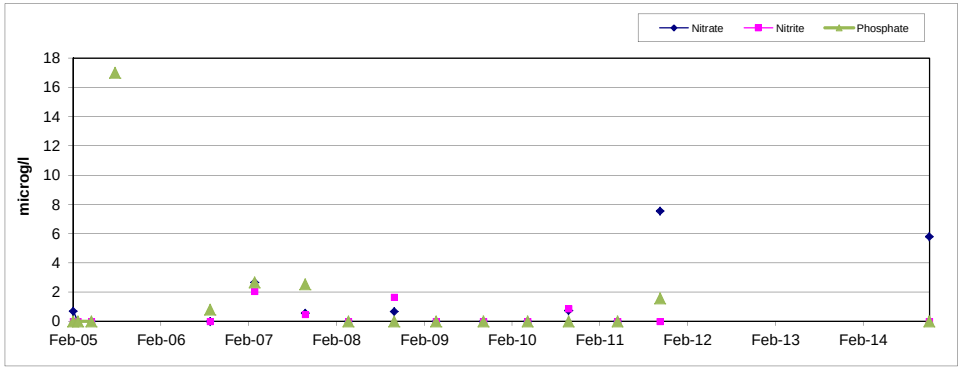

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

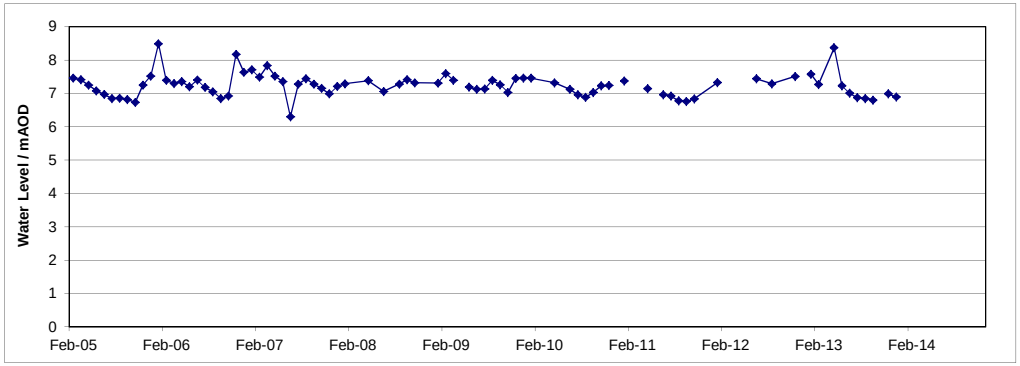

Copper
Arsenic
microg/l
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

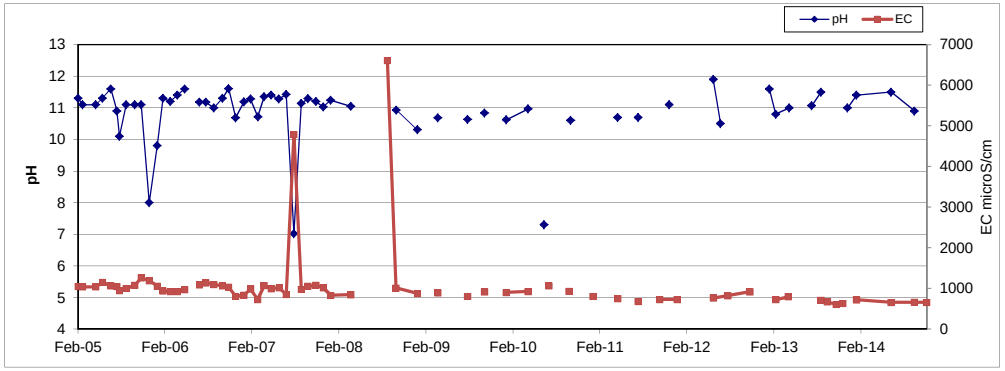

Alkalinity microg/l
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

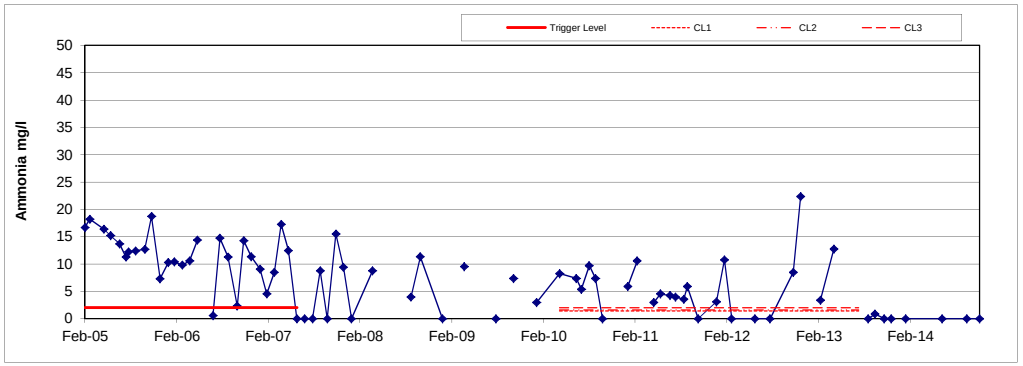

Chromium
Lead
Vanadium
Zinc
microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

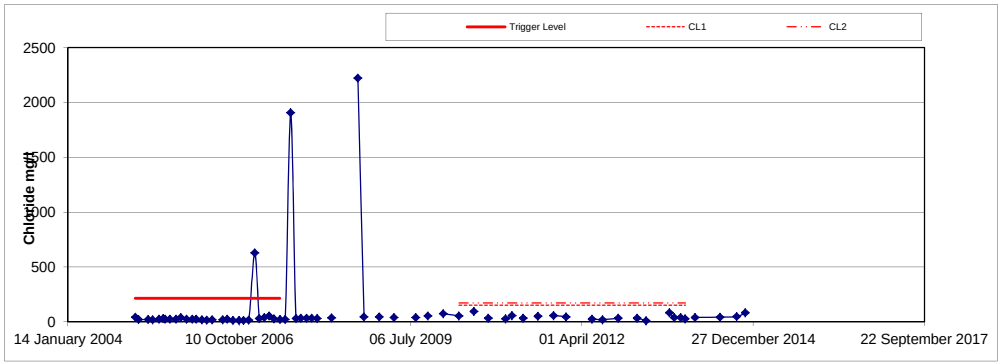

Sodium
Potassium
Magnesium
Sulphate
mg/l
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

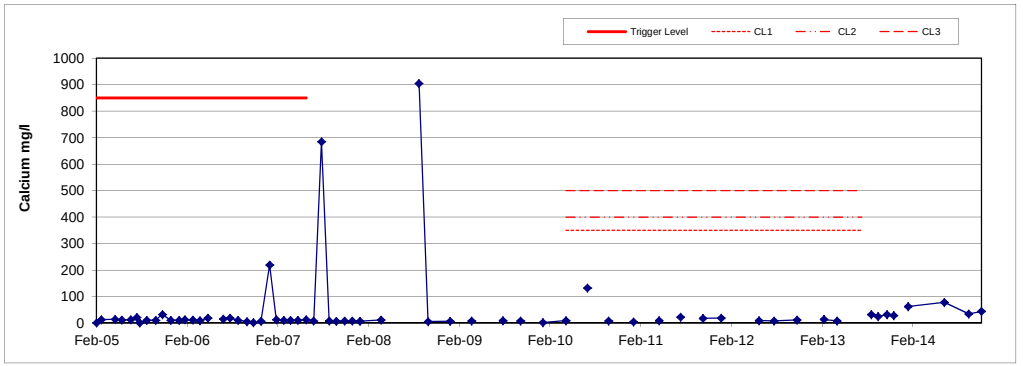

Nitrate
Nitrite
Phosphate
microg/l
18
16
14
12
10
8
6
4
2
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

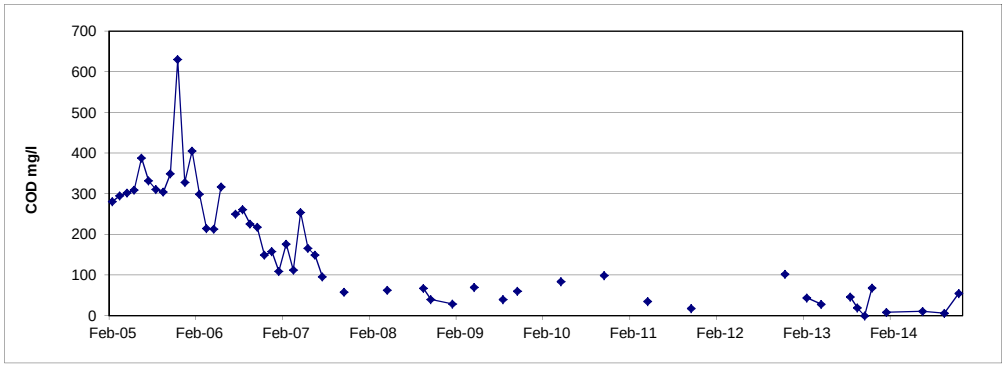

Water Level / mAOD
0
1
2
3
4
5
6
7
8
9
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

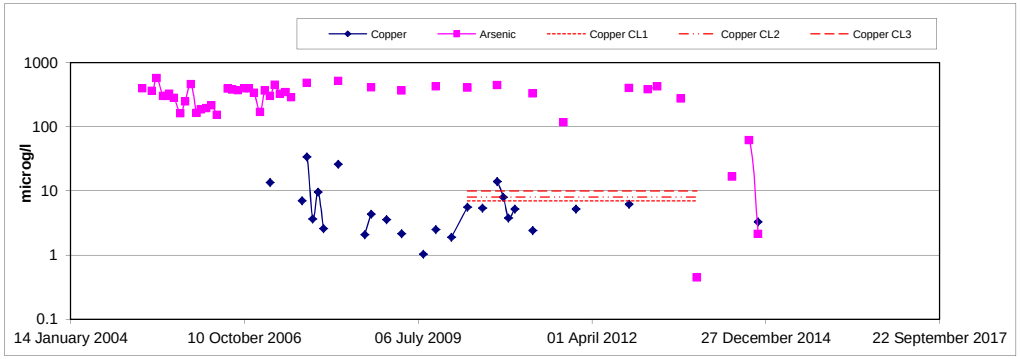

pH
EC
pH
EC microS/cm
4
5
6
7
8
9
10
11
12
13
0
1000
2000
3000
4000
5000
6000
7000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

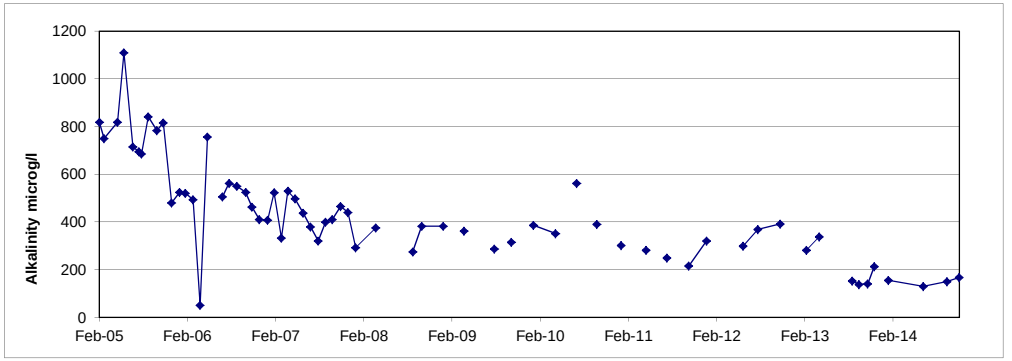

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
0
5
10
15
20
25
30
35
40
45
50
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

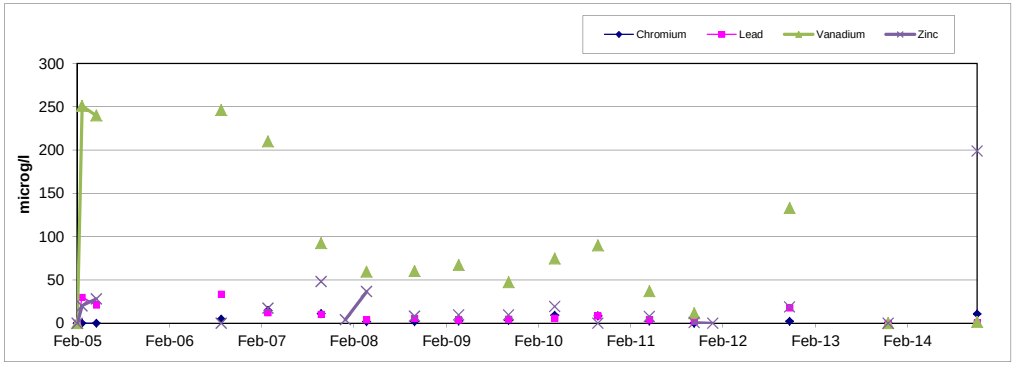

Trigger Level
CL1
CL2
Chloride mg/l
0
500
1000
1500
2000
2500
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

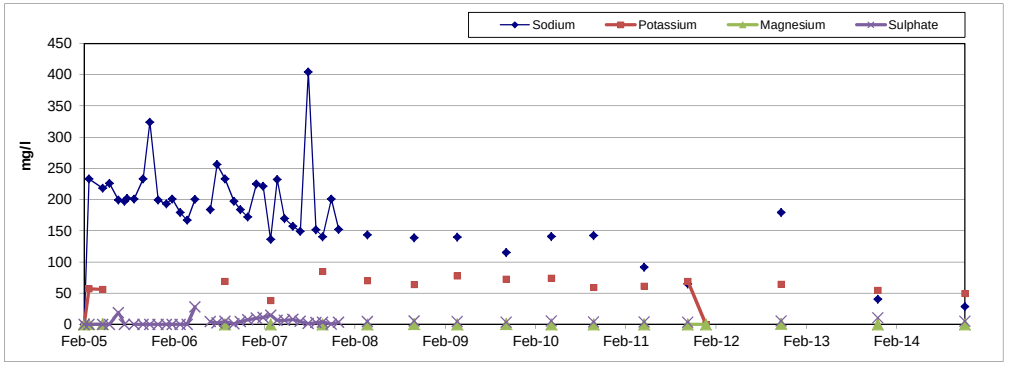

Trigger Level
CL1
CL2
CL3
Calcium mg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

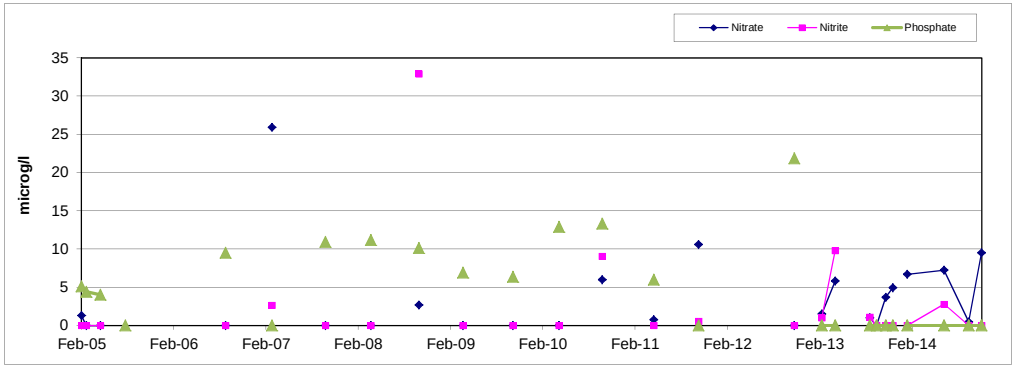

COD mg/l
0
100
200
300
400
500
600
700
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

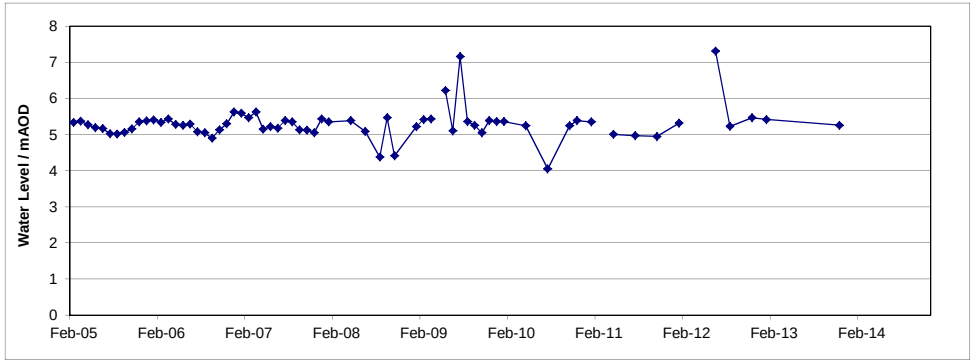

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
microg/l
1000
100
10
1
0.1
14 January 2004
10 October 2006
06 July 2009
01 April 2012
27 December 2014
22 September 2017

