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2010 ANNUAL MONITORING REPORT

Tansley Quarry
Hanson Brick Ltd.
Burlington, Ontario

Submitted to:
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REPORT

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1.0 INTRODUCTION

1.1 Background and Purpose

Golder Associates Ltd. (Golder) was retained by Hanson Brick Ltd. (Hanson) in 2002 to conduct a pre-application hydrogeological assessment of the proposed Tansley Quarry site and its environments. The assessment involved monitor well drilling and installation, hydraulic conductivity testing, water quality testing, a private water well survey and groundwater level modelling to assess potential impacts on surrounding water wells and water seepage into the quarry. A monitoring program was subsequently established comprising annual water quality sampling and quarterly water level monitoring at on-site and private wells.

On March 21, 2007 Hanson entered into an Agreement with a number of private well owners comprising the Tremaine Neighbourhood Association (TNA). Hanson also entered into an Adaptive Groundwater Management Plan (AMP) Agreement with the Region of Halton on May 8, 2007. Both agreements provide that Hanson shall proactively ensure a continuous supply of potable water to property owners whose wells may be adversely affected by the quarry operation.

In June 2007, Golder conducted further hydrogeological investigations at the Tansley Quarry site and surrounding area in order to fulfill the Pre-development Requirements set out in Section 2.2 of the AMP (Appendix A). The program comprised five basic elements including a baseline survey of private wells within a 1,000 m radius of the quarry, yield testing of selected private wells, installation of additional monitor wells and leveloggers for monitoring groundwater level fluctuation in and around the quarry, repair of existing TNA wells and update of the existing hydrogeological model.

A monitoring report and updated hydrogeological assessment of the Tansley Quarry was submitted in March 2008 in fulfilment of Hanson's requirement under Section 2.3 of the AMP to provide an initial monitoring report within 90 days of issuance of its ARA Licence. The ARA Licence was issued by the Ministry of Natural Resources (MNR) on December 20, 2007 based upon a 9-drawing Site Plan. The AMP and Drawing 7 of the Site Plan also provide for a long term groundwater monitoring program, with monthly reports during Year 1 and annual reports thereafter. Monthly reports were submitted for the period February 2008 through January 2009. The report provided herein presents a summary of the 2010 monitoring as per the terms and conditions of the AMP and Site Plan.

1.2 Site Description and Quarry Development

Tansley Quarry is situated on part of Lots 1 and 2, Concession 1, north of Dundas Street, within the Geographic Township of Nelson, City of Burlington, Region of Halton. It is bounded to the north by No. 1 Side Road, to the east by Tremaine Road, to the south by Highway 407 and to the west by the CNR railway line (see Figure 1).

Development at the Tansley Quarry site began on September 10, 2007 under a Burlington Municipal Site Alteration Permit. Excavation of overburden commenced on September 17, 2007 within the Sinking Cut stage shown on Figure 1. Approximately 436,000 m^3 of overburden was removed from the sinking cut between September 17 and December 20, 2007. Mining of shale began on November 27, 2007 once there was enough shale surface exposed to permit extraction.

Hanson's contractor began dewatering the excavation pit around the second week of October 2007. Pumping was frequent until mid-November 2007 and then tapered off by the end of the month. Hanson began dewatering of the site during the first week of December 2007 with discharge from the quarry sump being diverted towards the woodlot located approximately 150 m north of the excavation. Hanson made efforts to keep the discharged water on-site with rock check dams, straw bales and silt fencing being installed around all culverts, inlets and outlets to ensure filtration of any runoff before it left the site. Pumping times and volumes increased during December 2007 and early 2008 because of increased precipitation however pumping was sporadic due to frequent breakdown of the pumps and their inability to move water up a high vertical lift of approximately 14 m to 20 m.

Pumping from the quarry sump was carried out on a semi-regular basis throughout 2010. Pumping occurred for an average of 6 hours per day and daily pumping volumes averaged 420 m^3.

The excavation was surveyed by TLS Inc. on March 3, 2009. Although ice in the bottom of the excavation prevented obtaining an elevation of the quarry floor and sump floor, the elevation of the bottom of the quarry near the edge of the ice was surveyed at 149.02 metres above sea level (masl). Based on this ground elevation and estimates of the sump depth and ice thickness provided by Hanson, it is estimated that the quarry floor is at an elevation of approximately 148 masl and the base of the sump at an elevation of approximately 146 masl. Hanson indicated that by the end of 2010 the sump was approximately 30 m long by 10 m wide by 1 m deep. The excavation covered an area of approximately 3.2 ha and the floor of the excavation had been lowered by approximately 4 m to an elevation of approximately 144 masl by the end of 2010, with the base of the sinking cut approximately 2 m lower at an elevation of 142 masl. A total of 90,932 metric tonnes of shale was extracted in 2010.

Prior to June 2009, water pumped from the quarry sump was discharged to the woodlot northeast of the sinking cut. However, the sump discharge is currently directed to a decant pond located adjacent to the sinking cut. Water in the decant pond is allowed to settle for at least 24 hours prior to being discharged to the watercourse east of the pond under conditions as outlined in Certificate of Approval, Industrial Sewage Works No. 4408-7AUL75 (Appendix A) issued on February 4, 2008.

1.3 Precipitation

Figure 2 shows the monthly precipitation for the Millgrove Station and Hamilton Airport from 2002 to 2010. The Millgrove Station, located at an elevation of 255.1 masl, was discontinued in April 2006, and hence data from Hamilton Airport, which is located within a 25 km radius of the site at a similar elevation of 237.7 masl have been utilized to date.

Figure 3 shows the water budget (precipitation and surplus) for the Hamilton Airport from 2002 to 2010. The water budget assumes a 150 mm holding capacity for fine to sandy loam that supports pasture and shrubs, similar to pre-development site conditions. The surplus is the water that remains in the soil after evapotranspiration. On an average annual basis, the surplus indicates water available for infiltration and runoff. This available water can potentially affect groundwater levels. The water budget shows that the periods May to December 2007 and May to December 2009 were the longest dry periods on record (i.e., no available water for infiltration and runoff). In comparison, 2008 and 2010 were relatively wet years, with water available for infiltration and runoff during eight out of 12 months of the year.

2.0 GROUNDWATER LEVEL MONITORING

During 2010, groundwater levels were monitored using a network of on and off-site monitoring wells and private wells (Figure 1). The monitoring well network comprises the on-site MW-Series well nests, off-site TW-Series wells and a number of private wells.

The on-site MW-Series monitoring well network comprises a total of 11 well nests. Each well nest consists of a shallow well installed in the overburden (O) and a well installed in the deep shale (D). In addition, well nests MW-01, MW-02, MW-04, MW-05, MW-08 and MW-10 have an intermediate well installed in the upper shale (I) and well nests MW-05, MW-06, MW-09 and MW-11 have a well straddling the overburden/shale contact (S). The above mentioned nomenclature used for the overburden and straddle wells differs from that used in reports issued prior to 2008, and was adapted to avoid confusion. Logs showing well installation details are presented in Appendix B.

Static water level measurements have been collected at monitor wells MW-01 to MW-08 from September 2002 to present. Loggers have been installed in well MW-05I and well MW-03D since October 2005 and June 2005 respectively. Water level measurements at well nests MW-09, MW-10, MW-11, and wells MW-05S and MW-06S have been collected since August 2007. Water levels in the MW-Series wells were collected quarterly with the exception of the year 2008. Water levels were collected monthly during 2008 as required by Section 4.1 of the AMP. Water levels in well nests MW-04, MW-05 and MW-11 were collected monthly through 2010 on Hanson's initiative in order to more closely monitor groundwater levels in the vicinity of the Hendervale private wells. Loggers were installed in all the shallow wells in well nests MW-01 to MW-08 in September 2007 with the exception of well MW-01 which was blocked.

The off-site TW-Series wells (TW-1, TW-2 and TW-3) were drilled in August 2007 as part of a Class Environmental Assessment for a Private Communal Water System (PCWS). The three test wells were located in the vicinity of the Tansley Quarry to determine if groundwater could be a viable source of water for the PCWS. These wells have also been included as part of the monitoring network to provide additional information on surrounding area groundwater elevations. Well logs are presented in Appendix B.

Water levels have been monitored, where available, from a network of 11 private wells since 2005 to present. These private wells comprise eight TNA wells (wells owned by members of the Tremaine Neighbourhood Association namely Featherstone, Finucci, Wiggins and the five Hendervale wells) and three wells identified under the 2007 Baseline Survey (Bekkers, Simms and Wettlaufer). Private well names reflect either the names of the property owners or the name of the property. All private wells were installed with data loggers suspended from direct read cables. Loggers have been installed in the Featherstone, Finucci and Hendervale Barn wells since June 2005. Loggers have been installed in the Hendervale ABC Barn, Hendervale XYZ Barn and Hendervale Cottage wells since February 2006 and in the Hendervale House well since 2007. Loggers were installed in the Bekkers, Simms, Wiggins and Wettlaufer wells in early 2008. The logger in the Wettlauffer well was subsequently removed by the well owners in June 2008.

Water level elevations based on manual water level measurements are presented in Table 1. Water level elevations based on manual measurements and logger data are presented on hydrographs in Appendix C. Logger data shows a similar trend to manual static water level measurements.

2.1 Water Levels in MW-Series Wells

2.1.1 Well Nest MW-01

Well nest MW-01 is located at the northeastern corner of the site along Tremaine Road (see Figure 1) and is approximately 675 m north of the quarry face. This nest is comprised of an overburden, intermediate shale and deep shale well. The 2010 water levels in the overburden well varied between 164.33 masl and 164.49 masl (Figure C.1). Groundwater levels in the intermediate well varied between 164.31 masl and 164.50 masl and groundwater levels in the deep bedrock well ranged from 159.16 masl to 159.30 masl. The 2010 groundwater levels in the deep well were similar to the groundwater levels observed in 2009. The groundwater levels all occur in the overburden and are indicative of a downward gradient of groundwater flow. Although the 2010 groundwater levels were within the historical range for well nest MW-01, the groundwater levels in the deep shale well remained approximately 0.5 m below pre-2007 levels. Groundwater levels in all wells show a similar seasonal trend, however the groundwater levels in the intermediate well show consistently elevated water levels that may be impacted by infiltration of water from the nearby drainage ditch.

2.1.2 Well Nest MW-02

Well nest MW-02 is located at the north end of the site and is approximately 675 m north of the quarry face. This nest is comprised of an overburden, intermediate shale and deep shale well. During 2010, water levels in the overburden well ranged between 166.12 masl and 166.31 masl. Groundwater levels in the intermediate shale well varied between 160.91 masl and 161.12 masl while groundwater levels in the deep shale well varied between 152.62 masl and 153.03 masl (Figure C.2). Groundwater levels in the MW-02 well nest occur in the overburden and upper shale. These groundwater levels are indicative of a downward gradient of groundwater flow. Groundwater levels show a seasonal trend, with water level fluctuations consistent with historical observations.

2.1.3 Well Nest MW-03

The MW-03 well nest is located along the northwest edge of the quarry adjacent to No. 1 Sideroad and is approximately 675 m northwest of the quarry face. This nest is comprised of an overburden and deep shale well. In 2010, groundwater levels in the overburden well varied between 163.88 masl and 164.01 masl, and water levels in the deep well were relatively constant, ranging between 160.19 masl and 160.37 masl (Figure C.3). These groundwater levels all occur in the overburden and are indicative of a slight downward gradient of groundwater flow. Groundwater levels in the overburden well were slightly higher than historical water levels measured at the well since 2002. Although both the overburden and deep shale well showed a decline in groundwater levels in 2007, the groundwater levels in the overburden well has rebounded to pre-2007 levels whereas the groundwater levels in the deep shale well remain below pre-2007 levels.

2.1.4 Well Nest MW-04

Well nest MW-04 is located on the western edge of the quarry site adjacent to the CNR railway line and is approximately 300 m from the quarry face. 2010 groundwater levels varied between 164.64 masl and

165.81 masl in the overburden well. Groundwater levels in the intermediate well varied between 156.98 masl and 157.41 masl whereas groundwater levels in the deep shale varied between 123.88 and 127.01 masl (Figure C.4). Prior to initiation of the sinking cut, groundwater levels in all wells occurred in the overburden and upper shale. Since initiation of the sinking cut in September 2007, groundwater levels in the intermediate and deep wells have declined and now occur in the shale bedrock. The water levels in the intermediate well now occur near the top of the bedrock surface, approximately 4 to 5 m below historical levels (Figure C.4). The groundwater levels in the deep well have historically been similar to that in the intermediate well, however they have been affected by pumping during the annual groundwater quality sampling events. The groundwater levels have not recovered to the levels observed prior to the 2008 sampling event.

Groundwater levels at MW-04 are indicative of a downward gradient of groundwater flow. Groundwater level recovery in 2010 appears to be due to surplus water (water available for runoff and infiltration) from January through July and October through December 2010.

2.1.5 Well Nest MW-05

Well nest MW-05 is located at the southwestern end of the quarry site and is approximately 50 m southwest of the quarry face. This well nest is comprised of overburden, straddle, intermediate and deep wells. Groundwater levels in the overburden well ranged between 159.62 masl and 160.72 masl. Groundwater levels in the straddle well ranged between 157.81 masl and 158.64 masl. Groundwater levels in the intermediate well ranged between 147.36 masl and 147.85 masl.