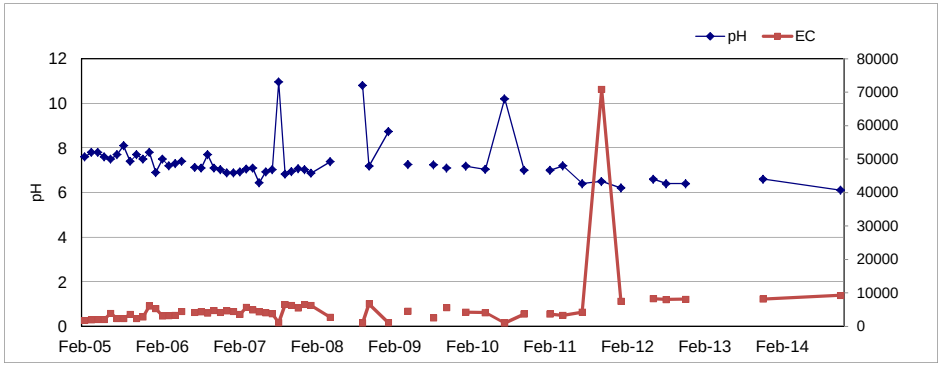

Alkalinity microg/l
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

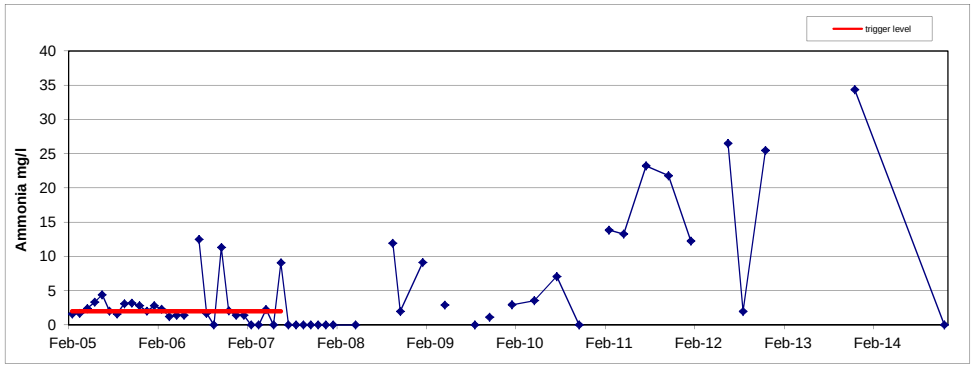

Chromium
Lead
Vanadium
Zinc
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

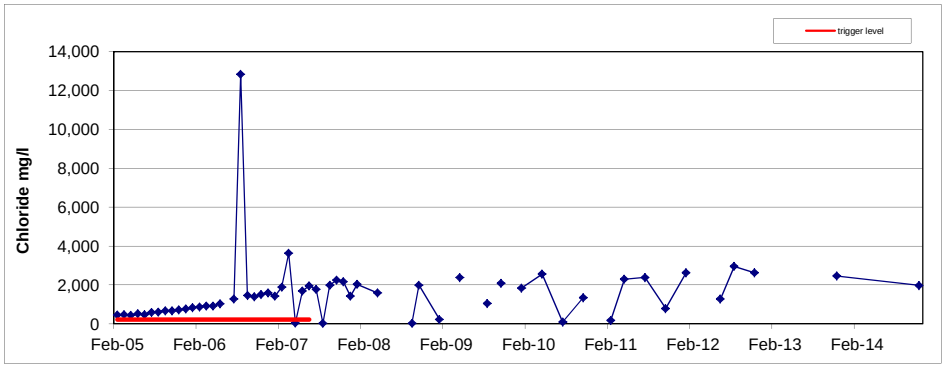

Sodium
Potassium
Magnesium
Sulphate
mg/l
450
400
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

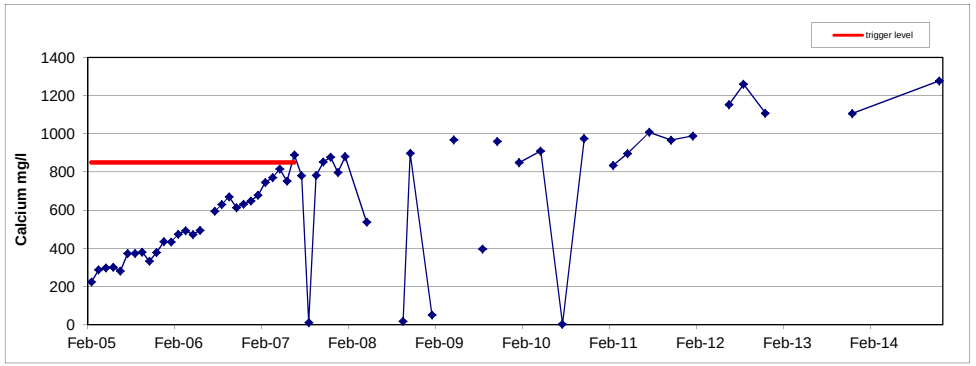

Nitrate
Nitrite
Phosphate
microg/l
35
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

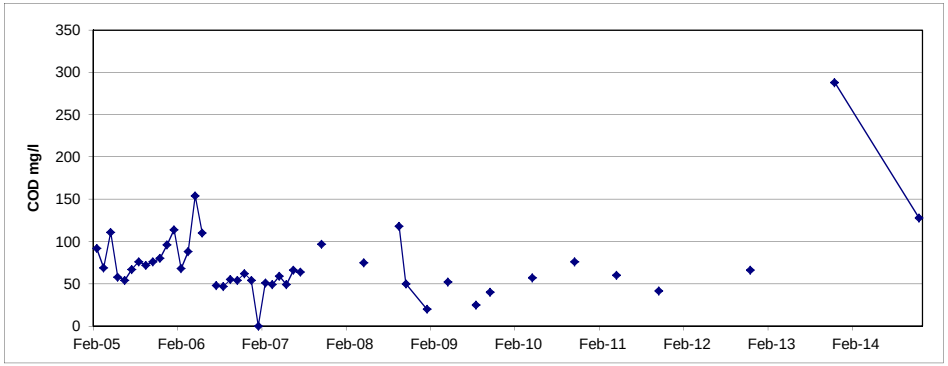

Water Level / mAOD
0
1
2
3
4
5
6
7
8
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

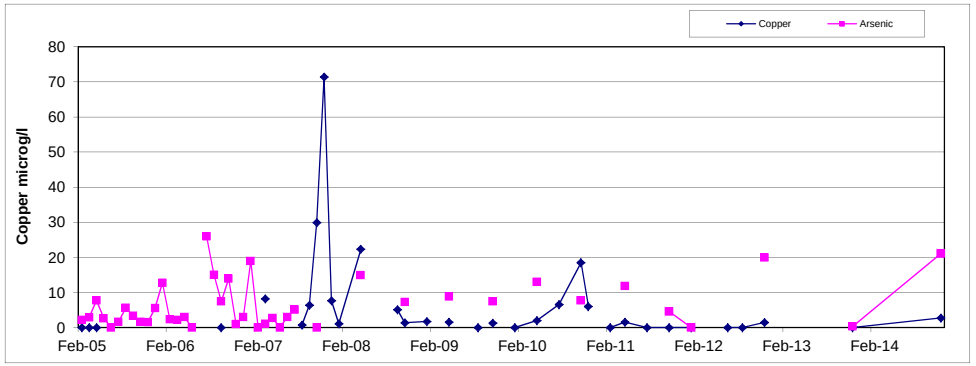

pH
EC
pH
0
2
4
6
8
10
12
0
10000
20000
30000
40000
50000
60000
70000
80000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

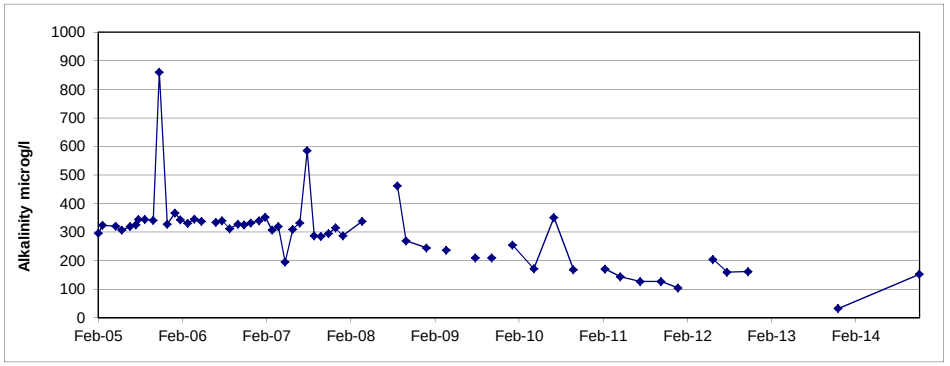

trigger level
Ammonia mg/l
0
5
10
15
20
25
30
35
40
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

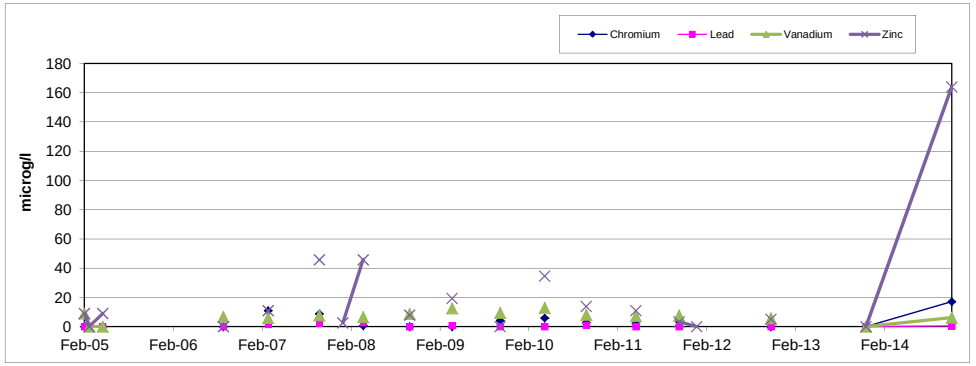

trigger level
Chloride mg/l
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

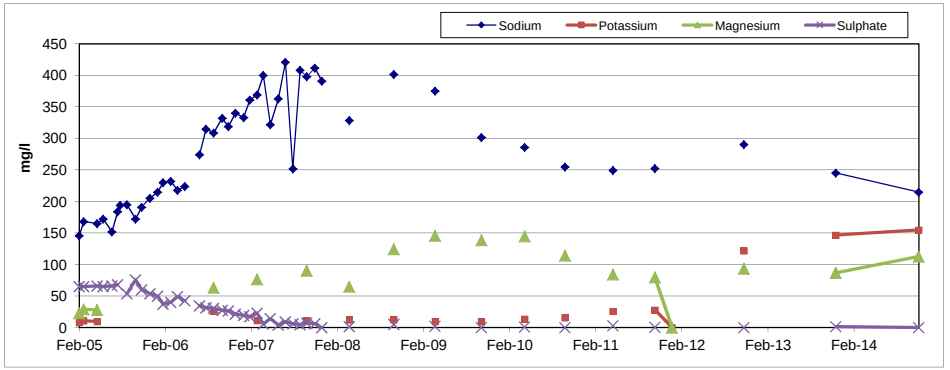

trigger level
Calcium mg/l
0
200
400
600
800
1000
1200
1400
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

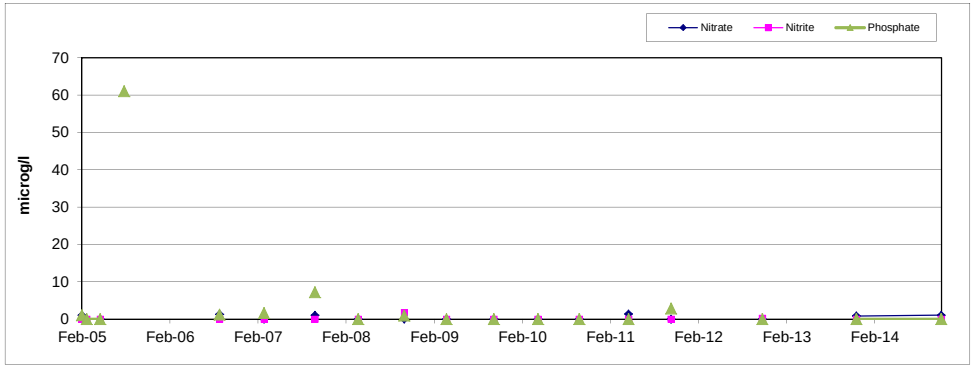

COD mg/l
0
50
100
150
200
250
300
350
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

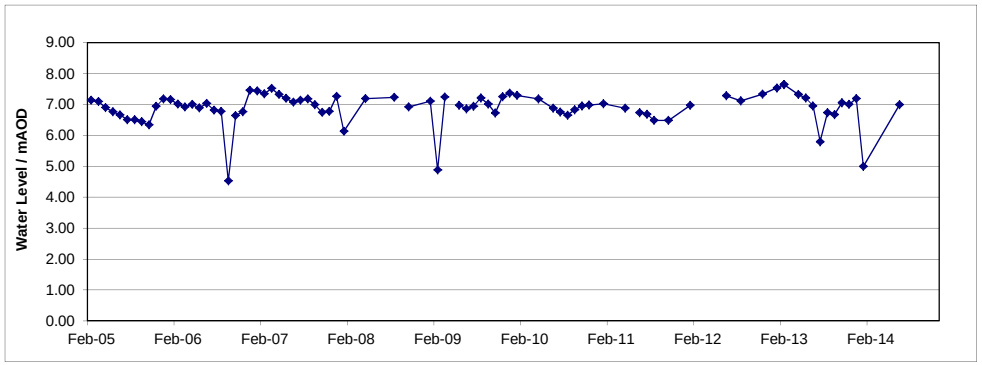

Copper
Arsenic
Copper microg/l
0
10
20
30
40
50
60
70
80
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

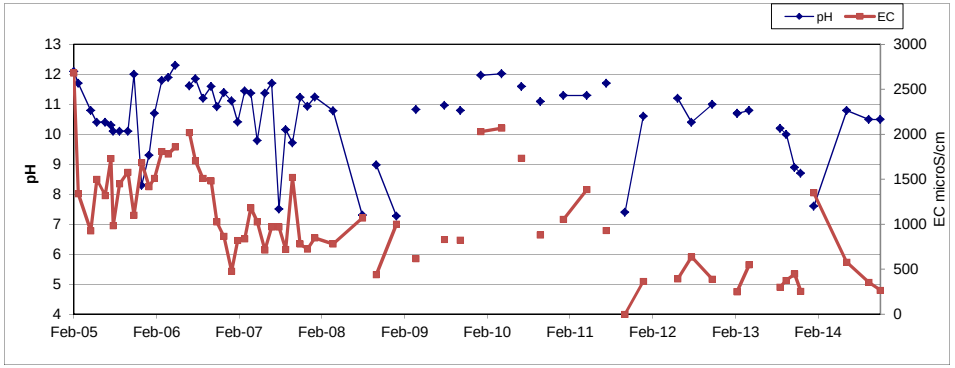

Alkalinity microg/l
0
100
200
300
400
500
600
700
800
900
1000
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