Groundwater levels in the overburden and straddle wells showed a seasonal fluctuation and were within the historical range. These groundwater levels were within the overburden/friable shale (Figure C.5).

In 2010, the groundwater levels in the intermediate well were approximately 12 m lower than historical levels. Although groundwater levels in the intermediate well have historically been in the overburden/friable shale, since 2008 these groundwater levels have occurred within the upper shale bedrock. In mid-2009 the intermediate well groundwater levels declined by approximately 3 m to 148 masl and continued to gradually decline through 2010 to approximately 147 masl. Similar groundwater level declines were also observed in the shallow and straddle wells in mid-2009. The mid-2009 groundwater level decline was likely due to the discontinuation of sump water discharge to the wooded area near MW-05. Based on the proximity of MW-05 to the quarry pit and the current pit floor elevation of approximately 144 masl it would appear that the water level in the intermediate well is being influenced by the dewatering activities at the pit.

During 2010, the groundwater levels in the deep well showed an increasing trend following the approximately 8 m drop in levels following the December 2009 sampling event. Groundwater level recovery in well MW-05D is slow as evidenced by the low hydraulic conductivity of the deep shale bedrock.

Groundwater levels are indicative of downward gradients of groundwater flow at this location.

2.1.6 Well Nest MW-06

Well nest MW-06 is located on the eastern edge of the quarry site and 30 m northeast of the quarry face. In 2010, groundwater levels in the overburden well ranged between 159.36 masl and 159.87 masl. Groundwater levels in the straddle well were similar to the overburden groundwater levels, ranging between 159.17 masl and 159.87 masl. Groundwater levels in the deep well dropped by approximately 20 m following the groundwater sampling event in December 2009. Through 2010 the deep groundwater level rose from 138.83 masl to 139.30 masl.

In general, the 2010 groundwater levels in well nest MW-06 were below historical levels. Overburden groundwater levels were similar to those observed in 2009. Groundwater levels in the straddle well were also similar to the 2009 levels and the levels in the shallow well. The 2010 groundwater levels continued to be lower than the water levels observed before August 2007 prior to initiation of the sinking cut. The decline in water levels can be attributed to the proximity of the well to the excavation.

Groundwater levels in the deep well show the effects of purging during the annual sampling events, however in 2010 groundwater levels in the deep well slowly began to recover from a low of 138.83 masl observed in January 2010.

Groundwater levels observed at MW-06 are indicative of downward gradients of groundwater flow.

2.1.7 Well Nest MW-07

The MW-07 well nest is located near the centre of the property and 400 m north of the quarry face. This well nest is comprised of an overburden and deep well. The 2010 groundwater levels in the overburden well varied between 164.03 and 164.56 masl (Figure C.7). Groundwater levels in the deep shale well ranged from 151.96 masl to 152.06 masl. The groundwater levels in the overburden well were confined to the overburden and deep bedrock groundwater levels were all within the upper shale. Groundwater levels in the overburden were within the range of historical levels and showed a slight seasonal fluctuation. Groundwater levels in the deep bedrock well were similar to 2009 levels and within the range of historical levels.

Groundwater levels observed at MW-07 are indicative of downward gradients of groundwater flow.

2.1.8 Well Nest MW-08

Well nest MW-08 is located at the centre of the quarry site and 300 m north of the quarry face. The well nest is comprised of an overburden, intermediate and deep well. Groundwater levels in the overburden well ranged between 161.15 masl and 162.06 masl. Groundwater levels in the intermediate well ranged between 159.79 masl and 160.00 masl while groundwater levels in the deep well fluctuated between 161.10 masl and 162.06 masl (Figure C.8). All groundwater levels occur in the overburden and friable shale. The 2010 intermediate groundwater levels were similar to those observed in 2009 but still slightly lower than those observed historically. The overburden and deep groundwater levels were similar through 2010 and showed an increasing trend with levels higher than those observed in 2009 but within the range of historical levels. 2010 groundwater levels at MW-08 are indicative of a downward vertical gradient of groundwater flow.

2.1.9 Well Nest MW-09

Well nest MW-09 is located approximately 80 m northwest of the quarry face. 2010 groundwater levels varied between 161.21 masl and 163.35 masl in the overburden well (Figure C.9). Groundwater levels in the straddle well varied between 154.92 masl and 155.14 masl. Groundwater levels in the deep well varied between 126.24 masl and 126.67 masl. Groundwater levels in the overburden and straddle wells all occur in the overburden/friable shale while groundwater levels in the deep shale well were restricted to the deep shale.

Groundwater levels in the overburden well showed a similar seasonal pattern to that observed in 2009. Groundwater levels in the straddle well were consistent throughout the year. Groundwater levels in the straddle well appear to be affected by the dewatering of the quarry as they remain over 5 metres below those observed prior to the beginning of extraction. The deep well groundwater levels gradually increased through 2010 after being lowered as a result of the December 2009 sampling event. Overall, the 2010 groundwater levels are within the range historically observed for the MW-09 well.

Groundwater levels within the MW-09 well nest are indicative of a downward gradient of groundwater flow.

2.1.10 Well Nest MW-10

Well nest MW-10 is located approximately 150 m northwest of the quarry face. In 2010, groundwater levels varied between 163.02 masl and 164.70 masl in the overburden well (Figure C.10). Groundwater levels in the intermediate well ranged between 159.06 masl and 159.73 masl while groundwater levels in the deep shale well ranged between 124.93 masl and 126.30 masl. Groundwater levels in the overburden and intermediate wells all occurred in the overburden/friable shale while groundwater levels in the deep shale well were restricted to the deep shale layers.

The overburden and intermediate wells both showed a similar pattern of groundwater level fluctuations in 2010. Water levels rose during the first part of the year and then began to decline after April 2010. The overburden and intermediate groundwater levels were, on average, slightly lower than levels in 2009. The groundwater levels in the deep well steadily increased through 2010, slowly recovering following the December 2009 sampling event which lowered the deep water levels by almost 10 m.

Groundwater levels within the MW-10 well nest are indicative of a downward gradient of groundwater flow.

2.1.11 Well Nest MW-11

Well nest MW-11 is located approximately 300 m northeast of the quarry face on property adjacent to the quarry and is comprised of an overburden, straddle and deep well. 2010 groundwater levels varied between 163.79 masl and 165.47 masl in the overburden well (Figure C.11). Groundwater levels in the straddle well ranged between 164.12 masl and 165.38. Groundwater levels in the deep well ranged between 129.45 masl and 137.96 masl. Groundwater levels in the overburden and straddle wells are similar and display similar trends in water level fluctuation. Groundwater levels in the overburden and straddle wells occur in the overburden/friable shale whereas groundwater levels in the deep shale well were restricted to the deep shale layers.

The overburden and straddle wells showed a seasonal fluctuation in groundwater levels and, overall, the levels remained similar to historical levels. Groundwater levels in the deep well continued to increase following the October 2008 sampling event, however the deep groundwater levels declined by approximately 8 m following the sampling event in October 2010.

In general, the 2010 groundwater levels were similar to groundwater levels observed historically and are indicative of a downward gradient of groundwater flow.

2.2 Water Levels in TW-Series Wells

In August 2007, three test wells (TW-1, TW-2 and TW-3) were drilled in the vicinity of the Tansley Quarry to determine if groundwater could be used as a viable source of water for a Private Communal Water System (PCWS). These wells were included as part of the monitoring network to provide additional information on surrounding area groundwater elevations.

Well TW-1 was completed at a depth of 18.29 mbgs. The well was cased through overburden to the top of bedrock (15.98 mbgs), and the lower 3 m left as open hole in the weathered shale. During 2010, water levels in TW-1 ranged between 164.38 masl and 165.19 masl and show a slight seasonal trend (Figure C.12).

Well TW-2 was cased through overburden to a depth of 18.3 mbgs and finished as open hole in the overburden to a depth of 32 mbgs. The well, which has been dry since its construction in August 2007, remained dry in 2010 (Figure C.13).

Well TW-3 was cased through overburden to the top of bedrock (19.82 mbgs) and completed as open hole in shale to a depth of 23.62 mbgs. 2010 groundwater levels ranged between 155.10 masl and 156.83 masl (Figure C.14).

2.3 Water Levels in Private Wells

Groundwater level hydrographs for the 11 private wells monitored for water levels are presented on Figures C.15 to C.25. The groundwater levels and magnitude of groundwater level fluctuation was within the range of historical observations. Groundwater levels were typically higher in the first part of 2010 following spring melt, and lower for the second half of the year.

Water levels in the Featherstone well showed seasonal fluctuations (Figure C.15). In December 2008, Hanson installed a cistern at the Featherstone residence as the primary water supply. The well was therefore no longer used to supply the residence. As a result, water levels in the Featherstone well rose to approximately 166 masl (Figure C.15). Water level readings have been recorded less frequently in the Featherstone well since December 10, 2008 as the logger was set to event based recording and records only after a 0.5% change in water levels. The discontinuation of well use meant that logger recording was no longer triggered by pumping induced drawdown.

The logger in the Finucci well (Figure C.16) malfunctioned in 2009 and was subsequently replaced in March 2010. Recorded groundwater levels in 2010 were similar to those observed in 2008 and 2009, remaining higher than the levels in 2007 but lower than the levels observed prior to quarry operation.

The groundwater level hydrograph for the Hendervale Main Barn well (Figure C.17) showed levels and fluctuations similar to those observed historically. There appears to have been a greater demand on the well since October 2009 however the well recovers to the same static level when not in use. The Hendervale Cottage well (Figure C.18) and Hendervale House well (Figure C.21) continued to show similar water level trends. Groundwater levels in the Hendervale ABC Barn well (Figure C.19) and Hendervale XYZ Barn well (Figure C.20) reflect usage of one or both wells in May and August 2010 that resulted in a drawdown of approximately 4 to 5 m. It should be noted that the wells are relatively close and installed at similar depth therefore pumping of one well is usually reflected in the water levels of the other.

The groundwater levels at the Simms well (Figure C.22) rapidly increased by approximately 14 m through February and March 2010 and then steadily declined through the remainder of the year. Groundwater level fluctuations of up to 27 m have been previously observed in the Simms well and they are considered to be a characteristic of the well construction (i.e. the well production may rely primarily on wellbore storage with a depth of 27 m and diameter of 1 m).

The groundwater level in the Wettlaufer well showed little variation from January to June 2008. The logger installed in the Wettlaufer well was removed by the tenants in June 2008 (Figure C.23). The logger has not been re-installed in the Wettlaufer well to date..

Groundwater levels in the Wiggins well ranged between approximately 165 masl and 166 masl in 2010 and remained higher than water levels observed historically while the well was in use (Figure C.24). Hanson installed a cistern in December 2008 and the use of the well as a source of domestic water supply was discontinued in January 2009..

Water levels in the Bekkers well continued to show a pattern indicative of seasonal groundwater fluctuations (Figure C.25). Groundwater levels were within the historical range. The logger in the Bekkers well failed in October 2009 and was subsequently replaced in February 2010.

2.4 Summary of Groundwater Levels

Based on groundwater monitoring at the Tansley Quarry, the following general statements can be made regarding groundwater levels and groundwater flow:

- Figure C.26 shows the static water level for MW-Series monitor wells compared to the monthly precipitation data. Overall, the groundwater levels show a seasonal fluctuation that corresponds to the wet and dry seasons and the quarry dewatering.
- 2010 groundwater levels in the shallow overburden wells ranged between 159.36 masl in well MW-06O and 166.31 masl in well MW-02O.
- Groundwater levels in wells that straddle the overburden/shale interface ranged between 154.92 masl in well MW-09S and 165.38 masl in well MW-11S.
- Groundwater elevations in the intermediate (upper shale) wells ranged between 147.36 masl in well MW-05I to 164.50 masl in well MW-01I.

- The water levels in the deep shale bedrock wells ranged between 123.88 masl in well MW-04D and 162.06 masl in well MW-08D in 2010. In general, water levels in the deep wells remained relatively unchanged or showed a slight increasing (recovery) trend. Water levels in wells MW-04D, MW-05D, MW-06D, MW-09D, MW-10D and MW-11D are considered to be artificially depressed due to the removal of water from the wells during annual sampling events and the slow recovery rates of these wells.
- Groundwater levels in intermediate wells MW04I, MW-05I and straddle wells MW-06S and MW-09S showed the strongest response to dewatering of the excavation. Based on the proximity of these wells to the quarry pit and the current pit floor elevation of approximately 144 masl it would appear that the groundwater levels at these locations are being influenced by the dewatering activities in the pit.
- With the exception of well nest MW-08 located at the centre of the site, 2010 groundwater levels observed at nested monitoring wells are indicative of a downward gradient of groundwater flow with water levels influenced by on-site discharge and precipitation during various parts of the year.
- The range of water level fluctuations observed in the private wells were within the range of historical groundwater level responses.