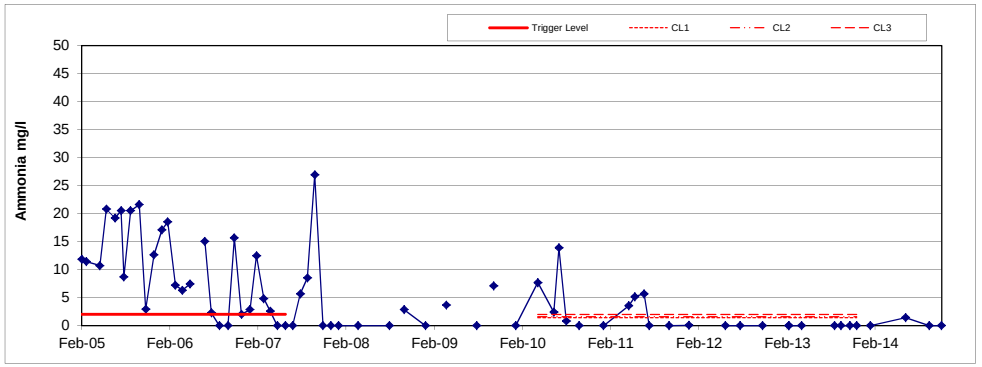

Chromium
Lead
Vanadium
Zinc
microg/l
0
20
40
60
80
100
120
140
160
180
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

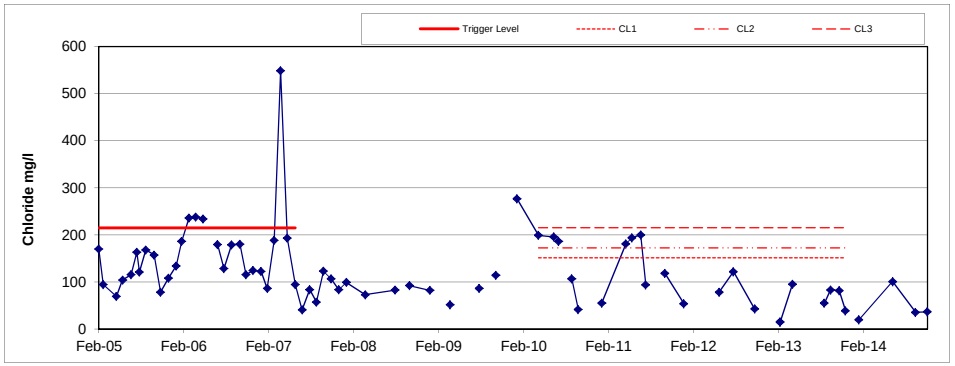

Sodium
Potassium
Magnesium
Sulphate
mg/l
0
50
100
150
200
250
300
350
400
450
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

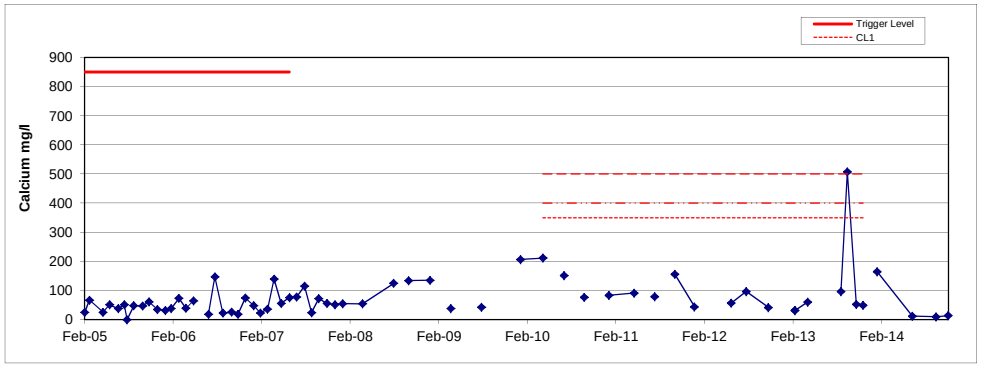

Nitrate
Nitrite
Phosphate
microg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

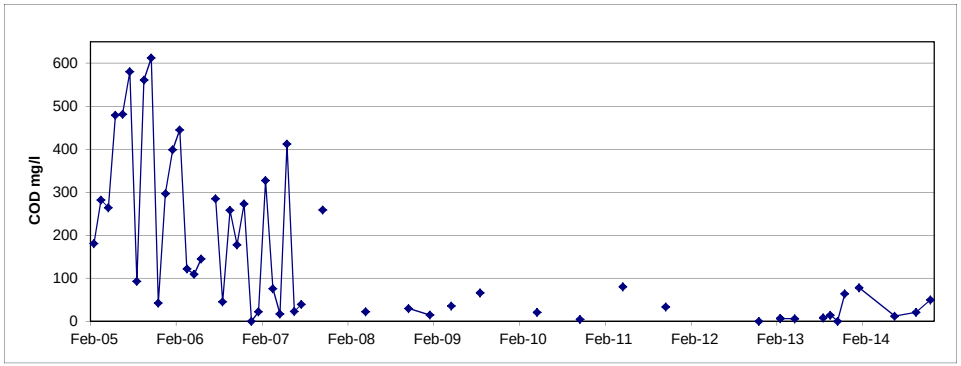

Water Level / mAOD
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

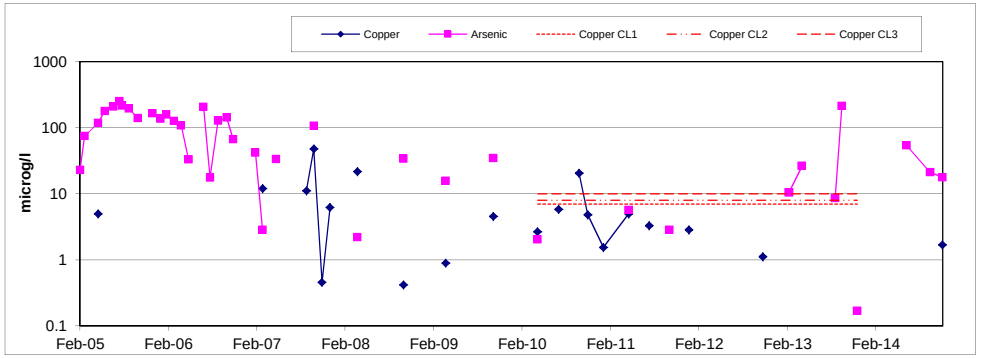

pH
EC
pH
EC microS/cm
13 12 11 10 9 8 7 6 5 4
3000 2500 2000 1500 1000 500 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

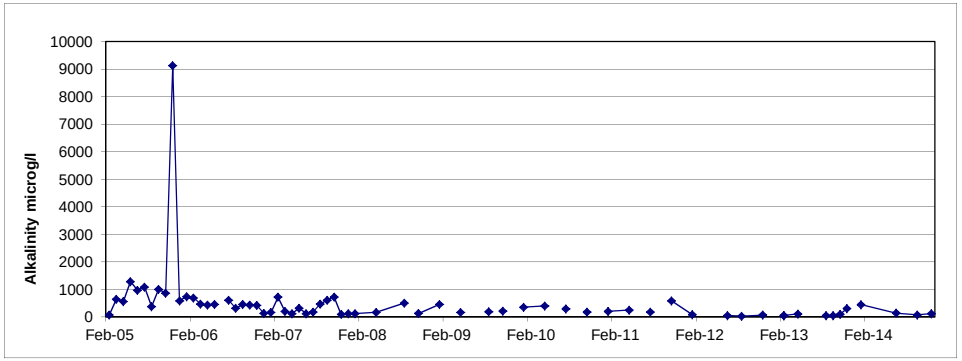

Trigger Level
CL1
CL2
CL3
Ammonia mg/l
50 45 40 35 30 25 20 15 10 5 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

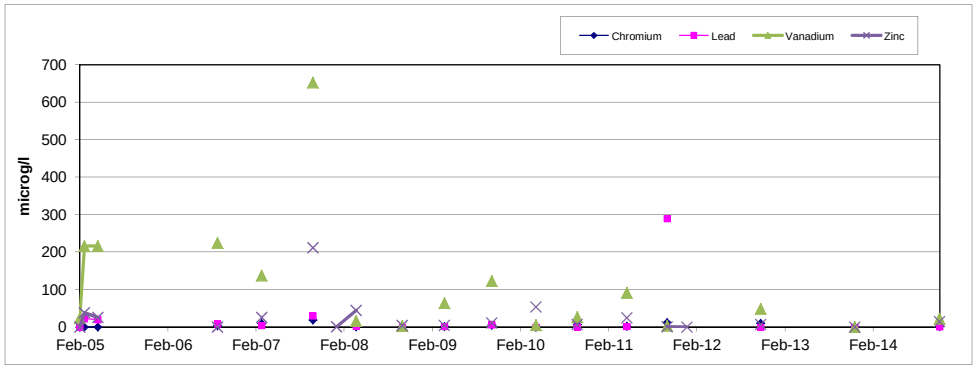

Trigger Level
CL1
CL2
CL3
Chloride mg/l
600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

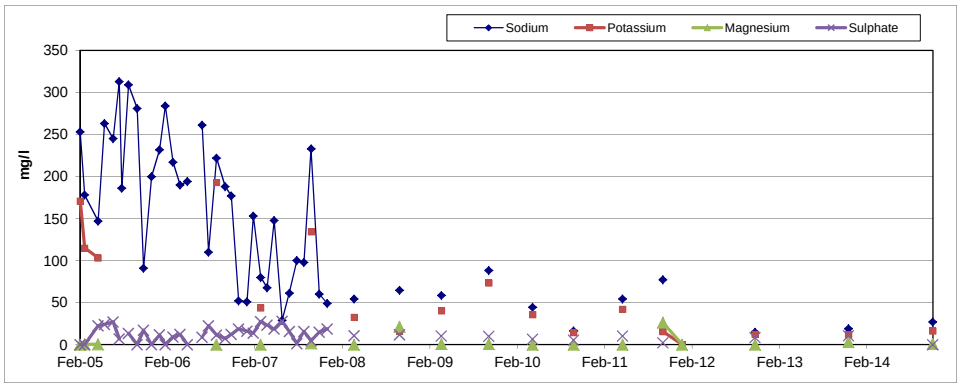

Trigger Level
CL1
Calcium mg/l
900 800 700 600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

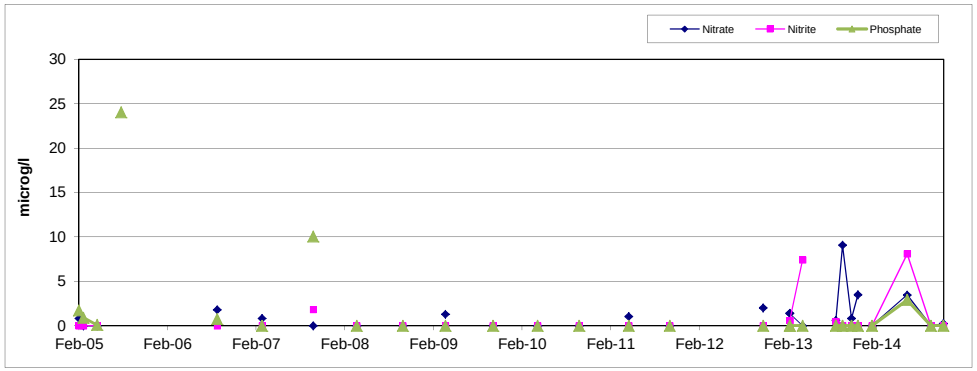

COD mg/l
600 500 400 300 200 100 0
Feb-05 Feb-06 Feb-07 Feb-08 Feb-09 Feb-10 Feb-11 Feb-12 Feb-13 Feb-14

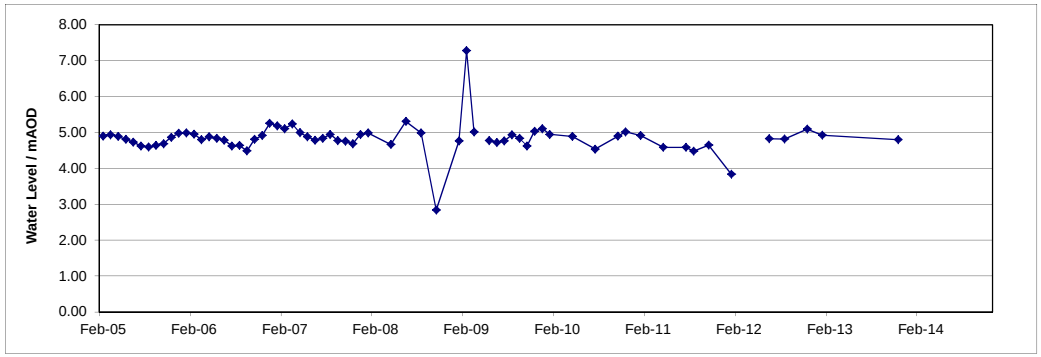

Copper
Arsenic
Copper CL1
Copper CL2
Copper CL3
microg/l
1000
100
10
1
0.1
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

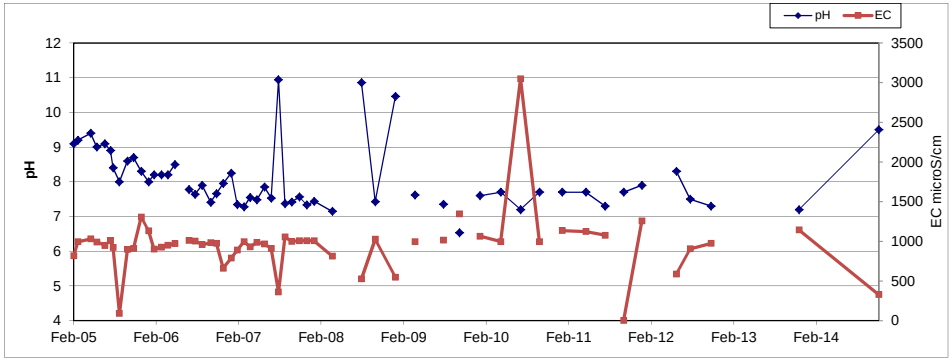

Alkalinity microg/l
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

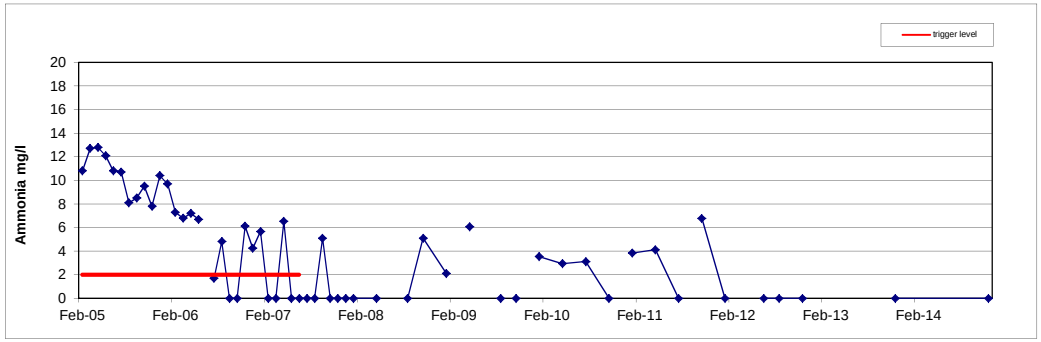

Chromium
Lead
Vanadium
Zinc
microg/l
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

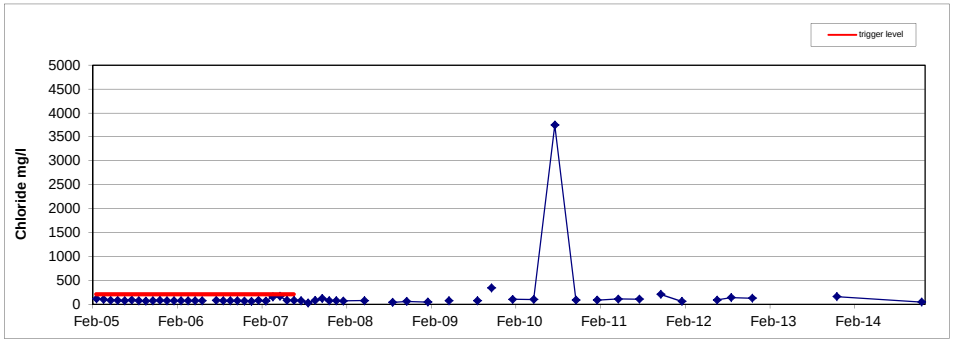

Sodium
Potassium
Magnesium
Sulphate
mg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