3.0 RESULTS OF GROUNDWATER QUALITY SAMPLING

Groundwater quality sampling of MW-Series monitoring wells and off-site private wells was conducted between October 19 and 22, 2010. As per previous water quality sampling carried out in November 2002, May 2003, January 2007, October 2008 and November/December 2009, all samples were analysed for a broad suite of general inorganic parameters and metals (including mercury and cyanide) as well as phenol. Groundwater quality results were compared to the Ontario Drinking Water Standards (ODWS) dated June 2006 and for the purposes of discharge to surface water courses, the results were also compared to the Provincial Water Quality Objectives (PWQO) dated July 1994. Water quality results are tabulated in Appendix D and laboratory certificates are included in Appendix E.

3.1 On-site Monitor Wells

Samples were taken from 10 piezometer nests (MW-01 to MW-10) located on the Tansley Quarry site and one piezometer nest (MW-11) located on the Hendervale property in order to provide baseline water quality relative to nearby private wells. Wells MW-01S, MW-02D, MW-04D, MW-05D, MW-06O, MW-06D, MW-09D and MW-10D were not sampled as sufficient water was not available in the wells after purging. Water quality results for the on-site wells are presented in Tables D.1 and D.2 of Appendix D.

Table 2 provides a summary of water quality exceedances of ODWS. In general, the analytical results were below the ODWS criteria with the exception of aluminum, alkalinity, hardness, chloride, sulphate, sulphide, copper, sodium, manganese, iron, turbidity, barium, cadmium, chromium, lead, selenium, arsenic and boron.

- Aluminum exceeded the ODWS Operational Guidelines (OG) of 0.1 mg/L in all samples with concentrations ranging from 0.29 mg/L to 670 mg/L;
- Alkalinity (545 mg/L to 700 mg/L) exceeded the OG in wells MW-02O, MW-07O and MW-08O only; and

- Hardness exceeded the OG of 80-100 mg/L in all samples with concentrations ranging between 300 mg/L to 21,000 mg/L.

It should be noted that the ODWS OG are non health-related criteria that may negatively affect the treatment and distribution of water.

- Chloride, sulphate, sulphide, copper, sodium, manganese, iron and turbidity exceeded the ODWS Aesthetic Objectives (AO). Aesthetic Objectives are non health-related criteria that reflect parameters that may impair the colour, smell or taste of water.
- Barium, cadmium, chromium, lead, and selenium exceeded the Maximum Acceptable Concentration (MAC) in a number of the wells sampled. Parameters that exceed the MAC have known or suspected adverse health effects when present above a certain concentration. The concentration of barium exceeded the MAC of 1 mg/L in four wells installed in the overburden and/or upper shale and one well installed in the deep shale with concentrations ranging from 2.3 mg/L to 9 mg/L. The MAC for cadmium (0.005 mg/L) was exceeded in four wells with concentrations ranging between 0.006 mg/L and 0.18 mg/L. Chromium (0.06 mg/L to 1.4 mg/L) exceeded the MAC of 0.05 mg/L at nine of the 24 wells sampled whereas lead (0.014 mg/L to 0.35 mg/L) exceeded the MAC of 0.01 mg/L at 13 of the 24 wells sampled. Selenium exceeded the MAC of 0.01 mg/L at wells MW-07D (0.045 mg/L) and MW-08D (0.1 mg/L).
- Arsenic exceeded the ODWS Interim Maximum Acceptable Concentration (IMAC) of 0.025 mg/L in nine of the 24 wells sampled, with concentrations ranging between 0.028 mg/L to 0.39 mg/L. Arsenic is a carcinogen and must be removed by treatment where present in drinking water at levels above this concentration.
- Boron concentrations exceeded the ODWS IMAC of 5 mg/L in a number of the intermediate and deep shale wells and one overburden well namely MW-01D, MW-04I, MW-07O, MW-07D, MW-08I and MW-08D. Exceeding concentrations ranged from 5.5 mg/L to 7.1 mg/L. Infants, the elderly and individuals with kidney diseases are the most susceptible to the toxic effects of boron compounds.

A summary of exceedances of PWQO are provided in Table 3. The 2010 analytical results were below the PWQO with the exception of aluminum, arsenic, boron, cadmium, cobalt, copper, iron, lead, molybdenum, nickel, silver, thallium, uranium, vanadium and zinc. It should be noted that with the exception of aluminum which was filtered prior to analysis, all other samples were unfiltered for comparison to PWQO. In all cases, the sample bottles contained visible sediment therefore the results may be biased high due to metals present in the sediment.

Overall, the analytical results indicate that the groundwater is very hard and mineralized with naturally occurring substances, such as sodium, potassium, magnesium, calcium, chloride and sulphate. Groundwater is relatively fresh in the shallow overburden, with salinity increasing with depth as seen in the MW-04 well nest where chloride in the shallow overburden well (depth = 7.6 m) ranges between 4.0 and 12.2 mg/l, the intermediate well (depth = 30 m) ranges between 984 and 1,800 mg/l and the deep well (depth = 44 m) ranges between 9,180 and 34,700 mg/l. High salinity is associated with the mineral composition of the shale, coupled with low hydraulic conductivity of the shale bedrock and limited groundwater recharge and circulation.

3.2 Private Wells

During October 2010, water samples were collected from 9 private wells (Finucci, Sicard, Sugiyami, Hendervale House, Hendervale Main Barn, Hendervale Cottage, Hendervale ABC Barn, Simms and Bekkers). Water quality samples were not obtained from the following wells:

- Featherstone and Wiggins wells as cisterns have been installed at those properties and the wells are no longer in use;
- Hendervale XYZ Barn well as the pump system was shut down for the winter;
- Eno/Myers well (previously called Des Roches) as the residents indicated that the well was not in use in 2010;
- Robinson well which is no longer sampled as it is sometimes filled with municipal water; and
- Stevenson well located on the Hanson property which was not accessible for water quality sampling.

Samples were collected from taps located prior to private water treatment systems. All samples were analysed for a broad suite of general inorganic parameters, metals (including mercury and cyanide) and phenol.

Inorganic water quality results are presented in Tables D.3 to D.16 of Appendix D and Maxxam laboratory certificates provided in Appendix E. Water quality exceedances of ODWS for Aesthetic Objectives, Operational Guidelines, Interim Maximum Acceptable Concentration and Maximum Acceptable Concentration are summarized in Table 4. The data showed that:

- Groundwater is consistently hard, exceeding the ODWS Operational Guideline of 80 – 100 mg/L in almost all cases. The exceedances of the Operational Guideline for hardness have been seen historically. The ODWS Operational Guidelines are non health-related criteria that may negatively effect the treatment and distribution of water. The Hendervale ABC Barn well was sampled for the first time in October 2010 and had a hardness concentration of 57 mg/L which was below the Operational Guidelines.
- Sulphate, chloride, iron, manganese, sodium and turbidity showed exceedances of the ODWS Aesthetic Objectives. These exceedances of the Aesthetic Objectives have also been observed in historical water quality analysis where available. Aesthetic Objectives are non health-related criteria that reflect parameters that may impair the colour, smell or taste of water.
- Although groundwater from only the Sicard, Sugiyami and Bekkers wells exceeded the ODWS Aesthetic Objective of 200 mg/L for sodium, all wells with the exception of the Hendervale Main Barn and Hendervale ABC wells, exceeded the 20 mg/L criterion for notification of the local Medical Officer.
- Boron exceeded the Interim Maximum Acceptable Concentration of 5 mg/L at the Sicard well (6.9 mg/L) and the Sugiyami well (5.3 mg/L). Boron has historically exceeded the ODWS criteria in water samples taken from the Sicard and Sugiyami wells. Elderly persons, infants, and individuals with kidney diseases are most susceptible to the toxic effects of boron.

4.0 QUARRY PUMPING RATES

The 2010 records of sump discharge were provided by Hanson and are presented in Table 5 and summarized on Figure 4. Pumping volumes were calculated based on the water level rise in the decant pond and the known geometry of the pond. Based on these volumes, in virtually all instances of pumping during 2010 the daily discharge exceeds the maximum daily discharge of 50,000 L/day based on the limit above which a Permit to Take Water is required. In 2011, Hanson will apply for a Permit to Take Water for its pumping from the quarry sump.

The total estimated volume of water pumped from the quarry in 2010 was 62,988,100 litres based on the reported daily pumping volumes. Based on past experience with shallow shale quarries in southern Ontario, the groundwater contribution to the total volume of water captured on-site is approximately 10% to 30%, therefore the majority of water pumped from the quarry in 2010 was likely surface water derived from direct catchment precipitation.

A Certificate of Approval, Industrial Sewage Works No. 4408-7AUL75 for the quarry was issued on February 4, 2008. The decant pond was commissioned in June 2009 to allow for treatment (settling) of the pumped water prior to discharge as required by the Certificate of Approval.

5.0 LOGGER INSTALLATION AND WELL REPAIRS

5.1 Logger installation

Loggers were not installed in any additional wells located in and around the Tansley Quarry in 2010. Loggers are currently installed in the following private wells:

Featherstone	Hendervale XYZ Barn
Finucci	Hendervale House
Hendervale Main Barn	Simms
Hendervale Cottage	Wiggins
Hendervale ABC Barn	Bekkers

The loggers are installed by suspension from direct read cables to allow for downloading data without the services of a licensed water well technician to open the wells. The wells were selected to provide an indication of the potential effects of quarrying at various distances (between 0.20 km and 1.0 km) and directions from the quarry boundary as well as at various depths in the overburden and shale (approximately 10 m to 27 m).

It should be noted that the Wettlaufer well was fitted with a logger in January 2008 however in June 2008 the logger and pipe were removed by the residents in order to conduct works on the well. As of the end of 2010, the logger has not been replaced in this well and the well is no longer monitored.

Loggers were not installed in two (Paccione and Proud) of the six wells originally identified under the Baseline Survey of private wells conducted in 2007 due to issues regarding public disclosure of data obtained from the monitoring program. As of the end of 2010, permission was not received from the well owners for logger installation.

Loggers have been installed in all the overburden, straddle and selected intermediate and deep shale wells as outlined below. Note that a logger was not installed in the overburden well in well nest MW-01 as the well has been blocked.

Well		Logger Installed	
		Yes	No
MW-01	Overburden		●
	Intermediate		●
	Deep		●
MW-02	Overburden	●	
	Intermediate		●
	Deep	●	
MW-03	Overburden	●	
	Deep	●	
MW-04	Overburden	●	
	Intermediate		●
	Deep	●	
MW-05	Overburden	●	
	Straddle	●	
	Intermediate	●	
	Deep	●	
MW-06	Overburden	●	
	Straddle	●	
	Deep	●	
MW-07	Overburden	●	
	Deep	●	
MW-08	Overburden	●	
	Intermediate	●	
	Deep		●
MW-09	Overburden	●	
	Straddle	●	
	Deep	●	
MW-10	Overburden	●	
	Intermediate	●	
	Deep	●	
MW-11	Overburden	●	
	Straddle	●	
	Deep	●	

5.2 Well Repairs and Water Supply Systems Modification

The following table provides a list of additional works undertaken by Hanson since 2008 as part of Section 2.2 of the AMP. No additional work well repairs or water supply systems modification was undertaken by Hanson in 2010.

Date	Work Completed
May 2009	A 3,000 imperial gallon (approximately 14 m^3) capacity cistern was installed on the Robinson property to provide potable water for the residence.
December 2008	A cistern was installed at the Featherstone residence. Water from the cistern is used as the primary water supply for the residence. A cistern was also installed at the Wiggins residence, however it is understood that the Wiggins well may continue to be used for filling the swimming pool
August 2008	It was discovered that the logger in the Hendervale ABC well was removed from the well, the direct read cable cut and the riser pipe and pitless adapter broken. Work on the well involved conducting a downhole camera investigation, removal of the broken riser pipe from the well, installation of new riser pipe and pitless adapter, and replacement of logger and direct read cable
June 2008	Hanson's contractor modified the existing cistern installed at the Finucci property by attaching a stainless steel riser to the cistern thereby raising the access port above ground level. This work improved the sanitary issues of having the port at ground level and the cistern accessible to surface runoff.

6.0 RADIUS OF INFLUENCE

The current configuration of monitoring wells (MW-Series and TW-Series wells) and private wells provides coverage to observe the potential effects of quarry dewatering on groundwater levels and quality in the vicinity of the Tansley Quarry. It should be noted that as of June 2009, Hanson discharges sump water to the lined decant pond at ground surface. Data collected subsequent to the commissioning of the decant pond that is unaffected by recharge are required to determine the radius of influence of quarry dewatering therefore the radius of influence of excavation dewatering will be revised after a review of two consecutive years of monitoring data from June 2009 to at least June 2011, and presented in the 2011 annual monitoring report.

A preliminary review of the groundwater levels suggest that the potential influence of quarry dewatering may extend to approximately 300 m from the quarry face. A summary of the individual monitoring well drawdown relative to the pre-excavation period is provided on Figure 5. The following illustrates the effects of quarry dewatering at various distances from the quarry face:

- **Less than 100 m from the quarry face**

  Wells MW-05, MW-06 and MW-09 are located less than 100 m from the quarry face. Well MW-06S located 30 m from the quarry face and installed 4 m into the shale showed a decline in water levels of approximately 3 m. Well MW-05I located 50 m from the quarry face (but closer to the quarry sump) and installed 15 m into the shale showed a decline in water levels of approximately 12 m as a result of quarry dewatering activities. Well MW-09 located 80 m from the quarry face showed a water level decline of approximately 6 m in the straddle well installed approximately 3 m into top of rock. No discernible influence of quarry dewatering was observed in the deep shale wells in these individual well nests. With the exception of groundwater levels in well MW-06O that showed a water level decline of approximately 2 m, the groundwater levels in the overburden wells in these nests did not show any influence of quarry dewatering.

- **150 m from the quarry face**

  Well MW-10I located 150 m from the quarry face and installed 8 m into the shale bedrock showed an initial decline of approximately 2.5 m in response to quarry dewatering but recovered to within pre-sinking cut levels. No discernible influence of quarry dewatering was observed in the deep shale well at this location. Groundwater levels in the overburden well showed a decline of approximately 3 m but have recovered to within pre-sinking cut levels.

- **300 m from the quarry face**

  Wells MW-04, MW-08 and MW-11 are located approximately 300 m from the quarry face. Well MW-04I installed 20 m into the shale bedrock and MW-04D installed 35 m into bedrock showed a 4 m decline in groundwater levels due to quarry dewatering. Bedrock wells in well nest MW-08 showed a decline of less than 1 m in response to quarry dewatering activities. However bedrock wells in well nest MW-11 showed no discernible influence of quarry dewatering. Although groundwater levels in the overburden wells installed in well nests MW-04, MW-08 and MW-11 were lowered by approximately 1 m following the start of shale mining, groundwater levels have rebounded to within historical levels and show seasonal fluctuations consistent with historical water level data.

- **400 m from the quarry face**

  Well MW-07D installed 35 m into bedrock showed no fluctuation in groundwater levels that could be attributed to quarry dewatering. Although the overburden well initially showed a decline of approximately 2 m, the groundwater levels have recovered to pre-sinking cut levels and continue to show seasonal fluctuations.

- **Within 700 m from the quarry face**

  Wells MW-01, MW-02 and MW-03 are located approximately 675 m from the quarry face. Well MW-01D installed 37 m into the shale bedrock showed a decline of approximately 0.5 m in response to dewatering of the excavation. Well MW-03D installed 25 m into the shale bedrock showed a water level decline of approximately 2 m in response to quarry dewatering. However, there was no observed influence of quarry dewatering on groundwater levels in the bedrock wells installed in well nest MW-02. It should be noted that this change in groundwater level is within the seasonal flux in groundwater levels across the site. The groundwater levels in the overburden wells showed no discernible impact of quarry dewatering.

In general the greatest drawdown (approximately 12 m) due to pumping within the sinking cut stage is observed in wells located within 100 m of the quarry face. The magnitude of groundwater drawdown reduces with increasing distance from the sump. However the effects of pumping are not seen in all wells located at similar distances from the sump and installed at similar depths in the shale bedrock. These observations are consistent with anisotropy associated with the fractured nature of the shale bedrock.

7.0 SUMMARY AND CONCLUSIONS

- The groundwater levels in the shallow monitoring wells ranged from 159.36 masl to 166.31 masl. The groundwater levels in wells straddling the overburden/shale contact ranged from 154.92 masl to 165.38 masl. The groundwater levels in the intermediate monitoring wells installed in the upper shale horizons ranged from 147.36 masl to 164.50 masl. The groundwater levels in the deep shale monitoring wells ranged from 123.88 masl to 162.06 masl.

- Groundwater levels in intermediate wells MW04I and MW-05I, straddle wells MW-06S and MW-09S, and deep well MW04I showed the strongest response to dewatering of the excavation ranging from approximately 3 m in well MW-06S to approximately 12 m at well MW-05I.

- The effects of pumping are not seen in all wells located at similar distances from the sump and installed at similar depths in the shale bedrock, consistent with anisotropy associated with the fractured nature of the shale bedrock.

- The range of groundwater level fluctuations seen in private wells were within the range of historical groundwater level responses although the static groundwater levels at the Finucci well remain slightly lower than that observed in 2007.

- A preliminary review of the groundwater levels suggest that the potential influence of quarry dewatering may extend approximately 300 m from the sinking cut.

- The groundwater quality results indicate that the groundwater in and around the quarry is very hard and mineralized with naturally occurring substances, such as sodium, potassium, magnesium, calcium, chloride and sulphate. Groundwater is relatively fresh in the shallow overburden, with salinity increasing with depth.

- The groundwater quality parameters in the monitoring wells were below the ODWS criteria with the exception of aluminum, alkalinity, hardness, chloride, sulphate, sulphide, copper, sodium, manganese, iron, turbidity, barium, cadmium, chromium, lead, selenium, arsenic and boron. These exceedances are considered to be naturally occurring in groundwater in the shale bedrock.

- The groundwater quality parameters in the monitoring wells were below PWQO criteria with the exception of aluminum, arsenic, boron, cadmium, cobalt, copper, iron, lead, molybdenum, nickel, silver, thallium, total phosphorus, uranium, vanadium and zinc. These exceedances are considered to be naturally occurring in groundwater in the shale bedrock.

- Groundwater quality in private wells showed non health-related ODWS exceedances of hardness, sulphate, chloride, iron, manganese, sodium and turbidity. In all but two instances, sodium exceeded the 20 mg/L limit above which the local Medical Officer should be notified. Boron exceeded the IMAC at the Sicard and Sugiyami wells.

- During 2010, the daily sump discharge consistently exceeded the maximum daily discharge of 50,000 L/day based on the limit above which a Permit to Take Water is required.

8.0 RECOMMENDATIONS

- An electronic event switch with data logger should be installed on the dewatering pump in the sump in order to provide a complete and accurate record of pumping activity.
- The installed pump and meter should be calibrated on an annual basis.
- Monitoring of groundwater levels should be continued in 2011.
- Water quality sampling should be conducted annually at MW-Series well nests and private wells.
- In 2011, Hanson should apply for a Permit to Take Water for its discharge from the sump.

Report Signature Page

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TABLES

Table 1
Water Level Elevations
September 30, 2002 to December 23, 2010
Tansley Quarry - Hanson Brick Ltd

Hole	Piezometer	Location		Ground Elev (m)	Stick-up (m)	Top of pipe	30-Sep-02	7-Oct-02	10-Oct-02	25-Oct-02	31-Oct-02	17-Dec-02	07-Jan-03	14-Feb-03	20-Mar-03	21-Apr-03	05-May-03	16-Jun-03	14-Jul-03	31-Oct-03
		Easting (m)	Northing (m)			elevation (masl)														
MW-01	Overburden	596395	4809597	164.78	0.76	165.54								163.16	163.60	164.29	164.09	164.40	163.52	163.80
	Intermediate			164.78	0.80	165.58		162.56	162.56	162.28	162.36	162.51	163.10	163.18	163.61	164.27	164.23	164.39	163.49	163.78
	Deep			164.78	0.75	165.53		160.39	160.30	160.14	160.06	159.41	159.43	159.74	159.62	160.19	160.26	160.41	160.23	159.79
MW-02	Overburden	596248	4809618	166.58	0.78	167.36		165.64	165.58	165.49	165.64	165.59	165.96	166.66	166.16	166.35	166.31	166.23	165.65	165.93
	Intermediate			166.58	0.76	167.34		160.36	160.31	160.09	160.07	159.79	159.90	162.02	160.19	160.88	160.88	161.29	161.06	160.57
	Deep			166.58	0.74	167.32		152.93	153.15	152.79	152.77	152.50	152.60	152.61	152.69	152.73	152.77	152.70	152.72	152.89
MW-03	Overburden	596108	4809606	169.31	0.81	170.12	162.22	162.12	162.32	162.08	161.87	162.19	162.13	161.91	161.74	162.14	162.01	162.41	162.61	162.16
	Deep			169.31	0.75	170.06	162.04	162.04	162.06	162.00	161.96	162.04	161.92	161.82	161.86	162.15	162.28	162.36	162.47	161.61
MW-04	Overburden	595911	4809070	167.85	0.97	168.82	163.79	163.94	163.90	163.69	163.67	163.48	163.49	163.48	163.69	164.81	165.04	165.41	165.21	164.71
	Intermediate			167.85	0.94	168.79	161.53	161.51	161.49	161.36	161.33	161.23	161.21	161.14	161.15	161.80	162.03	162.37	162.00	161.71
	Deep			167.85	0.87	168.72	162.15	163.82	163.85	163.63	163.64	163.41	163.41	164.38	163.60	164.65	164.93	161.24	163.06	162.75
MW-05	Overburden	596135	4808768	166.88	0.88	167.76	160.40	160.33	160.31	160.16	160.09	159.92	159.87	159.76	159.72	160.40	160.73	162.16	161.70	160.45
	Intermediate			166.88	0.84	167.72	158.67	158.68	158.65	158.55	158.64	158.80	158.87	158.78	158.81	159.61	159.75	160.22	159.40	159.25
	Deep			166.88	0.81	167.69	130.45	130.62	130.63	130.84	130.93	131.28	131.50	131.71	132.00	132.16	132.20	132.32	132.44	132.75
	Straddle	596134	4808769	167.03	0.95	167.98														
MW-06	Overburden	596355	4808896	165.97	0.98	166.95	161.76	161.71	161.70	161.62	161.58	161.37	161.30	161.20	161.11	162.31	162.82	163.58	162.92	162.11
	Deep			165.97	0.90	166.87	161.25	161.17	161.15	161.02	160.93	160.94	160.97	161.02	160.87	162.36	162.85	163.67	162.61	161.58
	Straddle	596351	4808892	166.05	0.84	166.89														
MW-07	Overburden	596099	4809348	166.89	0.85	167.74	163.46	163.38	163.34	163.14	163.12	162.70	162.64	162.71	162.85	164.07	164.24	164.79	164.43	163.79
	Deep			166.89	0.87	167.76	152.00	152.05	152.00	151.97	152.04	151.96	152.10	151.99	152.26	152.28	152.27	152.29	152.38	152.53
MW-08	Overburden	596295	4809190	162.79	0.87	163.66	160.57	160.36	160.25	160.05	160.00	159.76	159.89	160.19	160.49	161.09	161.07	161.39	161.06	160.39
	Intermediate			162.79	0.84	163.63	160.46	160.26	160.19	159.97	159.95	159.66	159.75	159.91	160.05	160.78	160.80	161.13	160.88	160.33
	Deep			162.79	0.82	163.61	160.51	160.33	160.26	160.26	160.04	159.77	159.94	160.24	160.47	161.09	161.06	161.39	161.07	160.42
MW-09	Overburden	596166	4809014	165.53	0.76	166.29														
	Straddle	596166	4809014		0.82	166.35														
	Deep	596164	4809012		1.06	166.59														
MW-10	Overburden	596045	4809002	166.77	0.88	167.65														
	Intermediate	596045	4809002		0.94	167.71														
	Deep	596046	4809003		0.83	167.60														
MW-11	Overburden	595869	4808946	168.31	1.01	169.32														
	Straddle	595870	4808946		1.04	169.35														
	Deep	595871	4808948		1.12	169.42														
TW-1		595581	4808946	167.64	0.88	168.52														
TW-2		595621	4810361	176.33	0.82	177.15														
TW-3		596411	4810003	166.85	0.70	167.55														

Notes:
1. Shallow wells have screened intervals no deeper than 30' (9 m) below ground, completed in overburden.
   The overburden ranged from 7 m to 9 m thick in the boreholes on-site.
2. Intermediate wells have screens within the upper/shallow bedrock, to depths no greater than 100' (30 m) below ground.
3. Deep wells have screen intervals at depths between 100' and 150' below ground, (30 m to 50 m).