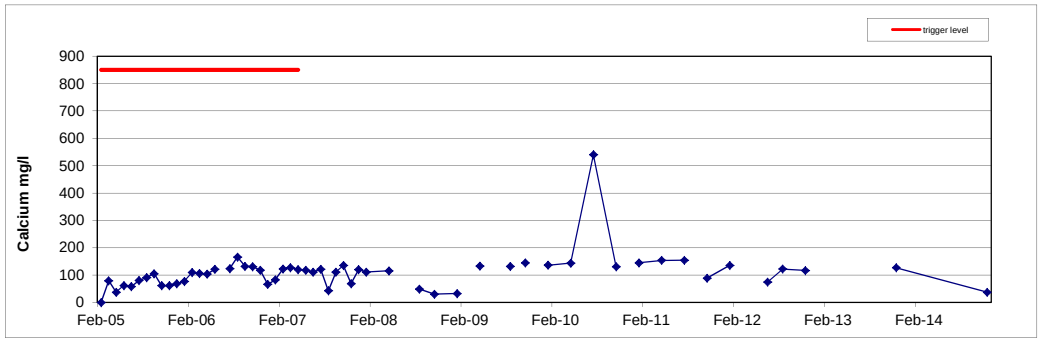

Nitrate
Nitrite
Phosphate
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

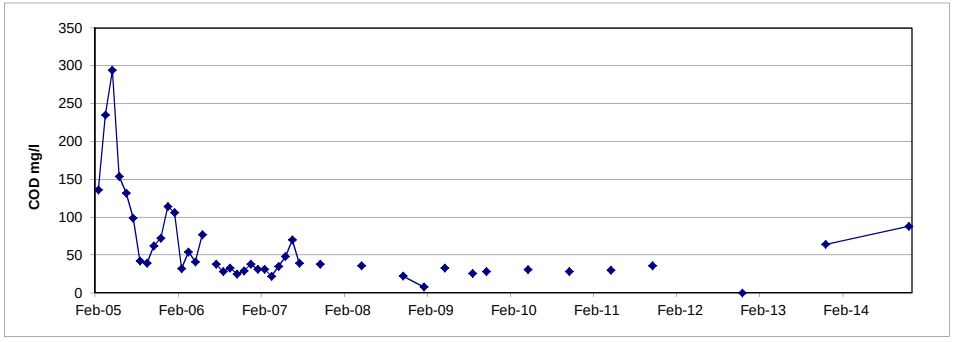

Water Level / mAOD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

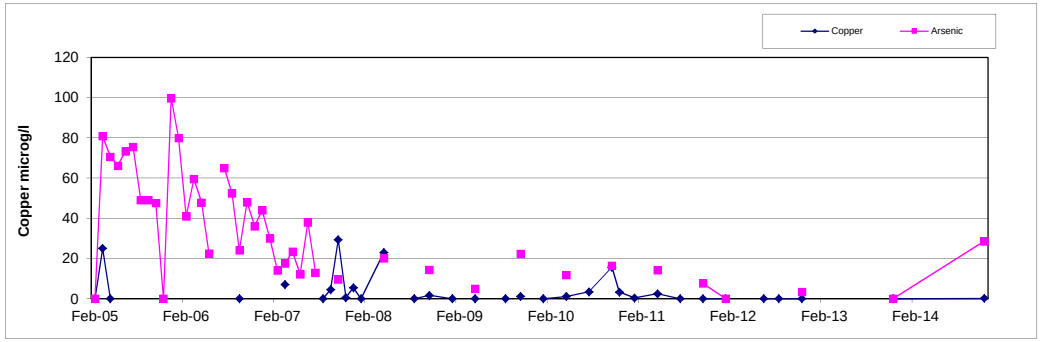

pH
EC
pH
EC microS/cm
12
11
10
9
8
7
6
5
4
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

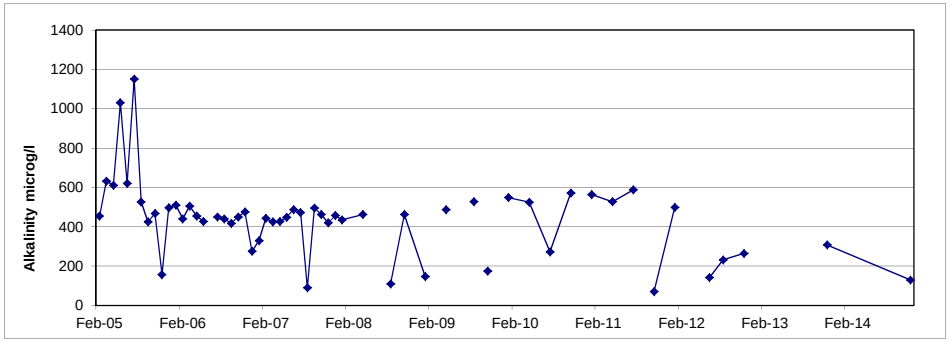

trigger level
Ammonia mg/l
20
18
16
14
12
10
8
6
4
2
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

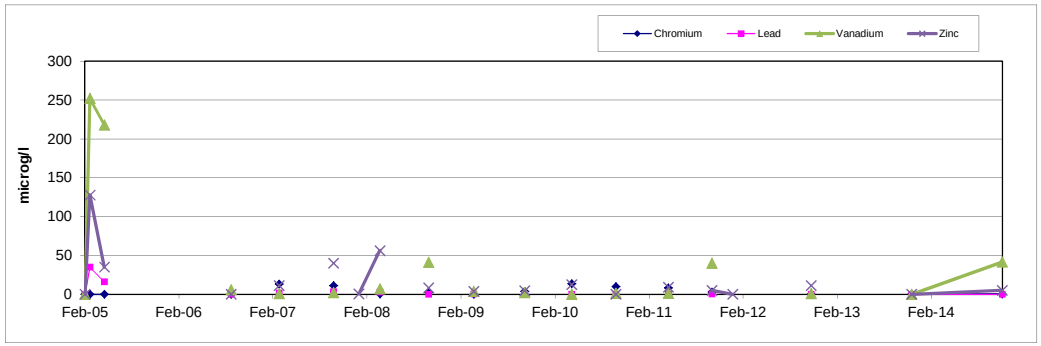

trigger level
Chloride mg/l
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

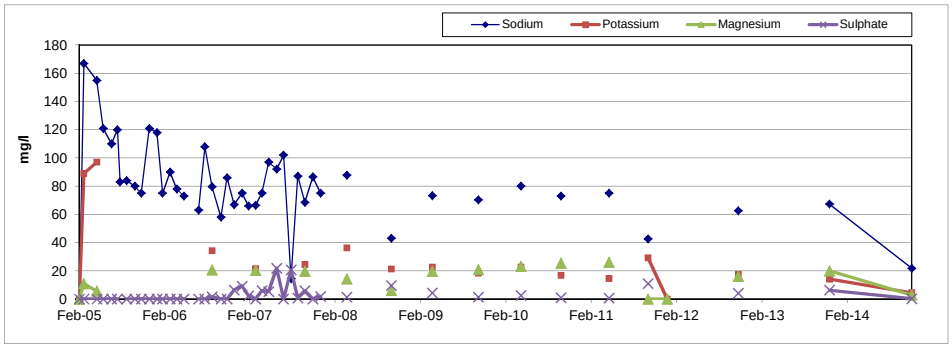

trigger level
Calcium mg/l
900
800
700
600
500
400
300
200
100
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

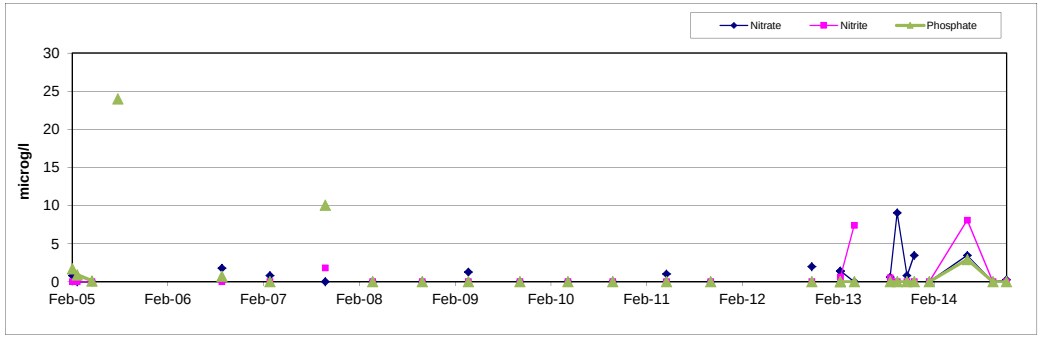

COD mg/l
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Copper
Arsenic
Copper microg/l
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Alkalinity microg/l
1400
1200
1000
800
600
400
200
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Chromium
Lead
Vanadium
Zinc
microg/l
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Sodium
Potassium
Magnesium
Sulphate
mg/l
180
160
140
120
100
80
60
40
20
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Nitrate
Nitrite
Phosphate
microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

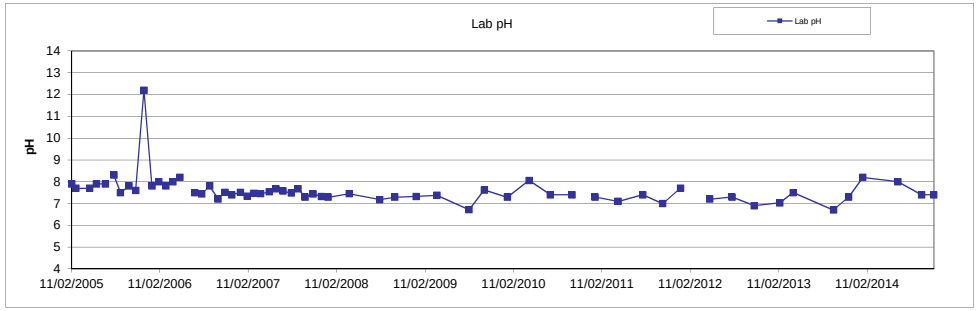
MORFA CLOSED LANDFILL, PORT TALBOT

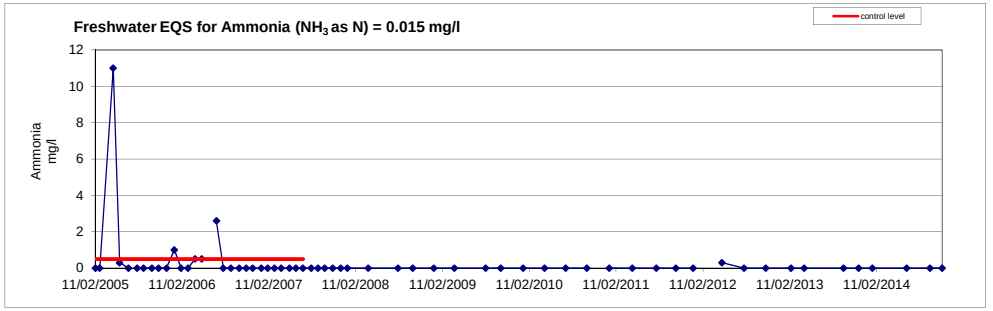
PERMIT EPR/AP3292LT

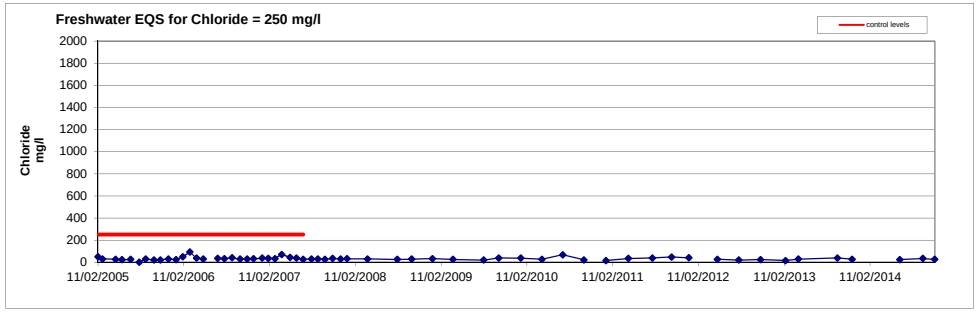
2014 Annual Review of Environmental Monitoring Results

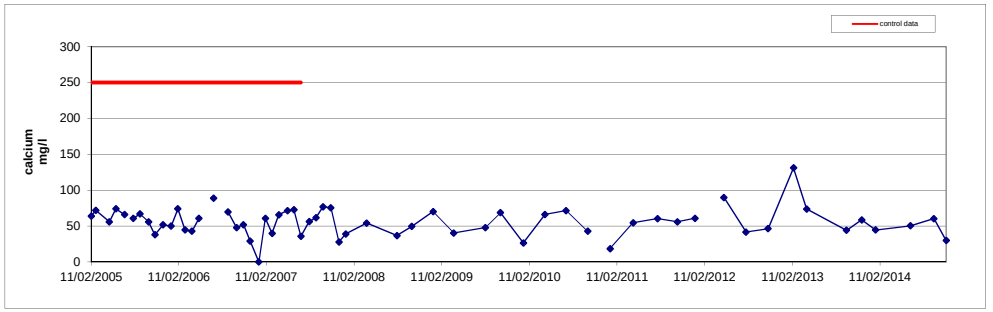
Appendix 4
Temporal variation of surface water chemistry

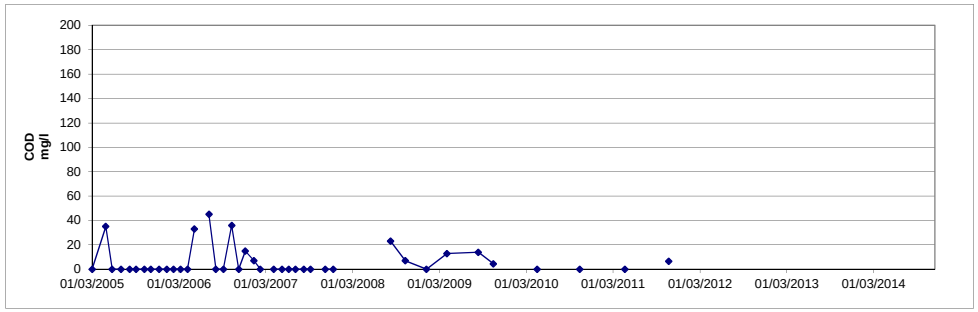
Report Number 1394r1v1d0315

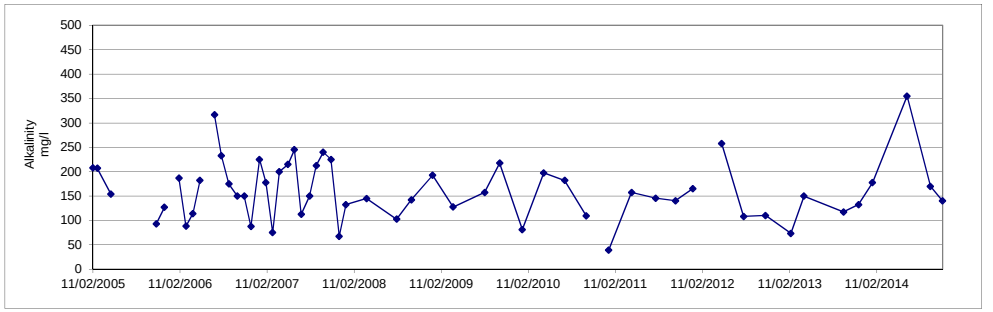

Lab pH
Lab pH
pH
14
13
12
11
10
9
8
7
6
5
4
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

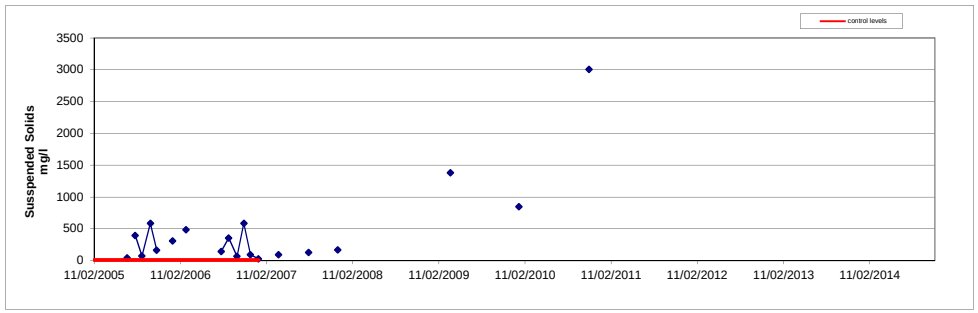

Freshwater EQS for Ammonia (NH_3 as N) = 0.015 mg/l
control level
Ammonia mg/l
12
10
8
6
4
2
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

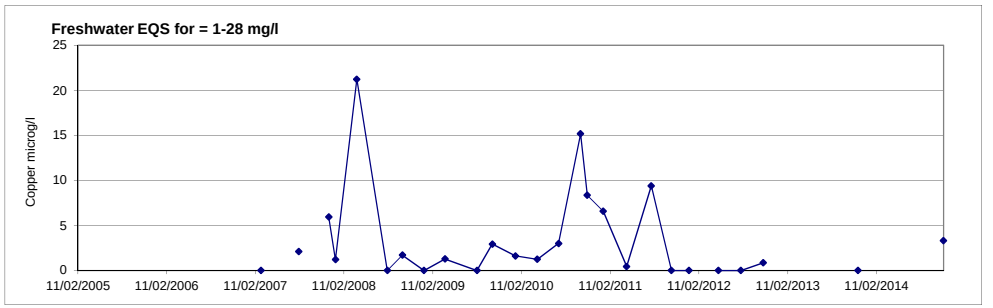

Freshwater EQS for Chloride = 250 mg/l
control levels
Chloride mg/l
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

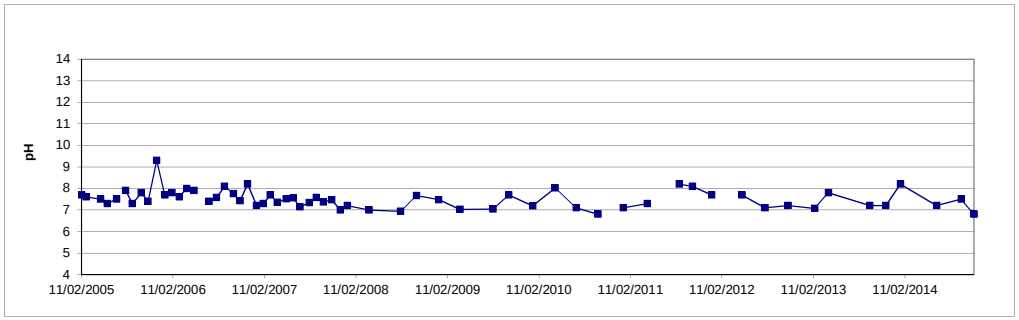

control data
calcium mg/l
300
250
200
150
100
50
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

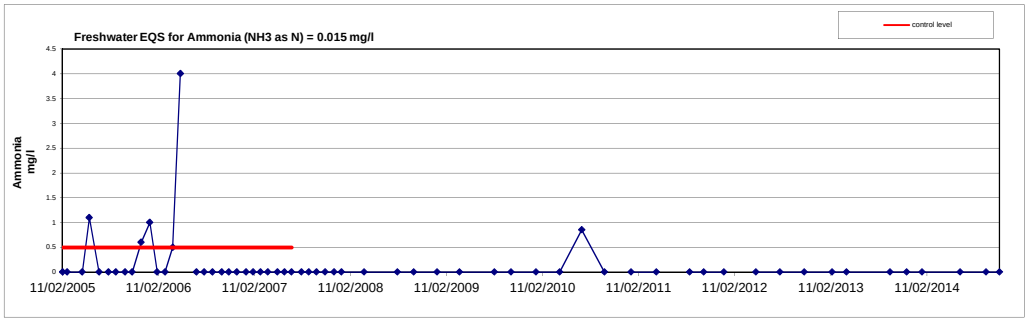

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
01/03/2005
01/03/2006
01/03/2007
01/03/2008
01/03/2009
01/03/2010
01/03/2011
01/03/2012
01/03/2013
01/03/2014

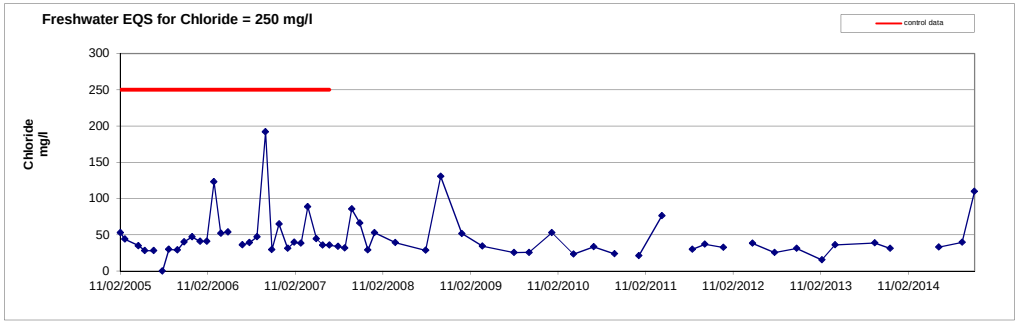

Alkalinity mg/l
500
450
400
350
300
250
200
150
100
50
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

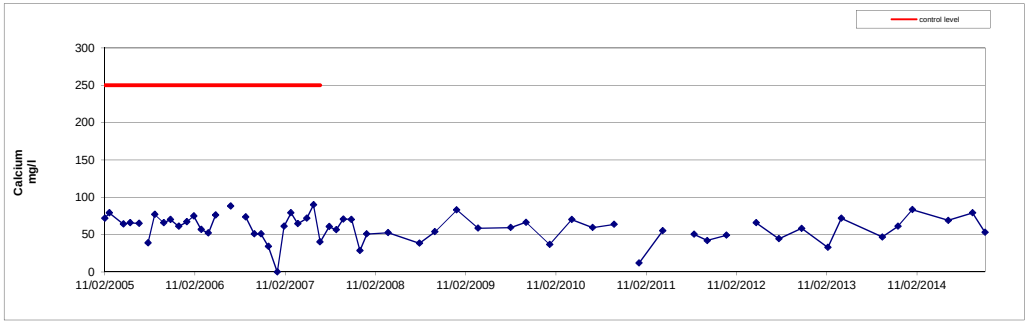

control levels
Susspended Solids mg/l
3500
3000
2500
2000
1500
1000
500
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

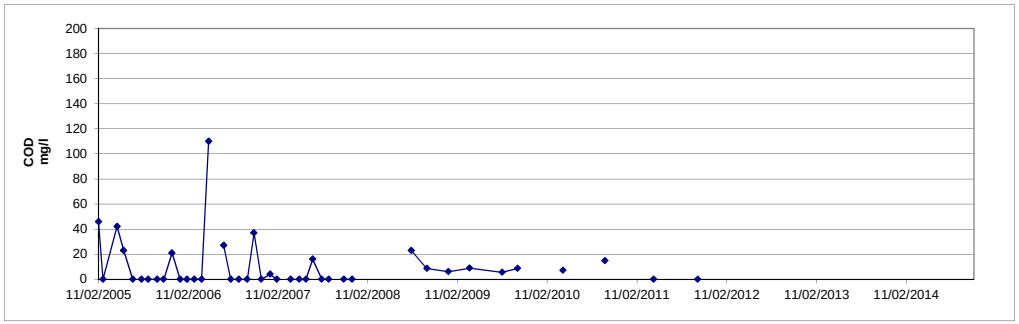

Freshwater EQS for = 1-28 mg/l
Copper microg/l
25
20
15
10
5
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

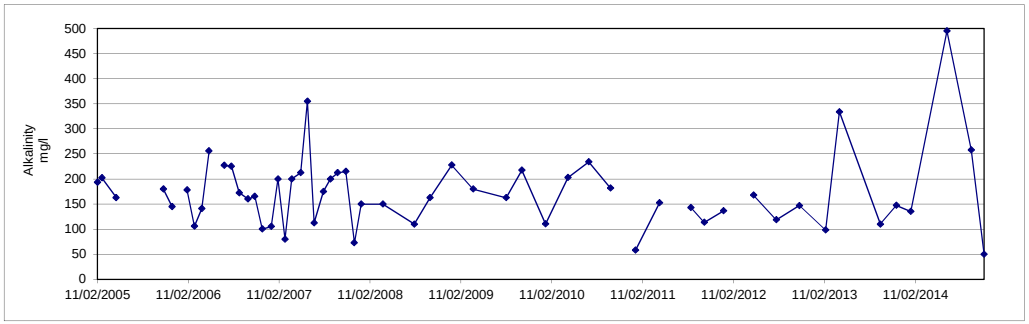

pH
14
13
12
11
10
9
8
7
6
5
4
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

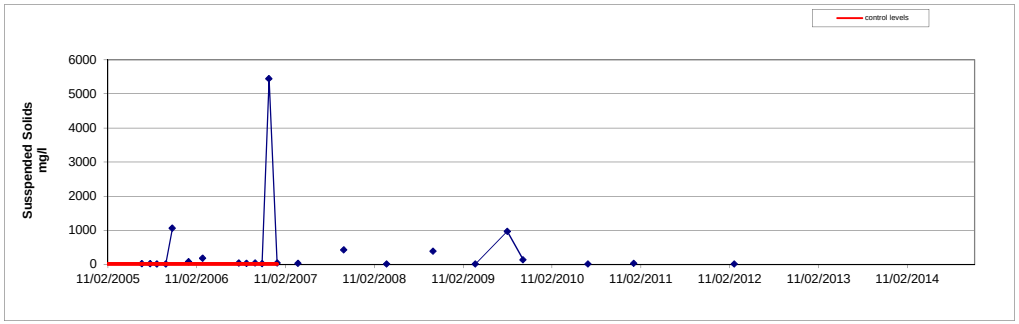

Freshwater EQS for Ammonia (NH3 as N) = 0.015 mg/l
control level
Ammonia mg/l
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

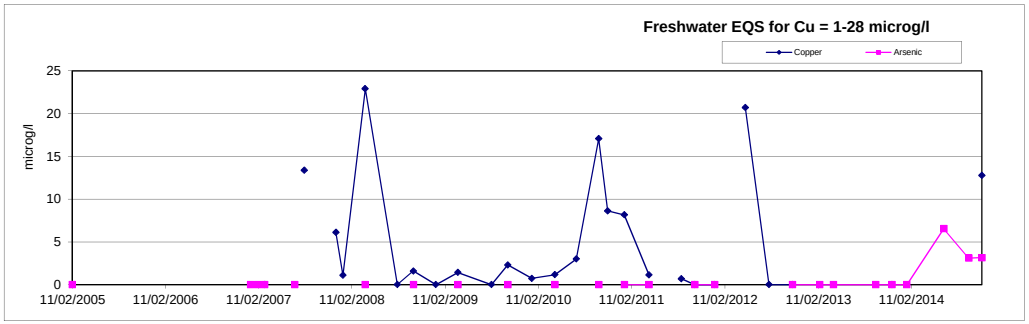

Freshwater EQS for Chloride = 250 mg/l
control data
Chloride mg/l
300
250
200
150
100
50
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

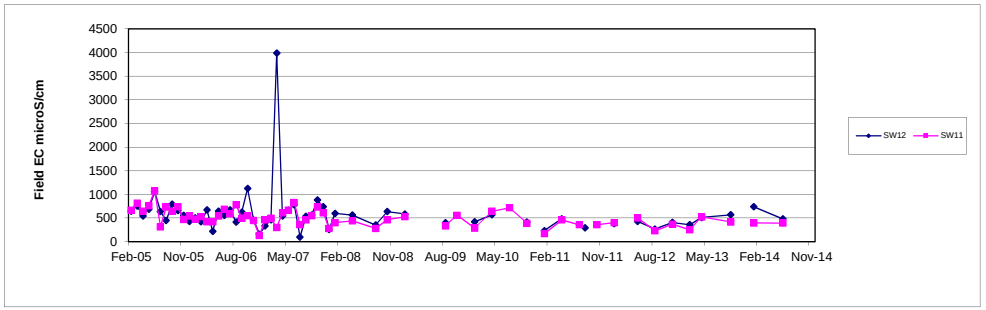

control level
Calcium mg/l
300
250
200
150
100
50
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

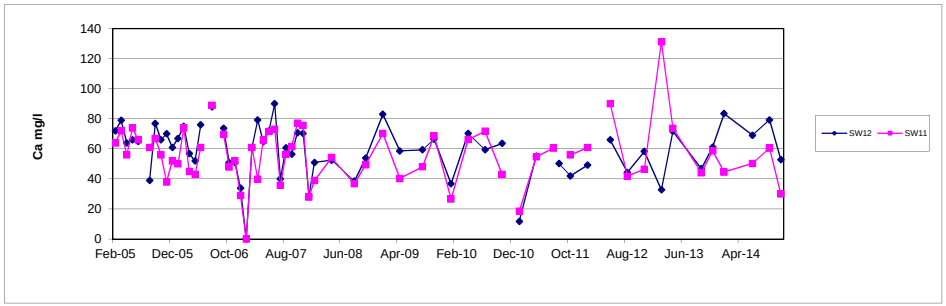

COD mg/l
200
180
160
140
120
100
80
60
40
20
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

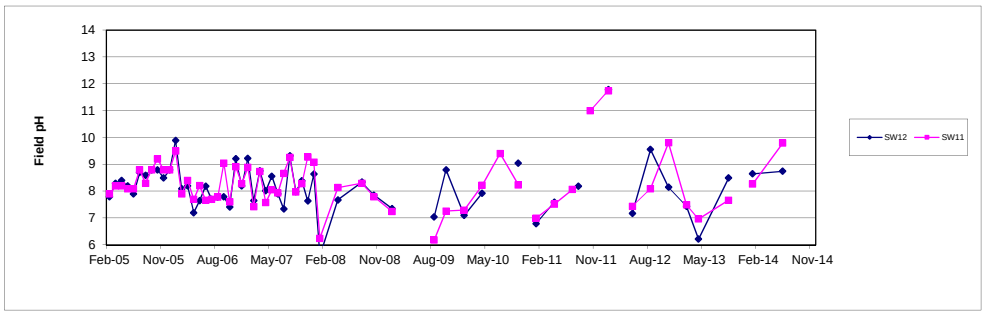

Alkalinity mg/l
500
450
400
350
300
250
200
150
100
50
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

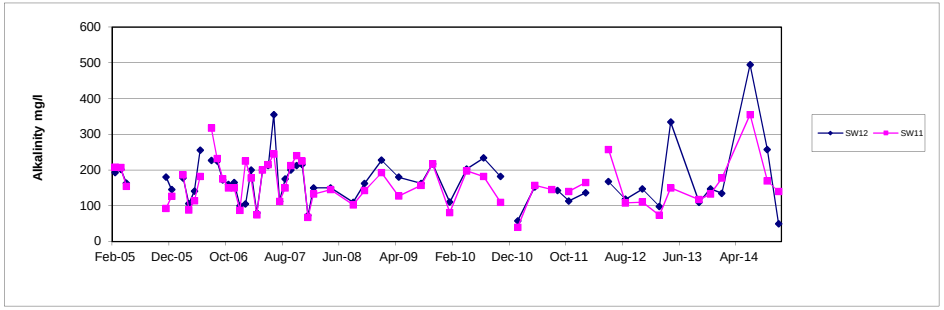

control levels
Susspended Solids mg/l
6000
5000
4000
3000
2000
1000
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

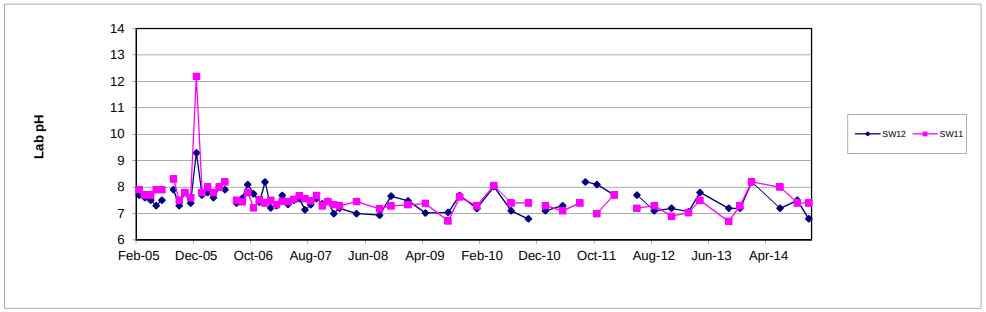

Freshwater EQS for Cu = 1-28 microg/l
Copper
Arsenic
microg/l
25
20
15
10
5
0
11/02/2005
11/02/2006
11/02/2007
11/02/2008
11/02/2009
11/02/2010
11/02/2011
11/02/2012
11/02/2013
11/02/2014