Table 1
Water Level Elevations
September 30, 2002 to December 23, 2010
Tansley Quarry - Hanson Brick Ltd

Hole	Piezometer	Location		Ground Elev (m)	Stick-up (m)	Top of pipe	12-Jan-04	05-Apr-04	15-Jul-04	15-Oct-04	28-Jan-05	03-May-05	31-Aug-05	24-Mar-06	16-Jun-06	10-Aug-06	09-Jan-07	30-Apr-07	27-Jun-07	7-Aug-07
		Easting (m)	Northing (m)			elevation (masl)														
MW-01	Overburden	596395	4809597	164.78	0.76	165.54	164.31	164.57	163.82	163.02	164.10	164.48	165.54	164.45	163.84	163.94	165.54	164.45	163.40	
	Intermediate			164.78	0.80	165.58	164.25	164.55	163.80	162.99	164.11	164.47	162.46	164.45	163.86	163.93	164.64	164.45	163.38	
	Deep			164.78	0.75	165.53	160.59	160.80	160.60	160.22	160.62	160.74	159.76	160.70	160.61	160.79	160.90	161.27	160.75	
MW-02	Overburden	596248	4809618	166.58	0.78	167.36	166.10	166.29	165.88	165.27	166.30	166.21	165.16	166.15	165.69	165.93	166.40	166.25	165.51	
	Intermediate			166.58	0.76	167.34	161.61	161.87	161.62	161.12	161.60	161.78	160.50	161.71	161.51	161.93	162.63	162.55	162.25	
	Deep			166.58	0.74	167.32	153.02	153.09	153.15	153.01	152.99	153.06	152.93	152.95	153.04	153.01	153.26	153.21	153.12	
MW-03	Overburden	596108	4809606	169.31	0.81	170.12	163.40	163.68	162.65	162.76	162.64	163.17	162.05	163.06	162.08	163.68	164.37	164.01	162.36	
	Deep			169.31	0.75	170.06	163.28	163.71	163.02	162.63	162.99	163.35	162.14	163.16	162.64	163.33	164.17	164.15	163.08	
MW-04	Overburden	595911	4809070	167.85	0.97	168.82	166.10	166.37	165.87	164.71	165.72	166.39	164.56	166.14	165.80	165.95	166.77	166.45	165.10	
	Intermediate			167.85	0.94	168.79	162.72	163.17	162.69	162.12	162.80	163.35	161.31	163.01	162.75	162.52	163.54	163.61	162.77	
	Deep			167.85	0.87	168.72	162.81	163.36	163.10	162.01	163.42	163.97	161.98	163.20	162.95	162.81	164.15	163.69	162.81	
MW-05	Overburden	596135	4808768	166.88	0.88	167.76	161.50	163.66	161.97	160.66	161.34	163.96	160.75	162.94	162.16	161.47	163.36	163.66	161.85	160.98
	Intermediate			166.88	0.84	167.72	160.24	160.78	160.15	159.45	161.73	161.05	158.41	160.45	160.19	159.79	160.90	161.07	160.23	160.17
	Deep			166.88	0.81	167.69	132.94	133.10	133.16	133.11	133.47	133.71	133.94	134.25		134.49	134.75	134.89	134.99	135.69
	Straddle	596134	4808769	167.03	0.95	167.98														160.66
MW-06	Overburden	596355	4808896	165.97	0.98	166.95	163.66	164.33	163.76	163.25	163.13	164.29	163.27	164.32	163.80	163.63	164.58	164.34	163.97	163.79
	Deep			165.97	0.90	166.87	163.71	164.32	163.91	162.85	163.43	164.34	162.07	164.19	163.25	163.34	164.46	164.48	163.23	162.07
	Straddle	596351	4808892	166.05	0.84	166.89														161.91
MW-07	Overburden	596099	4809348	166.89	0.85	167.74	165.12	165.32	165.54	164.32	164.95	165.21	163.91	165.08	164.75	164.96	165.63	165.38	164.39	
	Deep			166.89	0.87	167.76	152.70	152.72	152.86	152.57	152.47	152.58	152.60	152.56	152.61	152.67	152.93	152.91	152.83	
MW-08	Overburden	596295	4809190	162.79	0.87	163.66	161.62	161.85	161.51	160.99	161.73	161.90	160.56	162.04	161.70	161.83	162.55	162.45	161.59	
	Intermediate			162.79	0.84	163.63	161.31	161.58	161.26	160.83	161.29	161.46	160.21	161.43	161.22	161.56	162.31	162.06	161.42	
	Deep			162.79	0.82	163.61	161.64	161.86	161.51	161.03	161.68	161.91	160.58	162.06	161.72	161.86	162.57	162.44	161.61	
MW-09	Overburden	596166	4809014	165.53	0.76	166.29														163.42
	Straddle	596166	4809014		0.82	166.35														161.86
	Deep	596164	4809012		1.06	166.59														125.54
MW-10	Overburden	596045	4809002	166.77	0.88	167.65														163.88
	Intermediate	596045	4809002		0.94	167.71														162.36
	Deep	596046	4809003		0.83	167.60														125.09
MW-11	Overburden	595869	4808946	168.31	1.01	169.32														163.42
	Straddle	595870	4808946		1.04	169.35														163.58
	Deep	595871	4808948		1.12	169.42														126.30
TW-1		595581	4808946	167.64	0.88	168.52														
TW-2		595621	4810361	176.33	0.82	177.15														
TW-3		596411	4810003	166.85	0.70	167.55														

Notes:
1. Shallow wells have screened intervals no deeper than 30' (9 m) below ground, completed in overburden.
   The overburden ranged from 7 m to 9 m thick in the boreholes on-site.
2. Intermediate wells have screens within the upper/shallow bedrock, to depths no greater than 100' (30 m) below ground
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September 30, 2002 to December 23, 2010
Tansley Quarry - Hanson Brick Ltd

Hole	Piezometer	Location		Ground Elev (m)	Stick-up (m)	Top of pipe	9-Aug-07	30-Aug-07	06-Dec-07	07-Dec-07	16-Jan-08	23-Jan-08	24-Jan-08	25-Jan-08	31-Jan-08	26-Feb-08	28-Mar-08	24-Apr-08	26-May-08	26-Jun-08
		Easting (m)	Northing (m)			elevation (masl)								AFTER TEST						
MW-01	Overburden	596395	4809597	164.78	0.76	165.54	165.54	165.54	165.54		163.73				163.48	164.40	164.46	164.10	164.00	163.99
	Intermediate			164.78	0.80	165.58	162.63	162.34	161.14		163.75				163.50	164.42	164.45	164.10	164.01	164.02
	Deep			164.78	0.75	165.53	160.32	160.04	159.53		158.35				158.19	158.27	158.32	158.43	158.42	158.27
MW-02	Overburden	596248	4809618	166.58	0.78	167.36	165.11	164.94	165.33		166.08				165.85	166.19	166.38	166.12	166.06	165.98
	Intermediate			166.58	0.76	167.34	161.95	161.77	160.93		160.56				160.42	160.25	160.15	160.13	160.12	160.03
	Deep			166.58	0.74	167.32	153.09	153.06	153.21		153.13				153.06	153.05	152.96	152.88	152.90	152.81
MW-03	Overburden	596108	4809606	169.31	0.81	170.12	162.49	161.92	161.10		161.20				161.17	161.86	161.81	162.05	160.92	160.60
	Deep			169.31	0.75	170.06	162.29	162.00	160.02		158.91				158.88	159.30	159.49	159.81	159.82	159.46
MW-04	Overburden	595911	4809070	167.85	0.97	168.82	163.79	163.60	162.48		162.97				163.19	163.88	164.48	164.65	164.64	164.50
	Intermediate			167.85	0.94	168.79	161.28	160.95	157.84		156.27				156.10	156.52	156.84	157.17	157.23	156.91
	Deep			167.85	0.87	168.72	161.37	161.02	157.95		156.35	156.39		156.25	156.16	156.81	156.96	157.27	157.29	157.04
MW-05	Overburden	596135	4808768	166.88	0.88	167.76	160.92	160.63		159.88	159.70		159.72		159.69	159.82	160.36	161.93	161.32	160.58
	Intermediate			166.88	0.84	167.72	159.91	159.69		153.55	150.23		149.45		149.40	150.21	149.40	149.60	149.88	149.16
	Deep			166.88	0.81	167.69	135.06	135.13		146.46	146.38		146.32		146.31	146.34	146.31	146.29	146.28	146.27
	Straddle	596134	4808769	167.03	0.95	167.98	160.62	160.35		158.56	157.58		157.44	157.46	157.36	157.72	158.23	159.06	158.58	157.80
MW-06	Overburden	596355	4808896	165.97	0.98	166.95	163.78	163.68	163.07		162.77		162.69	161.26	161.24	161.17	161.09	161.03	160.95	160.90
	Deep			165.97	0.90	166.87	162.05	161.70	159.37		158.96		159.20	152.91	152.63	151.60	150.65	149.95	149.17	148.65
	Straddle	596351	4808892	166.05	0.84	166.89	161.84	161.46	158.77		159.44		159.55	159.56	159.56	159.52	159.54	159.97	159.86	159.54
MW-07	Overburden	596099	4809348	166.89	0.85	167.74	163.84	163.49	161.62		161.28	161.27		161.50	161.45	162.09	162.92	163.33	163.42	163.13
	Deep			166.89	0.87	167.76	152.81	152.78		152.84	152.77	152.81		152.44	152.38	152.60	152.45	152.28	152.35	152.29
MW-08	Overburden	596295	4809190	162.79	0.87	163.66	160.96	160.60	159.56		159.21		159.15	160.11	159.01	159.00	159.23	159.36	159.33	159.26
	Intermediate			162.79	0.84	163.63	160.91	160.55	160.12		158.69	158.67		158.57	158.51	158.73	158.83	158.96	158.95	158.81
	Deep			162.79	0.82	163.61	160.99	160.63	159.63		159.17	159.20		157.65	158.97	159.02	159.21	159.34	159.30	159.22
MW-09	Overburden	596166	4809014	165.53	0.76	166.29	163.31	162.70	160.50		160.04	159.97		159.94	159.81	159.96	161.40	162.54	162.80	162.27
	Straddle	596166	4809014		0.82	166.35	161.83	161.43	156.77		154.32	154.38	154.35	154.44	154.31	154.76	154.91	155.01	155.02	154.90
	Deep	596164	4809012		1.06	166.59	125.38	125.44	125.53		125.54	125.51		151.51	151.33	151.18	151.00	150.93	150.85	150.78
MW-10	Overburden	596045	4809002	166.77	0.88	167.65	163.79	163.16	160.89		160.22	160.17		160.42	160.20	160.68	162.86	164.21	164.33	163.62
	Intermediate	596045	4809002		0.94	167.71	162.31	161.91	159.06		157.81	157.85		157.55	157.55	157.99	159.15	160.02	160.31	159.82
	Deep	596046	4809003		0.83	167.60	124.88	125.03	125.25		125.30	125.30		158.38	156.90	155.94	155.43	155.10	154.82	154.59
MW-11	Overburden	595869	4808946	168.31	1.01	169.32	163.37	163.14		162.41	163.03		163.44	163.47	163.37	164.25	164.84	164.99	164.66	164.37
	Straddle	595870	4808946		1.04	169.35	163.58	163.61		162.48	163.20		163.42	163.43	163.28	164.05	164.63	164.81	164.46	164.45
	Deep	595871	4808948		1.12	169.42	125.19	125.32		125.51	125.58		125.55	153.89	153.67	151.94	151.75	151.68	151.64	151.58
TW-1		595581	4808946	167.64	0.88	168.52					162.58					163.77	164.12	164.26	163.77	163.26
TW-2		595621	4810361	176.33	0.82	177.15					Dry					Dry	Dry	Dry	Dry	Dry
TW-3		596411	4810003	166.85	0.70	167.55					155.11					155.95	156.09	155.14	155.09	155.28

Notes:
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Water Level Elevations
September 30, 2002 to December 23, 2010
Tansley Quarry - Hanson Brick Ltd

Hole	Piezometer	Location		Ground Elev (m)	Stick-up (m)	Top of pipe	28-Jul-08	27-Aug-08	29-Sep-08	07-Oct-08	28-Oct-08	21-Nov-08	23-Dec-08	21-Jan-09	27-Apr-09	24-Jul-09	26-Oct-09	30-Nov-09	26-Jan-10	5-Mar-10
		Easting (m)	Northing (m)			elevation (masl)														
MW-01	Overburden	596395	4809597	164.78	0.76	165.54	164.25	164.11	163.99	164.17	164.33	164.38	164.44	164.46	164.59	163.95	164.29	164.36	164.46	
	Intermediate			164.78	0.80	165.58	164.24	164.11	164.00	164.18	164.27	164.39	164.45	164.46	164.58	163.95	164.29	164.35	164.45	
	Deep			164.78	0.75	165.53	158.39	158.63	158.75	158.77	158.81	158.86	159.19	159.27	159.49	158.84	158.91	159.02	159.22	
MW-02	Overburden	596248	4809618	166.58	0.78	167.36	166.22	166.15	166.06	166.09	165.96	166.15	166.43	166.13	166.38	165.77	165.87	165.95	166.26	
	Intermediate			166.58	0.76	167.34	159.96	159.96	160.07	160.11	160.63	160.79	161.15	161.35	161.70	160.82	160.93	161.07	161.03	
	Deep			166.58	0.74	167.32	152.81	152.74	152.73	152.73	152.52	152.55	152.59	152.66	152.69	152.75	152.62	152.64	152.64	
MW-03	Overburden	596108	4809606	169.31	0.81	170.12	159.88	161.12	162.90	163.00	162.75	162.90	163.35	163.82	164.78	163.95	163.86	164.81	164.01	
	Deep			169.31	0.75	170.06	159.41	159.74	160.44	160.50	160.50	160.56	160.98	161.36	161.66	160.52	160.27	160.24	160.37	
MW-04	Overburden	595911	4809070	167.85	0.97	168.82	164.55	164.97	164.97	164.71	164.68	164.63	165.16	165.37	165.96	164.72	164.60	164.78	165.20	164.86
	Intermediate			167.85	0.94	168.79	157.07	157.54	157.89	157.92	157.95	157.96	158.43	158.88	159.02	157.56	157.24	157.17	157.20	157.00
	Deep			167.85	0.87	168.72	157.14	157.70	158.10	157.95	132.85	133.12	133.43	133.80	144.65	151.33	151.83	151.94	125.84	126.01
MW-05	Overburden	596135	4808768	166.88	0.88	167.76	160.17	160.61	160.42	160.34	159.91	159.89	160.09	160.78	162.47	160.57	159.82	159.63	159.77	159.62
	Intermediate			166.88	0.84	167.72	149.64	150.00	150.29	150.16	150.21	149.99	150.39	150.99	150.39	147.96	147.89	147.80	147.85	147.73
	Deep			166.88	0.81	167.69	146.23	146.20	146.19	146.17	133.08	133.13	133.18	133.33	133.49	133.70	133.81	133.88	127.03	127.06
	Straddle	596134	4808769	167.03	0.95	167.98	157.52	158.03	157.92	157.86	157.75	157.67	158.17	158.93	160.31	158.69	158.25	158.13	158.08	157.82
MW-06	Overburden	596355	4808896	165.97	0.98	166.95	160.82	160.75	160.71	160.69	159.56	159.46	160.02	160.08	160.52	159.64	159.37	159.36	159.76	
	Deep			165.97	0.90	166.87	148.28	148.17	148.22	148.24	152.06	152.94	152.05	151.56	160.60	159.21	159.34	159.19	138.83	
	Straddle	596351	4808892	166.05	0.84	166.89	159.52	160.00	159.81	159.76	159.65	159.59	160.12	160.18	158.22	159.74	159.46	159.33	159.83	
MW-07	Overburden	596099	4809348	166.89	0.85	167.74	163.11	163.88	164.01	163.97	164.14	164.13	164.55	164.59	164.84	163.87	163.92	164.03	164.26	
	Deep			166.89	0.87	167.76	152.27	152.18	152.19	152.08	151.90	151.91	151.89	152.06	152.03	152.06	151.95	152.05	152.06	
MW-08	Overburden	596295	4809190	162.79	0.87	163.66	159.39	159.65	159.74	159.77	159.85	159.94	160.28	160.40	160.72		160.13	160.22	161.15	
	Intermediate			162.79	0.84	163.63	159.01	159.28	159.41	159.42	159.45	159.50	159.77	159.94	160.19		159.56	159.71	159.85	
	Deep			162.79	0.82	163.61	159.38	159.63	159.74	159.77	159.83	159.94	160.28	160.39	160.71		160.06	160.15	161.10	
MW-09	Overburden	596166	4809014	165.53	0.76	166.29	162.26	163.54	162.88	162.63	162.40	162.16	163.89	164.14	164.64	162.43	154.69	161.18	161.95	
	Straddle	596166	4809014		0.82	166.35	155.19	155.63	155.82	155.81	155.89	155.77	156.10	156.40	156.30	155.08	161.29	154.77	154.92	
	Deep	596164	4809012		1.06	166.59	150.72	150.63	150.57	150.53	127.40	127.44	127.45	127.61	127.86	128.19	128.48	128.65	126.24	
MW-10	Overburden	596045	4809002	166.77	0.88	167.65	163.62	164.65	164.15	163.90	163.56	163.34	164.93	165.45	166.25	163.53	162.53	162.62	163.34	
	Intermediate	596045	4809002		0.94	167.71	159.97	161.01	161.07	161.02	160.40	160.40	161.42	161.84	162.01	159.90	159.21	159.16	159.06	
	Deep	596046	4809003		0.83	167.60	154.37	154.17	153.99	154.03	133.52	133.73	133.96	134.20	134.89	135.58	136.00	136.17	124.93	
MW-11	Overburden	595869	4808946	168.31	1.01	169.32	164.68	165.03	164.72	164.61	164.33	164.48	165.21	165.21	166.06	164.15	163.99	164.04	164.53	164.13
	Straddle	595870	4808946		1.04	169.35	164.48	164.80	164.78	164.61	164.39	164.47	165.08	165.18	165.95	164.40	164.19	164.32	164.73	164.38
	Deep	595871	4808948		1.12	169.42	151.53	151.48	151.45	151.39	132.63	132.70	132.82	133.04	133.51	134.11	134.60	134.81	136.59	136.71
TW-1		595581	4808946	167.64	0.88	168.52	163.84	164.52	164.10		163.69	163.86	164.71	164.69	165.38	168.52	163.89		164.38	
TW-2		595621	4810361	176.33	0.82	177.15	Dry	Dry	Dry		Dry	Dry	Dry	Dry	Dry	Dry	Dry			
TW-3		596411	4810003	166.85	0.70	167.55	154.67	154.70	154.73		155.66	162.98	156.66	156.83	156.55	167.55	155.91		156.83	

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		Easting (m)	Northing (m)			elevation (masl)											
MW-01	Overburden	596395	4809597	164.78	0.76	165.54		164.49				164.33			164.37		
	Intermediate			164.78	0.80	165.58		164.50				164.31			164.37		
	Deep			164.78	0.75	165.53		159.30				159.17			159.16		
MW-02	Overburden	596248	4809618	166.58	0.78	167.36		166.31			166.18	166.13			166.12		
	Intermediate			166.58	0.76	167.34		161.12			161.04	160.91			160.97		
	Deep			166.58	0.74	167.32		152.62			152.69	152.66			153.03		
MW-03	Overburden	596108	4809606	169.31	0.81	170.12		163.98				163.97			163.88		
	Deep			169.31	0.75	170.06		160.28				160.26			160.19		
MW-04	Overburden	595911	4809070	167.85	0.97	168.82		165.73	165.81	165.68	165.46	165.09	164.77	164.64	164.93	165.54	165.37
	Intermediate			167.85	0.94	168.79		157.20	157.37	157.30	157.27	157.12	157.02	156.98	157.08	157.30	157.41
	Deep			167.85	0.87	168.72		126.06	126.15	126.27	126.35	126.52	126.88	126.96	127.01	123.88	123.93
MW-05	Overburden	596135	4808768	166.88	0.88	167.76		159.97	160.64	160.72	160.60	160.36	160.07	159.83	159.85	159.85	159.96
	Intermediate			166.88	0.84	167.72		147.80	147.72	147.66	147.59	147.55	147.44	147.36	147.46	147.44	147.45
	Deep			166.88	0.81	167.69	127.07	127.08	127.12	127.14	127.17	127.16	127.19	127.24	127.21	127.24	127.26
	Straddle	596134	4808769	167.03	0.95	167.98	157.87	158.21	158.64	158.59	158.46	158.27	157.98	157.81	157.89	157.86	157.83
MW-06	Overburden	596355	4808896	165.97	0.98	166.95	159.73					159.87			159.36		
	Deep			165.97	0.90	166.87	138.95					139.17			139.30		
	Straddle	596351	4808892	166.05	0.84	166.89	159.87					159.77			159.17		
MW-07	Overburden	596099	4809348	166.89	0.85	167.74		164.56				164.03			164.10		
	Deep			166.89	0.87	167.76		152.01				151.96			152.00		
MW-08	Overburden	596295	4809190	162.79	0.87	163.66		161.38				162.06			161.94		
	Intermediate			162.79	0.84	163.63		160.00				159.79			159.83		
	Deep			162.79	0.82	163.61		161.40				162.06			161.95		
MW-09	Overburden	596166	4809014	165.53	0.76	166.29		163.35				162.50			161.21		
	Straddle	596166	4809014		0.82	166.35		155.09				155.12			155.14		
	Deep	596164	4809012		1.06	166.59		126.32				126.55			126.67		
MW-10	Overburden	596045	4809002	166.77	0.88	167.65		164.70				163.96			163.02		
	Intermediate	596045	4809002		0.94	167.71		159.73				159.49			159.29		
	Deep	596046	4809003		0.83	167.60		125.17				125.86			126.30		
MW-11	Overburden	595869	4808946	168.31	1.01	169.32			165.47	165.25	164.99	164.59	163.99	163.79	164.35	165.16	165.00
	Straddle	595870	4808946		1.04	169.35			165.38	165.18	164.89	164.56	164.20	164.12	164.48	165.23	164.91
	Deep	595871	4808948		1.12	169.42			137.11	137.16	137.42	137.51	137.70	137.90	137.96	129.45	129.51
TW-1		595581	4808946	167.64	0.88	168.52		165.19				164.39			164.50		
TW-2		595621	4810361	176.33	0.82	177.15											
TW-3		596411	4810003	166.85	0.70	167.55		156.53				155.10			155.71		

Notes:
1. Shallow wells have screened intervals no deeper than 30' (9 m) below ground, completed in overburden.
   The overburden ranged from 7 m to 9 m thick in the boreholes on-site.
2. Intermediate wells have screens within the upper/shallow bedrock, to depths no greater than 100' (30 m) below ground
3. Deep wells have screen intervals at depths between 100' and 150' below ground, (30 m to 50 m).

Table 2
Summary of 2010 Groundwater Quality Exceedances of ODWS
MW Series Monitoring Wells
Tansley Quarry - Hanson Brick Ltd.

Parameter	Aluminum	Alkalinity	Hardness	Chloride	Sulphate	Sulphide	Copper	Sodium	Manganese	Iron	Turbidity	Barium	Cadmium	Chromium	Lead	Selenium	Arsenic	Boron
ODWS	0.1 mg/L	30-500 mg/L	80-100 mg/L	250 mg/L	500 mg/L	0.05 mg/L	1 mg/L	200 mg/L	0.05 mg/L	0.3 mg/L	1 NTU	1 mg/L	0.005 mg/L	0.05 mg/L	0.01 mg/L	0.01 mg/L	0.025 mg/L	5 mg/L
	OG	OG	OG	AO	AO	AO	AO	AO	AO	AO	AO	MAC	MAC	MAC	MAC	MAC	IMAC	IMAC
MW-01O	Not sampled: Blocked																	
MW-01I	60		1100						2.7	120	2900			0.11	0.054		0.028	
MW-01D	6.2		8800	16300	1820			7200	1.8	20	300							6.4
MW-02O	22	700	1900		1410				1	40	3600				0.02			
MW-02I	3		940		1120			210	0.34	6	320							
MW-02D	Not Sampled																	
MW-03O	88		1000	574	933			290	9.5	160	19000			0.18	0.087		0.051	
MW-03D	3.3		3300	4980	1450			2500	0.51	5.4	100							
MW-04O	10		450						0.7	17	4300				0.014			
MW-04I	3		1700	1500	1750			1000	0.3	3	57							7.1
MW-04D	Not sampled: Insufficient water																	
MW-05O	26		430						7	62	24			0.1	0.05			
MW-05S	19		300						3	40	3400				0.02			
MW-05I	0.38		390							1.1	15							
MW-05D	Not sampled: Insufficient water																	
MW-06O	Not Sampled																	
MW-06S	210		340			0.08			7.2	210	18000	2.3		0.18	0.057		0.051	
MW-06D	Not sampled: Insufficient water																	
MW-07O	380	569	590			0.1			22	750	63000	3.8		0.6	0.33		0.18	5.5
MW-07D	0.4		10000	16000	1620			7200	1.6	7	91					0.045		7
MW-08O	140	545	990		576				6.4	240	14000			0.2	0.1		0.054	
MW-08I	0.29		2000	2240	1010			1100	0.21	1	14							6.1
MW-08D	670		18000	48500	1180	0.19	1.1	18000	31	1300	96000	5	0.026	1.3	0.33	0.1	0.39	6.8
MW-09O	4		410					34	0.2	6	330							
MW-09S	33		600						2.4	45	3400			0.06	0.02			
MW-09D	Not sampled: Insufficient water																	
MW-10O	420		480			0.23			28	660	94000	5		1	0.21		0.12	
MW-10I	9.3		370						1	15	340							
MW-10D	Not sampled: Insufficient water																	
MW-11O	470		550			0.17	1.1		42	840	62000	9	0.006	1.4	0.35		0.2	
MW-11S	2		450						0.2	5	210							
MW-11D	17		21000	35800	1390			14000	4.2	67	760		0.013				0.061	

Note:

ODWS: Ontario Drinking Water Standard, June 2006.

AO: Aesthetic Objective; MAC: Maximum Acceptable Concentration:

IMAC: Interim Maximum Acceptable Concentration; OG: Operational Guideline

Wells designated as: **O** = Overburden, **I** = Intermediate, **D** = Deep, **S** = Straddle

Table 3
Summary of 2010 Groundwater Quality Exceedances of PWQO
MW Series Monitoring Wells
Tansley Quarry - Hanson Brick Ltd.