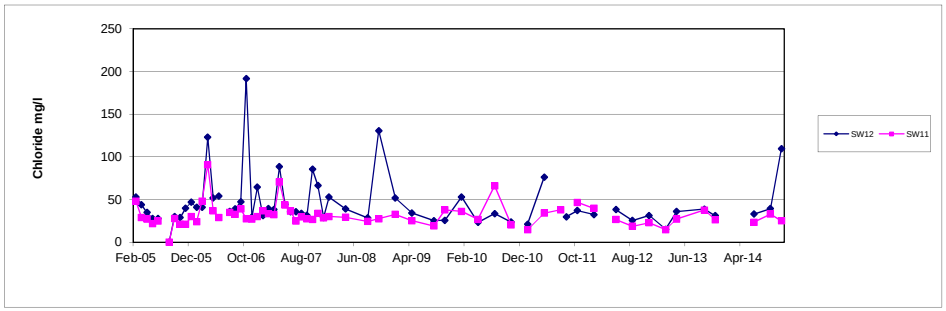

Field EC microS/cm
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Feb-05 Nov-05 Aug-06 May-07 Feb-08 Nov-08 Aug-09 May-10 Feb-11 Nov-11 Aug-12 May-13 Feb-14 Nov-14
SW12 SW11

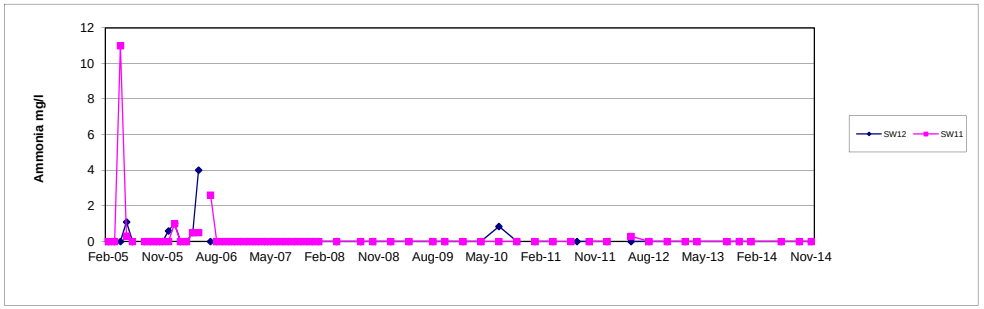

Ca mg/l
140
120
100
80
60
40
20
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

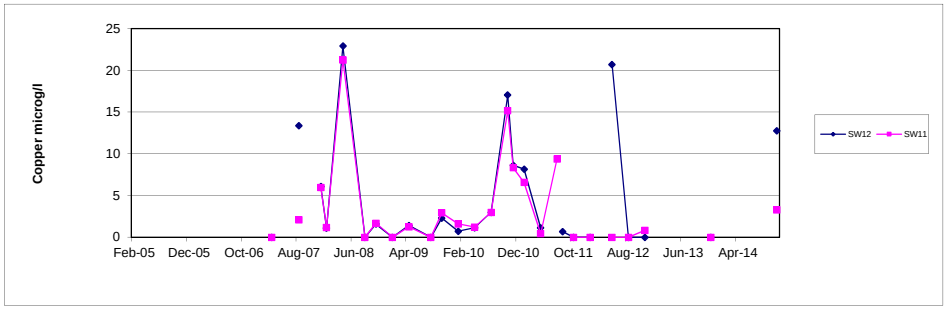

Field pH
14
13
12
11
10
9
8
7
6
Feb-05 Nov-05 Aug-06 May-07 Feb-08 Nov-08 Aug-09 May-10 Feb-11 Nov-11 Aug-12 May-13 Feb-14 Nov-14
SW12 SW11

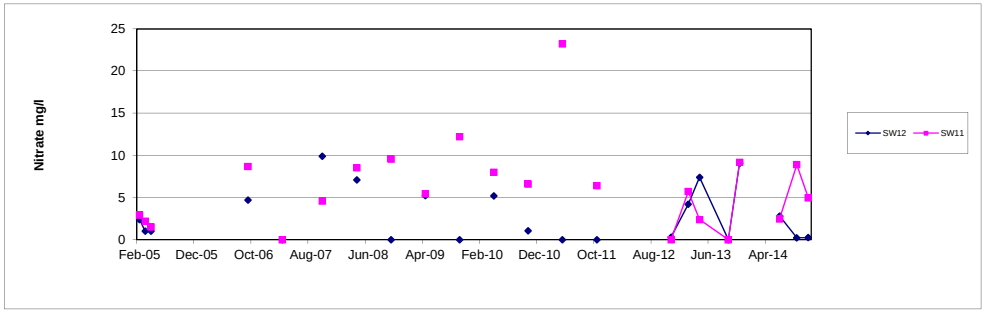

Alkalinity mg/l
600
500
400
300
200
100
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

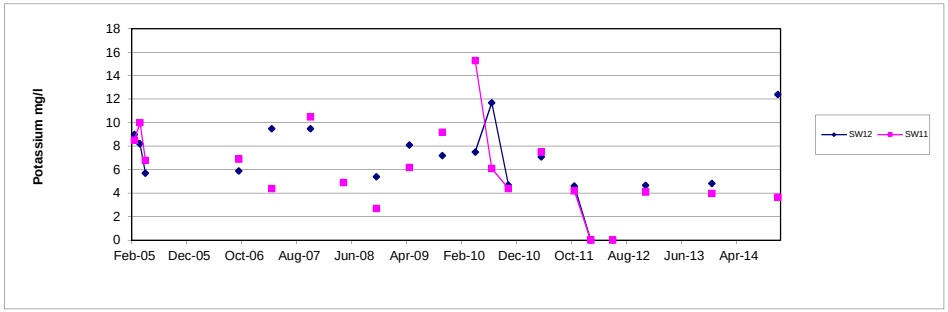

Lab pH
14
13
12
11
10
9
8
7
6
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

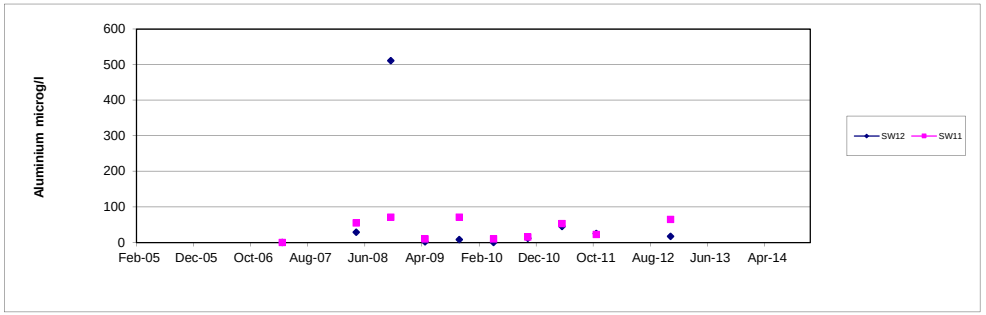

Chloride mg/l
250
200
150
100
50
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

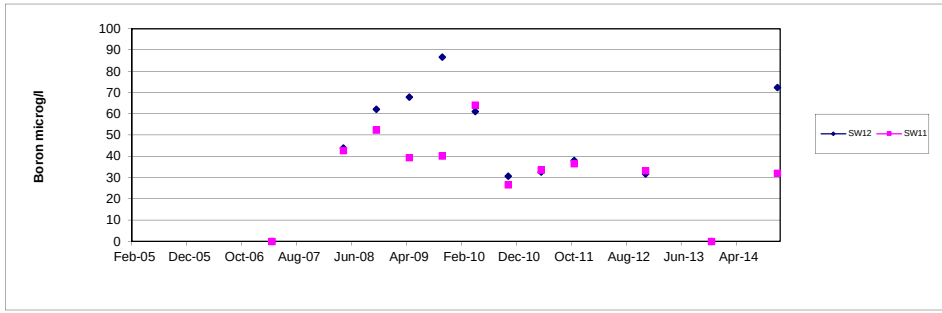

Ammonia mg/l
12
10
8
6
4
2
0
Feb-05 Nov-05 Aug-06 May-07 Feb-08 Nov-08 Aug-09 May-10 Feb-11 Nov-11 Aug-12 May-13 Feb-14 Nov-14
SW12 SW11

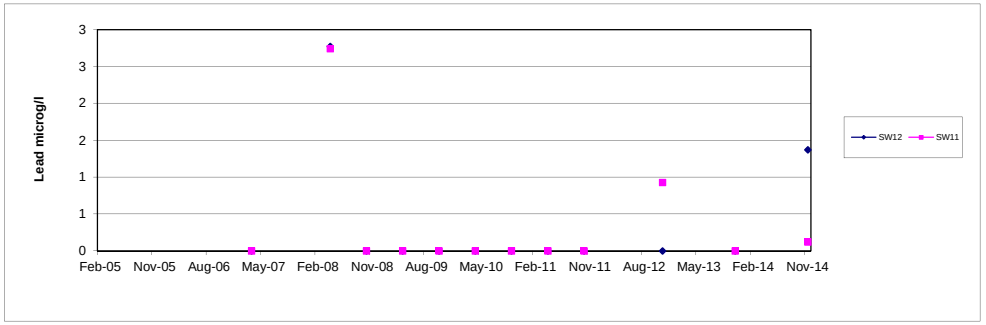

Copper microg/l
25
20
15
10
5
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

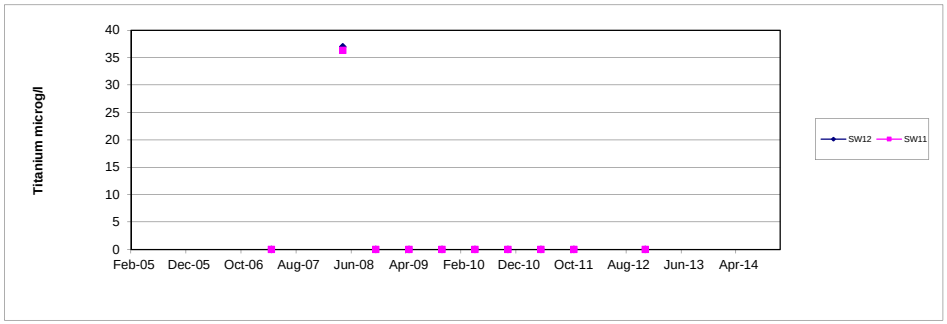

Nitrate mg/l
25
20
15
10
5
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

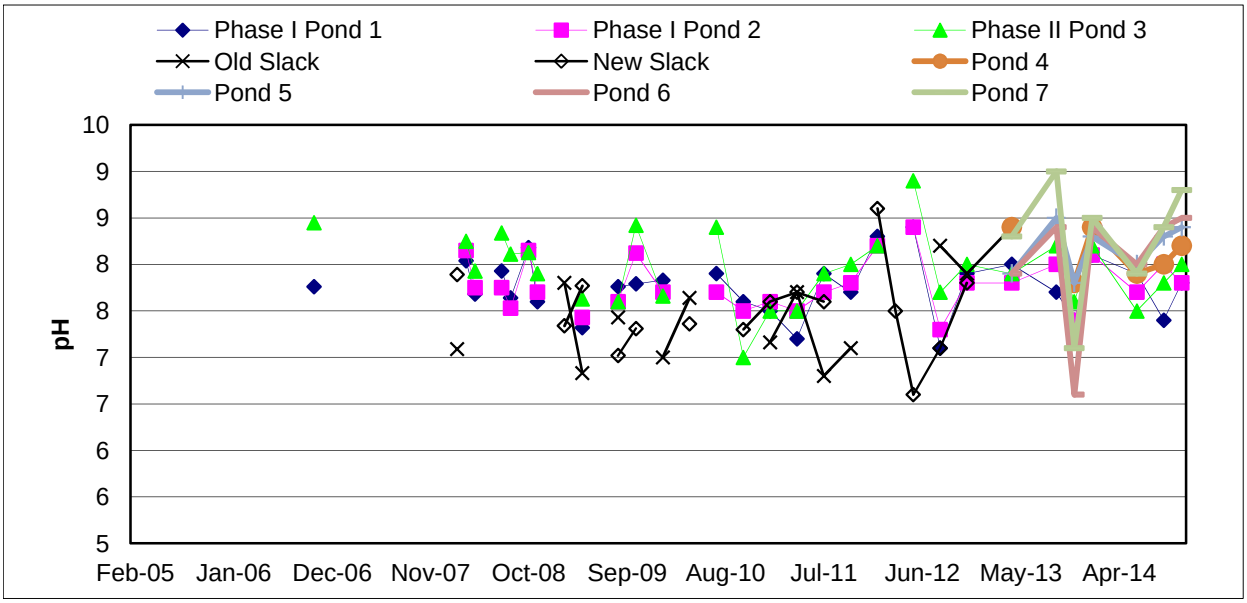

Potassium mg/l
18
16
14
12
10
8
6
4
2
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

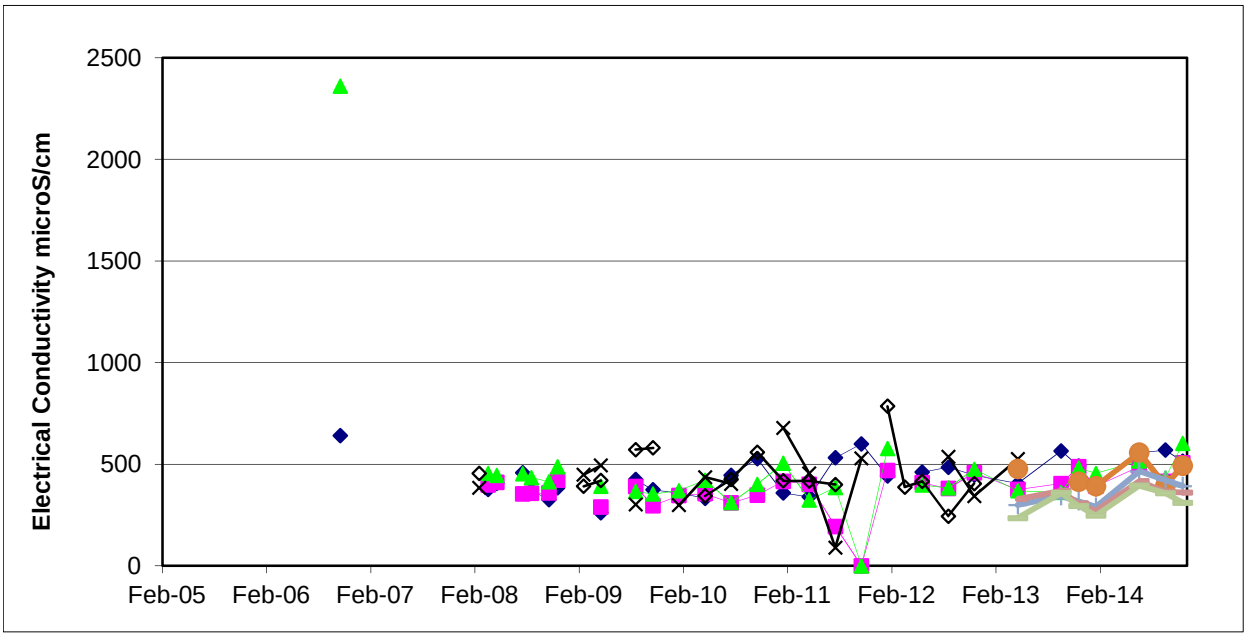

Aluminium microg/l
600
500
400
300
200
100
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