Parameter	Aluminum	Arsenic	Boron	Cadmium	Cobalt	Copper	Iron	Lead	Molybdenum	Nickel	Silver	Thallium	Total Phosphorous	Uranium	Vanadium	Zinc
PWQO	0.075 mg/L	0.005 mg/L	0.2 mg/L	0.0005 mg/L	0.0009 mg/L	0.005 mg/L	0.3 mg/L	0.005 mg/L	0.04 mg/L	0.025 mg/L	0.0001 mg/L	0.0003 mg/L	0.01 mg/L	0.005 mg/L	0.006 mg/L	0.02 mg/L
	Interim	Interim		Interim		Interim		Interim				Interim			Interim	Interim
MW-01O	Not sampled: Blocked															
MW-01I		0.028		0.0006	0.052	0.095	120	0.054		0.11	0.0004	0.00057	3	0.017	0.12	0.31
MW-01D	0.1		6.4			0.048	20	0.009					0.15			0.076
MW-02O	0.17	0.01	0.3		0.02	0.04	40	0.02		0.042	0.0002		1.1	0.02	0.05	0.13
MW-02I	0.15		2.3		0.0028		6						0.17			
MW-02D	Not sampled															
MW-03O		0.051	1.6	0.002	0.083	0.23	160	0.087		0.16		0.0011	9.1	0.01	0.2	0.48
MW-03D	0.11	0.007	4.8		0.0012		5.4				0.0002					0.083
MW-04O					0.011	0.019	17	0.014					1	0.01	0.019	0.05
MW-04I			7.1				3									
MW-04D	Not sampled: Insufficient water															
MW-05O		0.021		0.001	0.036	0.17	62	0.05		0.063	0.0002		2.7		0.06	0.19
MW-05S		0.023	1.2		0.02	0.05	40	0.02		0.04	0.0002		2.8		0.04	0.11
MW-05I			3				1.1									
MW-05D	Not sampled															
MW-06O	Not sampled: Insufficient water															
MW-06S	0.46	0.051	0.49	0.001	0.13	0.15	210	0.057		0.28		0.0018	6.6	0.007	0.24	0.68
MW-06D	Not sampled: Insufficient water															
MW-07O	0.94	0.18	5.5	0.004	0.36	0.74	750	0.33		0.81	0.002	0.0045	34	0.047	0.76	2
MW-07D		0.023	7				7								0.033	
MW-08O		0.054	2	0.001	0.1	0.2	240	0.1		0.3		0.002	6.7	0.02	0.3	1
MW-08I			6.1				1									
MW-08D		0.39	6.8	0.026	0.63	1.1	1300	0.33	0.14	1.4		0.005	26	0.037	1.3	3.9
MW-09O			0.6		0.004		6						0.14		0.008	0.03
MW-09S		0.02	3.6		0.03	0.02	45	0.02	0.011	0.071	0.0002		1.8		0.06	0.1
MW-09D	Not sampled: Insufficient water															
MW-10O	0.17	0.12	0.8	0.003	0.4	0.6	660	0.21		0.9	0.002	0.004	26	0.03	0.77	2
MW-10I		0.01	1		0.01	0.01	15						0.56		0.02	0.045
MW-10D	Not sampled: Insufficient water															
MW-11O	4.8	0.2	0.8	0.006	0.42	1.1	840	0.35		0.9		0.004	28	0.04	0.9	2.1
MW-11S	0.078	0.013	1.3		0.002		5						0.19			
MW-11D		0.061	4.8	0.013		0.096	67							0.011	0.14	0.79

Note:

PWQO: Provincial Water Quality Objectives, July 1994

Cadmium standard is 0.0002 mg/L when hardness < 100 mg/L and 0.0005 mg/L when hardness > 100 mg/L

Wells designated as: O = Overburden, I = Intermediate, D = Deep, S = Straddle

Table 4
Summary of 2010 Groundwater Quality Exceedances of ODWS
Private Wells
Tansley Quarry - Hanson Brick Ltd.

Parameter	**Hardness**	**Sulphate**	**Chloride**	**Iron**	**Manganese**	**Sodium**	**Turbidity**	**Boron**
ODWS	80-100 mg/L	500 mg/L	250 mg/L	0.3 mg/L	0.05 mg/L	200 mg/L	5 NTU	5 mg/L
	OG	AO	AO	AO	AO	AO	AO	IMAC
Finucci	520							
Featherstone	**Not Sampled - Cistern installed, well not in use**							
Sicard	860	952	955	1.6	0.07	760	11	6.9
Wiggins	**Not Sampled - Cistern installed, well not in use**							
Sugiyami	1400	1010	1780		0.12	960		5.3
Eno/Myers	**Not sampled - well not in use**							
Robinson	**Not sampled - well filled with municipal water**							
Stevenson	**Not sampled - well not in use**							
Hendervale House	570			0.44				
Hendervale Main Barn	280			0.47	0.074		130	
Hendervale Cottage	560			1.1			8.5	
Hendervale ABC Barn	57							
Simms	500							
Bekkers	810	617			0.1	260		

Note:

ODWS: Ontario Drinking Water Standard, June 2006

AO: Aesthetic Objective; MAC: Maximum Acceptable Concentration

IMAC: Interim Maximum Acceptable Concentration; OG: Operational Guideline

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate (m^3/hr)	(igal/min)
Friday, January 01, 2010				
Saturday, January 02, 2010				
Sunday, January 03, 2010				
Monday, January 04, 2010	5.25	429	81.8	300
Tuesday, January 05, 2010	6.25	472	75.6	277
Wednesday, January 06, 2010	4.0	179	44.8	164
Thursday, January 07, 2010				
Friday, January 08, 2010				
Saturday, January 09, 2010				
Sunday, January 10, 2010				
Monday, January 11, 2010				
Tuesday, January 12, 2010	6.25	492	78.7	289
Wednesday, January 13, 2010	6.25	376	60.1	220
Thursday, January 14, 2010				
Friday, January 15, 2010				
Saturday, January 16, 2010				
Sunday, January 17, 2010				
Monday, January 18, 2010	2.75	213	77.4	284
Tuesday, January 19, 2010	6.25	315	50.4	185
Wednesday, January 20, 2010	3.0	149	49.5	182
Thursday, January 21, 2010	3.0	176	58.6	215
Friday, January 22, 2010				
Saturday, January 23, 2010				
Sunday, January 24, 2010				
Monday, January 25, 2010	6.5	481	74.0	272
Tuesday, January 26, 2010	6.5	375	57.7	212
Wednesday, January 27, 2010	6.5	493	75.9	278
Thursday, January 28, 2010	4.5	317	70.5	259
Friday, January 29, 2010				
Saturday, January 30, 2010				
Sunday, January 31, 2010				
Monday, February 01, 2010				
Tuesday, February 02, 2010				
Wednesday, February 03, 2010	5.25	408	77.7	285
Thursday, February 04, 2010				
Friday, February 05, 2010	5.75	347	60.3	221
Saturday, February 06, 2010				
Sunday, February 07, 2010				
Monday, February 08, 2010				
Tuesday, February 09, 2010	6.5	407	62.6	230
Wednesday, February 10, 2010				
Thursday, February 11, 2010				
Friday, February 12, 2010				
Saturday, February 13, 2010				
Sunday, February 14, 2010				
Monday, February 15, 2010				
Tuesday, February 16, 2010	5.5	526	95.7	351
Wednesday, February 17, 2010	5.5	405	73.7	270
Thursday, February 18, 2010	5.5	165	30.1	110
Friday, February 19, 2010				
Saturday, February 20, 2010				
Sunday, February 21, 2010				
Monday, February 22, 2010	5.25	409	77.8	285
Tuesday, February 23, 2010	4	273	68.2	250
Wednesday, February 24, 2010				
Thursday, February 25, 2010				

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate (m^3/hr)	
			(m^3/hr)	(igal/min)
Friday, February 26, 2010	5	403	80.7	296
Saturday, February 27, 2010				
Sunday, February 28, 2010				
Monday, March 01, 2010	6	626	104.4	383
Tuesday, March 02, 2010	5.75	458	79.6	292
Wednesday, March 03, 2010	5	357	71.3	261
Thursday, March 04, 2010	4.5	392	87.0	319
Friday, March 05, 2010				
Saturday, March 06, 2010				
Sunday, March 07, 2010				
Monday, March 08, 2010	4.25	361	84.8	311
Tuesday, March 09, 2010	5.75	446	77.5	284
Wednesday, March 10, 2010	3.75	357	95.1	349
Thursday, March 11, 2010	4.25	234	55.0	202
Friday, March 12, 2010	5.5	480	87.2	320
Saturday, March 13, 2010				
Sunday, March 14, 2010				
Monday, March 15, 2010				
Tuesday, March 16, 2010	6	694	115.6	424
Wednesday, March 17, 2010	8	631	78.8	289
Thursday, March 18, 2010	5	372	74.4	273
Friday, March 19, 2010	6.75			
Saturday, March 20, 2010				
Sunday, March 21, 2010				
Monday, March 22, 2010	4.5	215	47.7	175
Tuesday, March 23, 2010	5.75	341	59.3	217
Wednesday, March 24, 2010	5.5	475	86.4	317
Thursday, March 25, 2010	5.5	441	80.2	294
Friday, March 26, 2010				
Saturday, March 27, 2010				
Sunday, March 28, 2010				
Monday, March 29, 2010	6.75	360	53.3	195
Tuesday, March 30, 2010	6.5	397	61.1	224
Wednesday, March 31, 2010	6	307	51.1	187
Thursday, April 01, 2010				
Friday, April 02, 2010				
Saturday, April 03, 2010				
Sunday, April 04, 2010				
Monday, April 05, 2010	7	384	54.9	201
Tuesday, April 06, 2010	7.25	605	83.5	306
Wednesday, April 07, 2010	19.25	930	48.3	177
Thursday, April 08, 2010	6.75	534	79.1	290
Friday, April 09, 2010				
Saturday, April 10, 2010				
Sunday, April 11, 2010				
Monday, April 12, 2010	16	1,124	70.2	257
Tuesday, April 13, 2010	15.5	1,008	65.1	239
Wednesday, April 14, 2010	3.5	142	40.7	149
Thursday, April 15, 2010				
Friday, April 16, 2010	5.5	467	84.9	311
Saturday, April 17, 2010				
Sunday, April 18, 2010				
Monday, April 19, 2010	6.75	379	56.1	206
Tuesday, April 20, 2010	6.75	309	45.8	168
Wednesday, April 21, 2010	5	394	78.9	289
Thursday, April 22, 2010				

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate	
			(m^3/hr)	(igal/min)
Friday, April 23, 2010				
Saturday, April 24, 2010				
Sunday, April 25, 2010				
Monday, April 26, 2010	5.25	71	13.5	50
Tuesday, April 27, 2010	4.5	289	64.3	236
Wednesday, April 28, 2010				
Thursday, April 29, 2010	3.5	172	49.2	180
Friday, April 30, 2010	1.25	50	39.7	145
Saturday, May 01, 2010				
Sunday, May 02, 2010				
Monday, May 03, 2010	6.25	253	40.4	148
Tuesday, May 04, 2010	4	103	25.7	94
Wednesday, May 05, 2010	2.5	156	62.4	229
Thursday, May 06, 2010	1.25	79	63.0	231
Friday, May 07, 2010				
Saturday, May 08, 2010				
Sunday, May 09, 2010				
Monday, May 10, 2010	6.5	544	83.7	307
Tuesday, May 11, 2010	7.5	597	79.6	292
Wednesday, May 12, 2010	2.75	258	93.9	344
Thursday, May 13, 2010	2.75	158	57.3	210
Friday, May 14, 2010				
Saturday, May 15, 2010				
Sunday, May 16, 2010				
Monday, May 17, 2010	5	403	80.6	296
Tuesday, May 18, 2010	5.75	368	64.0	235
Wednesday, May 19, 2010	1	50	50.0	183
Thursday, May 20, 2010				
Friday, May 21, 2010				
Saturday, May 22, 2010				
Sunday, May 23, 2010				
Monday, May 24, 2010				
Tuesday, May 25, 2010	7.25	515	71.1	261
Wednesday, May 26, 2010	4.5	266	59.1	217
Thursday, May 27, 2010	0.5	27	53.6	197
Friday, May 28, 2010				
Saturday, May 29, 2010				
Sunday, May 30, 2010				
Monday, May 31, 2010	6	405	67.5	247
Tuesday, June 01, 2010	4.5	221	49.2	180
Wednesday, June 02, 2010	1.5	100	66.3	243
Thursday, June 03, 2010	6	408	68.0	249
Friday, June 04, 2010	4	262	65.5	240
Saturday, June 05, 2010				
Sunday, June 06, 2010				
Monday, June 07, 2010				
Tuesday, June 08, 2010	6	481	80.2	294
Wednesday, June 09, 2010	7	425	60.8	223
Thursday, June 10, 2010	6.5	469	72.1	264
Friday, June 11, 2010	7	459	65.6	241
Saturday, June 12, 2010				
Sunday, June 13, 2010				
Monday, June 14, 2010	6.75	531	78.6	288
Tuesday, June 15, 2010	7.25	479	66.0	242
Wednesday, June 16, 2010				
Thursday, June 17, 2010	5.25	313	59.5	218