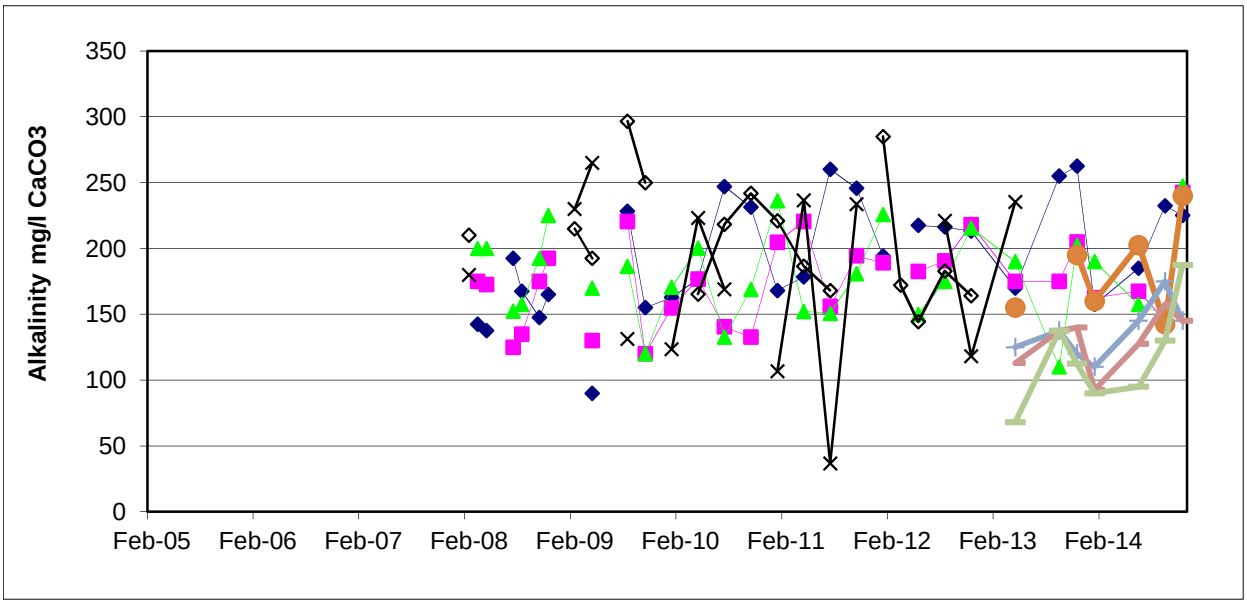

Boron microg/l
100
90
80
70
60
50
40
30
20
10
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

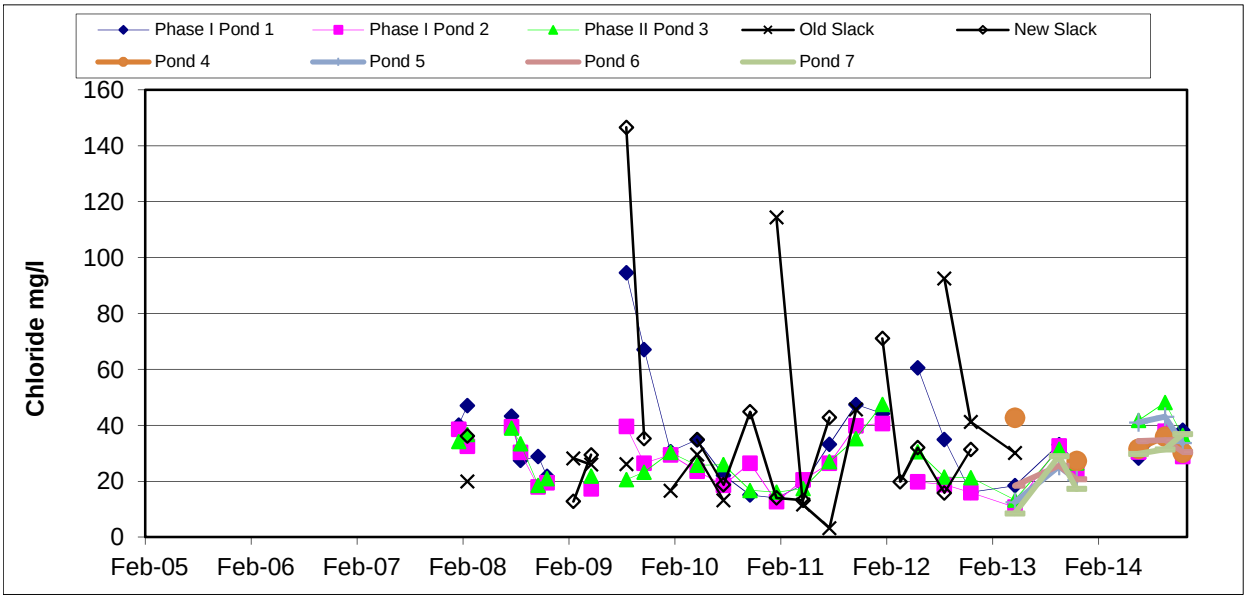

Lead microg/l
3
3
2
2
1
1
0
Feb-05 Nov-05 Aug-06 May-07 Feb-08 Nov-08 Aug-09 May-10 Feb-11 Nov-11 Aug-12 May-13 Feb-14 Nov-14
SW12 SW11

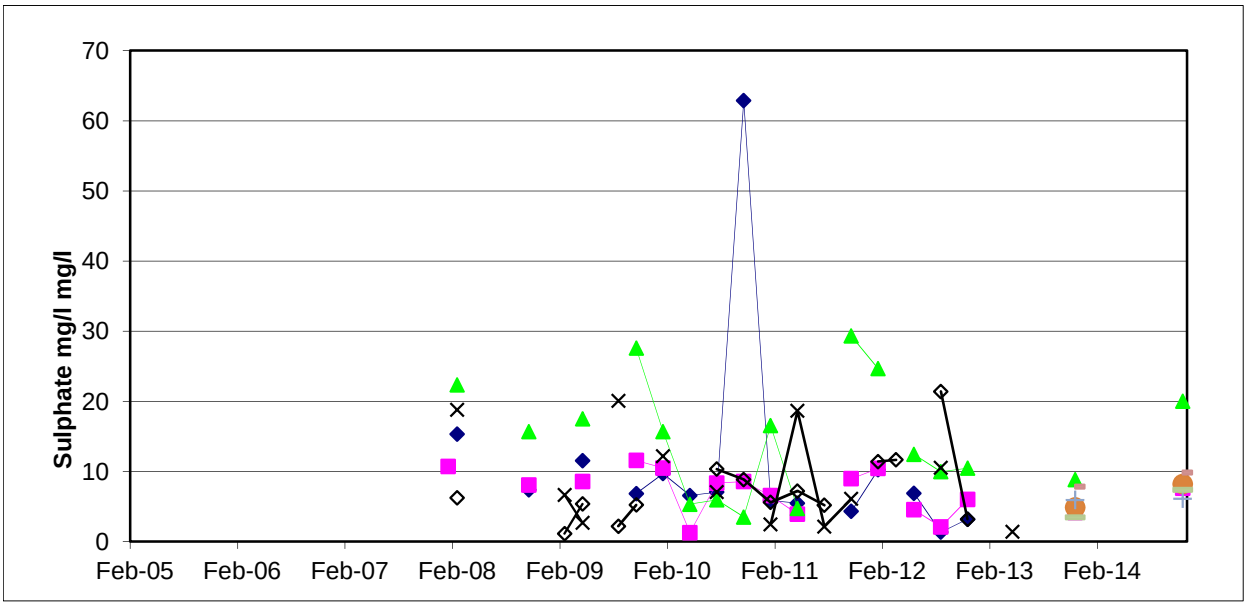

Titanium microg/l
40
35
30
25
20
15
10
5
0
Feb-05 Dec-05 Oct-06 Aug-07 Jun-08 Apr-09 Feb-10 Dec-10 Oct-11 Aug-12 Jun-13 Apr-14
SW12 SW11

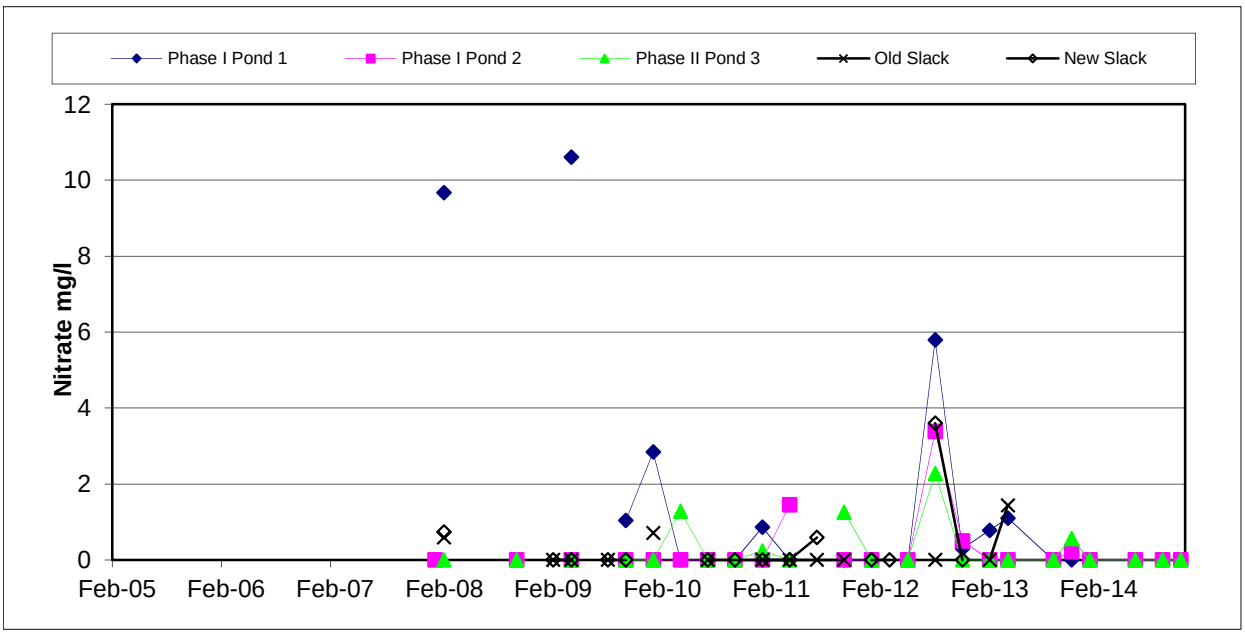

Phase I Pond 1
Phase I Pond 2
Phase II Pond 3
Old Slack
New Slack
Pond 4
Pond 5
Pond 6
Pond 7
pH
10
9
9
8
8
7
7
6
6
5
Feb-05
Jan-06
Dec-06
Nov-07
Oct-08
Sep-09
Aug-10
Jul-11
Jun-12
May-13
Apr-14

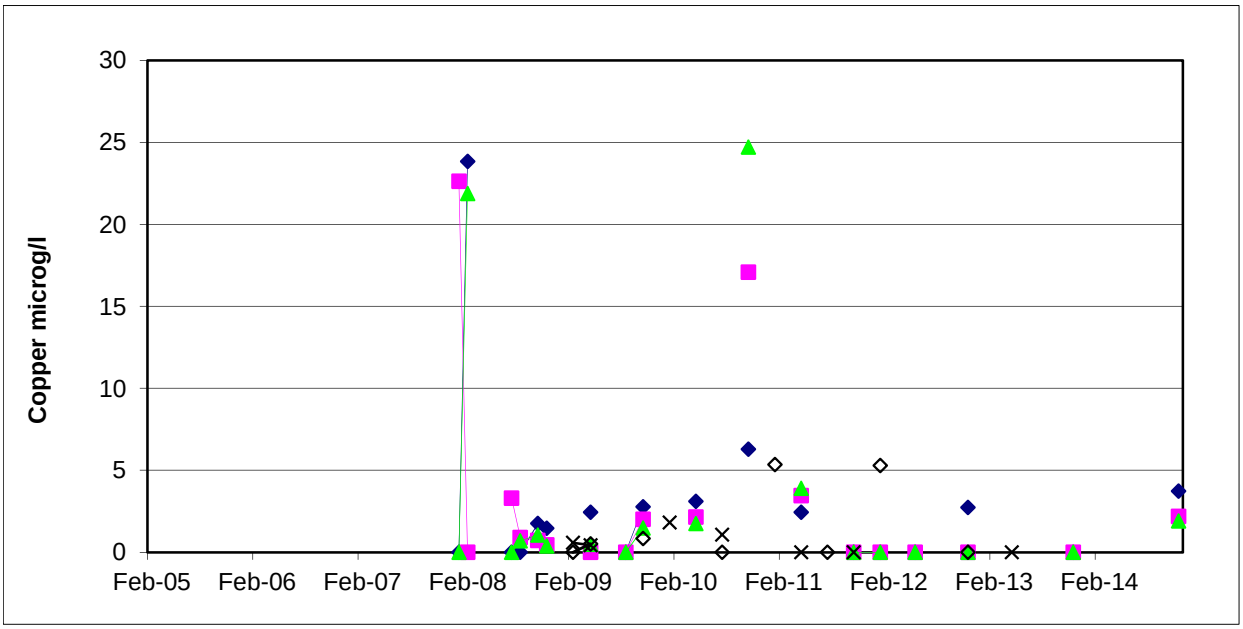

Electrical Conductivity microS/cm
2500
2000
1500
1000
500
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

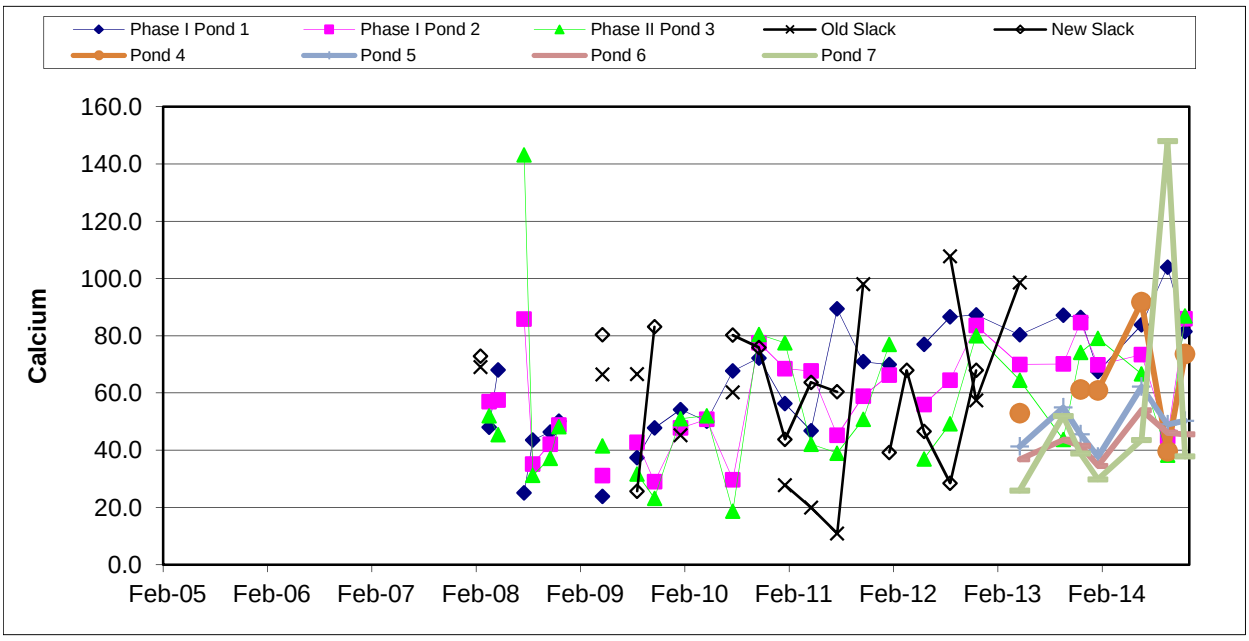

Alkalinity mg/l CaCO3
350
300
250
200
150
100
50
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Phase I Pond 1
Phase I Pond 2
Phase II Pond 3
Old Slack
New Slack
Pond 4
Pond 5
Pond 6
Pond 7
Chloride mg/l
0
20
40
60
80
100
120
140
160
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Sulphate mg/l mg/l
0
10
20
30
40
50
60
70
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Phase I Pond 1
Phase I Pond 2
Phase II Pond 3
Old Slack
New Slack
Nitrate mg/l
0
2
4
6
8
10
12
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Copper microg/l
30
25
20
15
10
5
0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14


Phase I Pond 1
Phase I Pond 2
Phase II Pond 3
Old Slack
New Slack
Pond 4
Pond 5
Pond 6
Pond 7
Calcium
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Feb-05
Feb-06
Feb-07
Feb-08
Feb-09
Feb-10
Feb-11
Feb-12
Feb-13
Feb-14

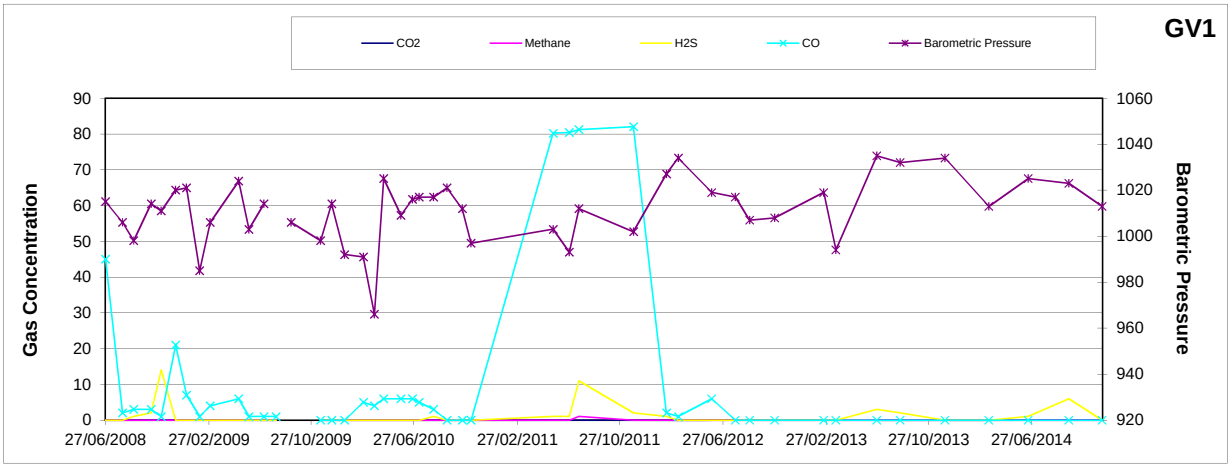
MORFA CLOSED LANDFILL, PORT TALBOT

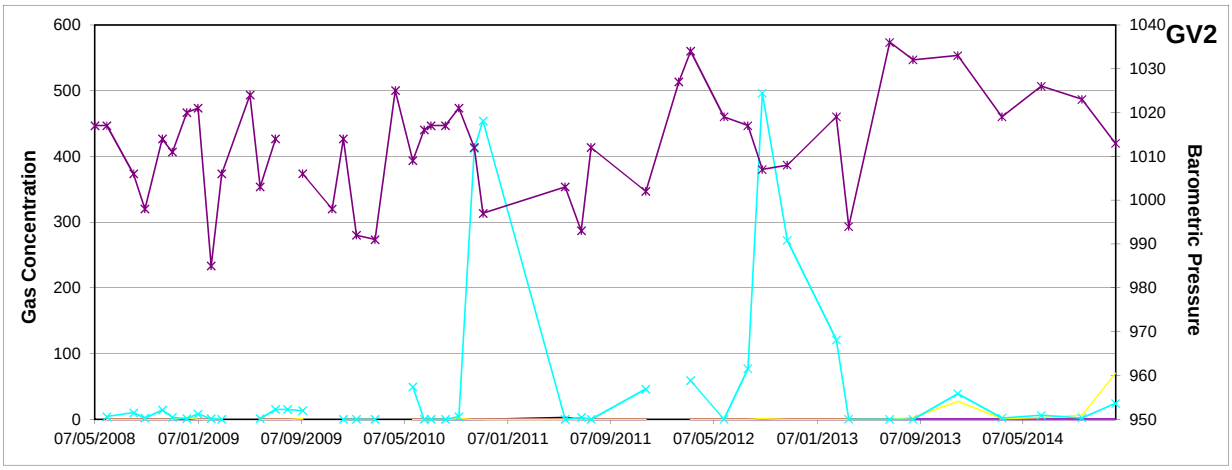
PERMIT EPR/AP3292LT

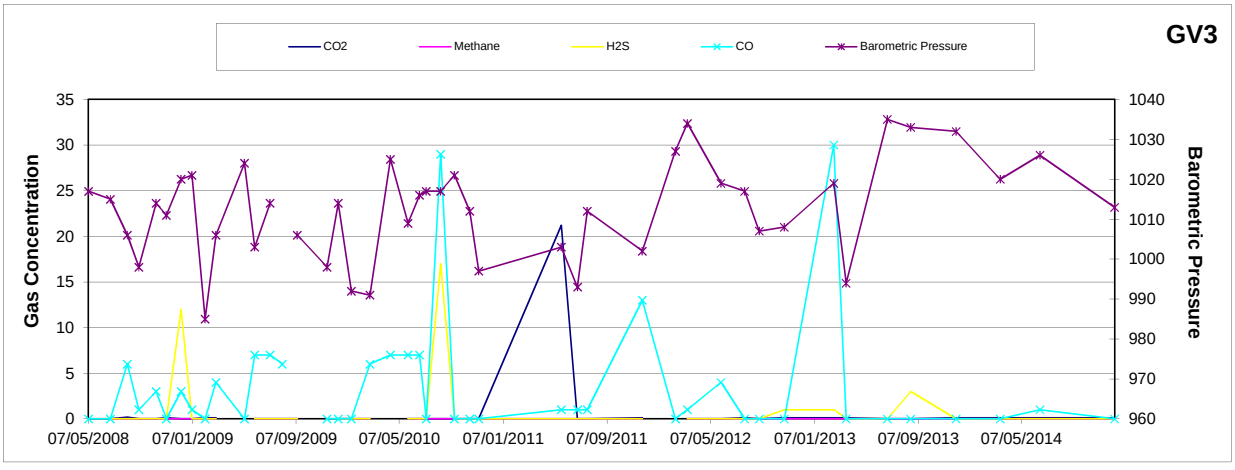
2014 Annual Review of Environmental Monitoring Results

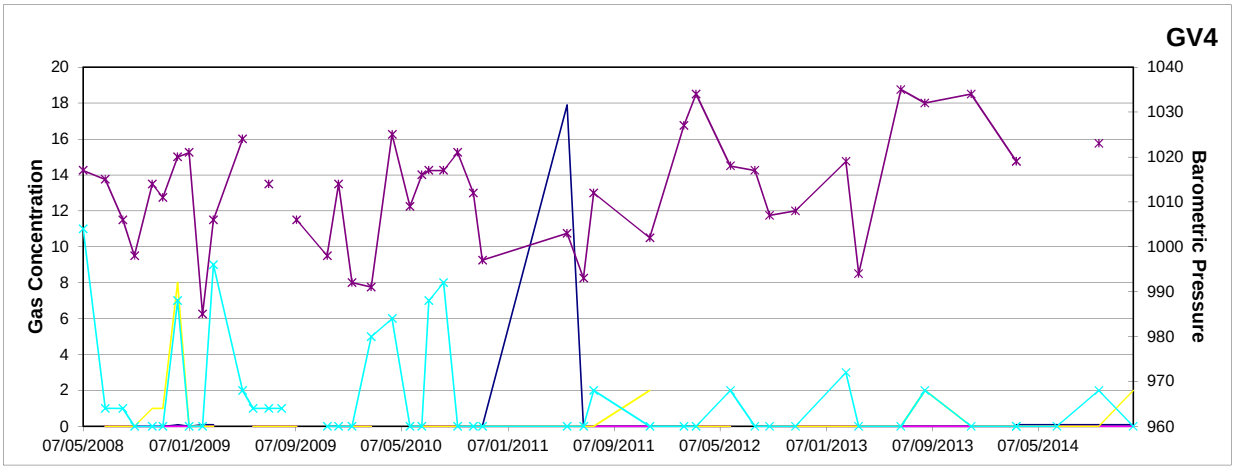
Appendix 5
Temporal variation of landfill gas chemistry

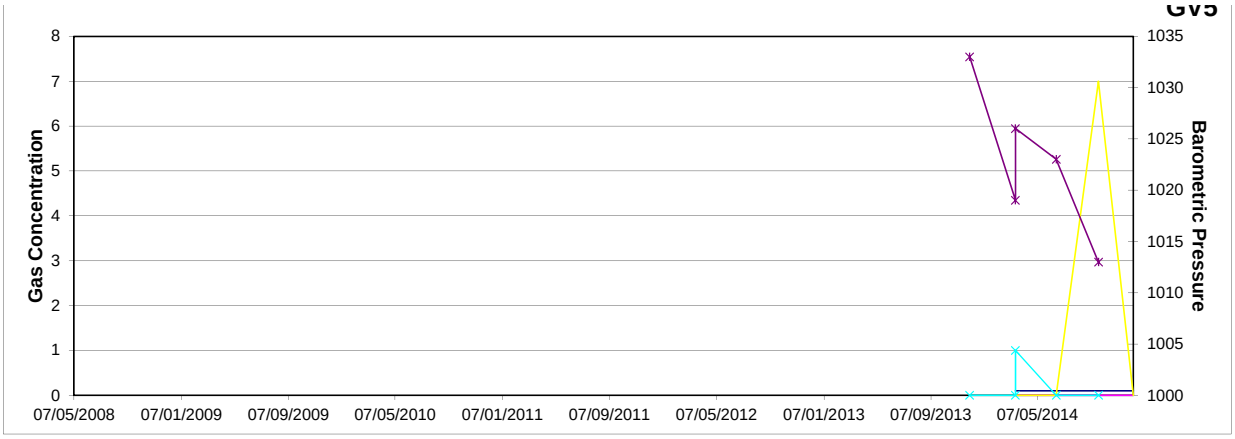
Report Number 1394r1v1d0315

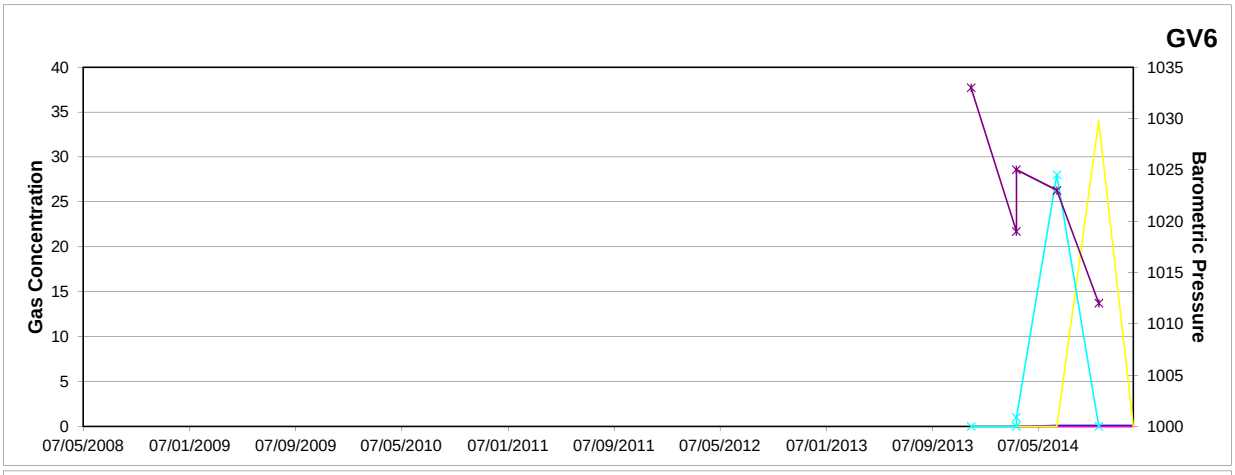

GV1
CO2
Methane
H2S
CO
Barometric Pressure
Gas Concentration
Barometric Pressure
0
10
20
30
40
50
60
70
80
90
920
940
960
980
1000
1020
1040
1060
27/06/2008
27/02/2009
27/10/2009
27/06/2010
27/02/2011
27/10/2011
27/06/2012
27/02/2013
27/10/2013
27/06/2014

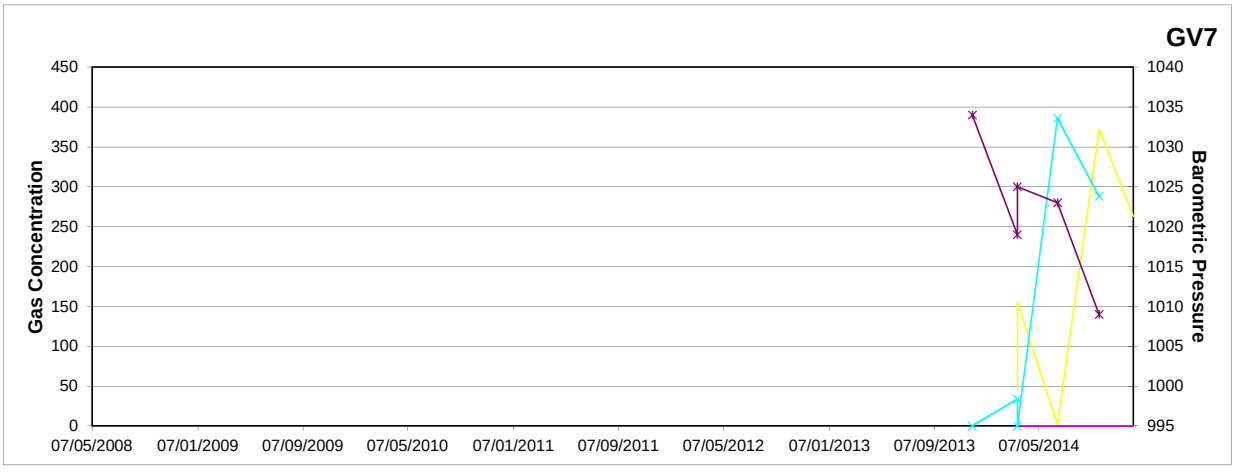

GV2
Gas Concentration
Barometric Pressure
0
100
200
300
400
500
600
950
960
970
980
990
1000
1010
1020
1030
1040
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014

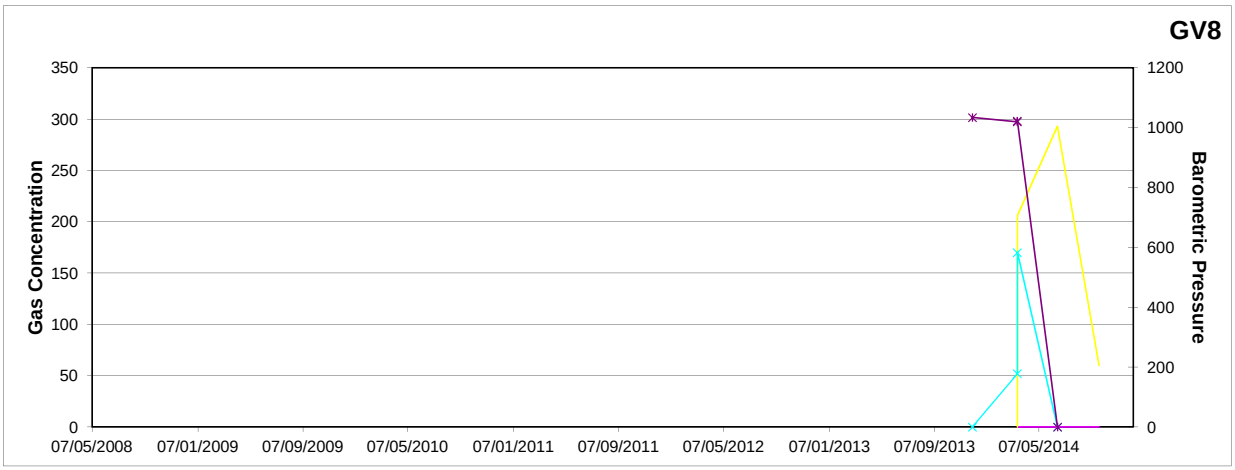

GV3
CO2
Methane
H2S
CO
Barometric Pressure
Gas Concentration
Barometric Pressure
0
5
10
15
20
25
30
35
960
970
980
990
1000
1010
1020
1030
1040
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014


GV4
Gas Concentration
Barometric Pressure
0
2
4
6
8
10
12
14
16
18
20
960
970
980
990
1000
1010
1020
1030
1040
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014


GV5
Gas Concentration
Barometric Pressure
0
1
2
3
4
5
6
7
8
1000
1005
1010
1015
1020
1025
1030
1035
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014


GV6
Gas Concentration
Barometric Pressure
0
5
10
15
20
25
30
35
40
1000
1005
1010
1015
1020
1025
1030
1035
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014


GV7
Gas Concentration
Barometric Pressure
0
50
100
150
200
250
300
350
400
450
995
1000
1005
1010
1015
1020
1025
1030
1035
1040
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014


GV8
Gas Concentration
Barometric Pressure
0
50
100
150
200
250
300
350
0
200
400
600
800
1000
1200
07/05/2008
07/01/2009
07/09/2009
07/05/2010
07/01/2011
07/09/2011
07/05/2012
07/01/2013
07/09/2013
07/05/2014