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate (m^3/hr)	(igal/min)
Friday, June 18, 2010				
Saturday, June 19, 2010				
Sunday, June 20, 2010				
Monday, June 21, 2010	6.5	372	57.3	210
Tuesday, June 22, 2010				
Wednesday, June 23, 2010	7.5	439	58.6	215
Thursday, June 24, 2010	6	169	28.1	103
Friday, June 25, 2010				
Saturday, June 26, 2010				
Sunday, June 27, 2010				
Monday, June 28, 2010				
Tuesday, June 29, 2010				
Wednesday, June 30, 2010	7	633	90.4	331
Thursday, July 01, 2010				
Friday, July 02, 2010				
Saturday, July 03, 2010				
Sunday, July 04, 2010				
Monday, July 05, 2010				
Tuesday, July 06, 2010				
Wednesday, July 07, 2010				
Thursday, July 08, 2010				
Friday, July 09, 2010				
Saturday, July 10, 2010				
Sunday, July 11, 2010				
Monday, July 12, 2010				
Tuesday, July 13, 2010				
Wednesday, July 14, 2010	6	527	87.8	322
Thursday, July 15, 2010	9	632	70.2	257
Friday, July 16, 2010	9	495	55.0	202
Saturday, July 17, 2010				
Sunday, July 18, 2010				
Monday, July 19, 2010				
Tuesday, July 20, 2010	7.5	685	91.3	335
Wednesday, July 21, 2010	8	462	57.7	212
Thursday, July 22, 2010	8	507	63.4	232
Friday, July 23, 2010				
Saturday, July 24, 2010				
Sunday, July 25, 2010				
Monday, July 26, 2010				
Tuesday, July 27, 2010				
Wednesday, July 28, 2010				
Thursday, July 29, 2010				
Friday, July 30, 2010				
Saturday, July 31, 2010				
Sunday, August 01, 2010				
Monday, August 02, 2010				
Tuesday, August 03, 2010				
Wednesday, August 04, 2010				
Thursday, August 05, 2010				
Friday, August 06, 2010				
Saturday, August 07, 2010				
Sunday, August 08, 2010				
Monday, August 09, 2010				
Tuesday, August 10, 2010				
Wednesday, August 11, 2010				
Thursday, August 12, 2010				

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate	
			(m^3/hr)	(igal/min)
Friday, August 13, 2010				
Saturday, August 14, 2010				
Sunday, August 15, 2010				
Monday, August 16, 2010				
Tuesday, August 17, 2010	6.25	459	73.4	269
Wednesday, August 18, 2010	6.5	479	73.6	270
Thursday, August 19, 2010	7	550	78.6	288
Friday, August 20, 2010	4	325	81.3	298
Saturday, August 21, 2010				
Sunday, August 22, 2010				
Monday, August 23, 2010	7	587	83.8	307
Tuesday, August 24, 2010	3.5	317	90.5	332
Wednesday, August 25, 2010				
Thursday, August 26, 2010	7.5	855	114.0	418
Friday, August 27, 2010	6	531	88.5	324
Saturday, August 28, 2010				
Sunday, August 29, 2010				
Monday, August 30, 2010				
Tuesday, August 31, 2010				
Wednesday, September 01, 2010				
Thursday, September 02, 2010				
Friday, September 03, 2010				
Saturday, September 04, 2010				
Sunday, September 05, 2010				
Monday, September 06, 2010				
Tuesday, September 07, 2010	7.5	736	98.1	360
Wednesday, September 08, 2010	8	609	76.1	279
Thursday, September 09, 2010	7	403	57.5	211
Friday, September 10, 2010				
Saturday, September 11, 2010				
Sunday, September 12, 2010				
Monday, September 13, 2010				
Tuesday, September 14, 2010	7	538	76.8	282
Wednesday, September 15, 2010	8	562	70.3	258
Thursday, September 16, 2010	7	372	53.1	195
Friday, September 17, 2010	4.5	436	96.8	355
Saturday, September 18, 2010				
Sunday, September 19, 2010				
Monday, September 20, 2010				
Tuesday, September 21, 2010				
Wednesday, September 22, 2010	4.5	414	92.0	337
Thursday, September 23, 2010	5.5	456	82.9	304
Friday, September 24, 2010				
Saturday, September 25, 2010				
Sunday, September 26, 2010				
Monday, September 27, 2010	5	287	57.3	210
Tuesday, September 28, 2010	19.5	1,096	56.2	206
Wednesday, September 29, 2010	5.5	289	52.5	193
Thursday, September 30, 2010				
Friday, October 01, 2010				
Saturday, October 02, 2010				
Sunday, October 03, 2010				
Monday, October 04, 2010				
Tuesday, October 05, 2010				
Wednesday, October 06, 2010	7.5	565	75.4	276
Thursday, October 07, 2010	3	255	85.0	312

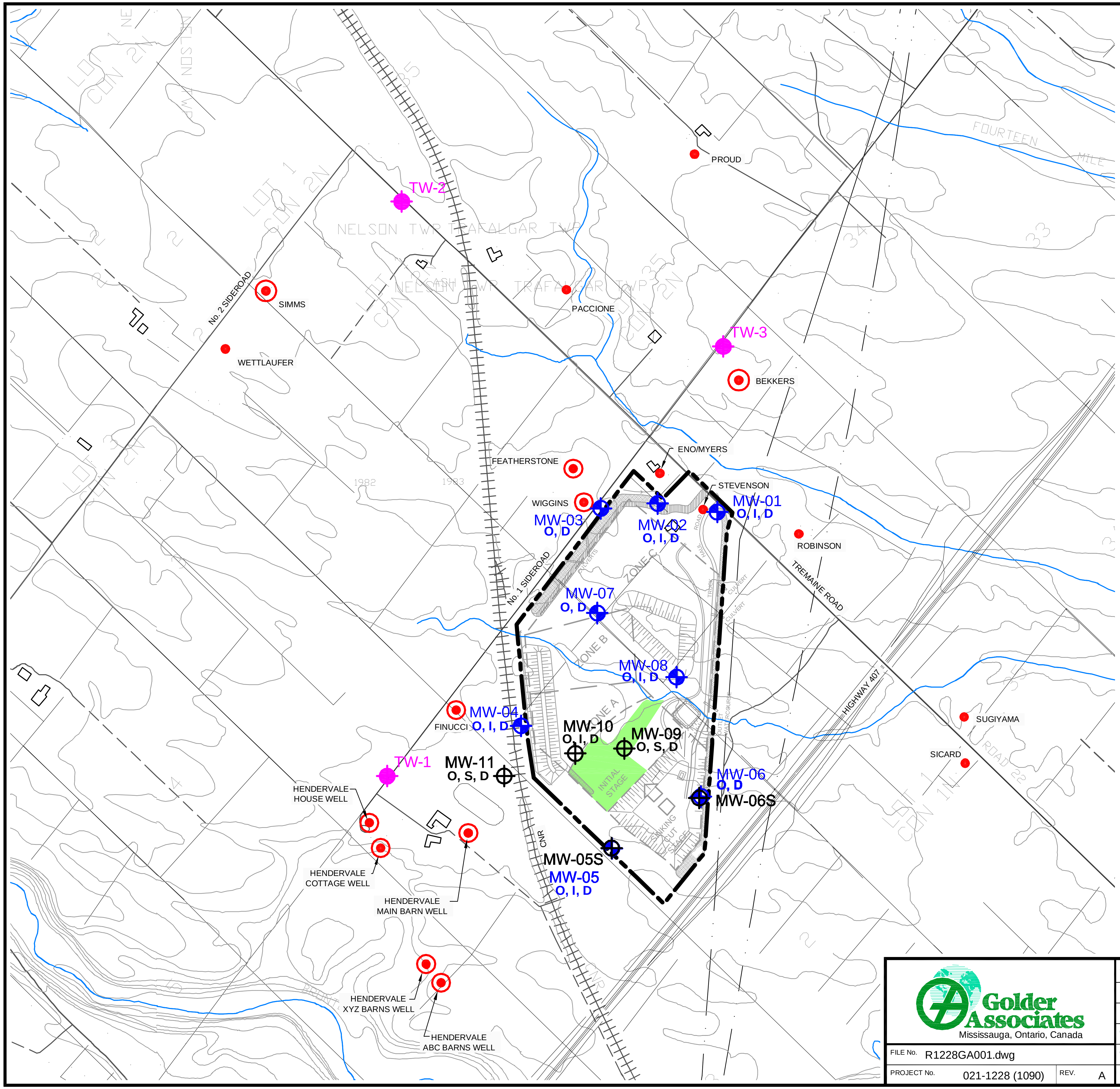
Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate	
			(m^3/hr)	(igal/min)
Friday, October 08, 2010				
Saturday, October 09, 2010				
Sunday, October 10, 2010				
Monday, October 11, 2010				
Tuesday, October 12, 2010				
Wednesday, October 13, 2010				
Thursday, October 14, 2010	6.5	473	72.7	267
Friday, October 15, 2010	8	547	68.3	251
Saturday, October 16, 2010				
Sunday, October 17, 2010				
Monday, October 18, 2010	6.5	541	83.2	305
Tuesday, October 19, 2010				
Wednesday, October 20, 2010	6.5	726	111.6	409
Thursday, October 21, 2010				
Friday, October 22, 2010	7.5	660	88.0	323
Saturday, October 23, 2010				
Sunday, October 24, 2010				
Monday, October 25, 2010	6	356	59.3	217
Tuesday, October 26, 2010				
Wednesday, October 27, 2010	6.5	719	110.6	406
Thursday, October 28, 2010	7	683	97.6	358
Friday, October 29, 2010	6	495	82.5	303
Saturday, October 30, 2010				
Sunday, October 31, 2010				
Monday, November 01, 2010	5	485	96.9	355
Tuesday, November 02, 2010				
Wednesday, November 03, 2010				
Thursday, November 04, 2010				
Friday, November 05, 2010	5	389	77.7	285
Saturday, November 06, 2010				
Sunday, November 07, 2010				
Monday, November 08, 2010	6.25	531	85.0	312
Tuesday, November 09, 2010	6	448	74.7	274
Wednesday, November 10, 2010	6	549	91.5	336
Thursday, November 11, 2010	7.25	572	78.9	289
Friday, November 12, 2010				
Saturday, November 13, 2010				
Sunday, November 14, 2010				
Monday, November 15, 2010	4	396	99.1	363
Tuesday, November 16, 2010	3	204	68.0	249
Wednesday, November 17, 2010	4	341	85.3	313
Thursday, November 18, 2010	5.5	434	78.9	289
Friday, November 19, 2010	7	420	60.0	220
Saturday, November 20, 2010				
Sunday, November 21, 2010				
Monday, November 22, 2010	6.5	346	53.2	195
Tuesday, November 23, 2010				
Wednesday, November 24, 2010				
Thursday, November 25, 2010	6.25	452	72.3	265
Friday, November 26, 2010	6.25	470	75.2	276
Saturday, November 27, 2010				
Sunday, November 28, 2010				
Monday, November 29, 2010	4.5	296	65.8	241
Tuesday, November 30, 2010	6	388	64.6	237
Wednesday, December 01, 2010	6	315	52.5	192
Thursday, December 02, 2010	3.5	145	41.5	152

Table 5
Daily Sump Production Data Collected by Hanson Brick
Tansley Quarry - Hanson Brick Ltd.

Date	Total Daily Pumping Time (hrs)	Total Daily Volume Pumped (m^3)	Sump Dewatering Rate	
			(m^3/hr)	(igal/min)
Friday, December 03, 2010				
Saturday, December 04, 2010				
Sunday, December 05, 2010				
Monday, December 06, 2010	8	474	59.3	217
Tuesday, December 07, 2010	6	336	56.0	205
Wednesday, December 08, 2010	5	265	53.0	194
Thursday, December 09, 2010				
Friday, December 10, 2010				
Saturday, December 11, 2010				
Sunday, December 12, 2010				
Monday, December 13, 2010	6	448	74.7	274
Tuesday, December 14, 2010	6	412	68.7	252
Wednesday, December 15, 2010				
Thursday, December 16, 2010				
Friday, December 17, 2010				
Saturday, December 18, 2010				
Sunday, December 19, 2010				
Monday, December 20, 2010	7	399	56.9	209
Tuesday, December 21, 2010	6	522	87.0	319
Wednesday, December 22, 2010				
Thursday, December 23, 2010				
Friday, December 24, 2010				
Saturday, December 25, 2010				
Sunday, December 26, 2010				
Monday, December 27, 2010				
Tuesday, December 28, 2010	5	421	84.1	309
Wednesday, December 29, 2010				
Thursday, December 30, 2010	5	357	71.4	262
Friday, December 31, 2010				
Totals for 2010:	**900**	**62,988**		

FIGURES



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S

LEGEND:

▬ ▬ ▬	TANSLEY QUARRY BOUNDARY
▥	STORAGE BERM
▨	LANDSCAPED BERM
▨	VEGETATED BERM
〰	SURFACE WATER COURSES
●	PRIVATE WELL
○	LEVEL LOGGER INSTALLED
⊕ MW-09	MONITORING WELL (GOLDER, JUNE/JULY 2007)
⊕ MW-01	MONITORING WELL (GOLDER, 2002)
⊕ TW-1	TEST WELL (GOLDER, AUGUST 2007)
🟩	APPROXIMATE LOCATION OF WOODED AREA

NOTES:

1. PROJECTION IS UTM83-17.
2. O = OVERBURDEN, S = STRADDLE, I = INTERMEDIATE AND D = DEEP WELL
3. LEVEL LOGGERS INSTALLED IN ALL OVERBURDEN WELLS AND ALL GOLDER 2007 MONITORING WELLS..

REFERENCES:

BASE DATA - PRODUCED BY GOLDER ASSOCIATES Ltd.UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, @ QUEENS PRINTER 2005.

200 0 200 400

SCALE 1:10000 METRES

Golder Associates
Mississauga, Ontario, Canada

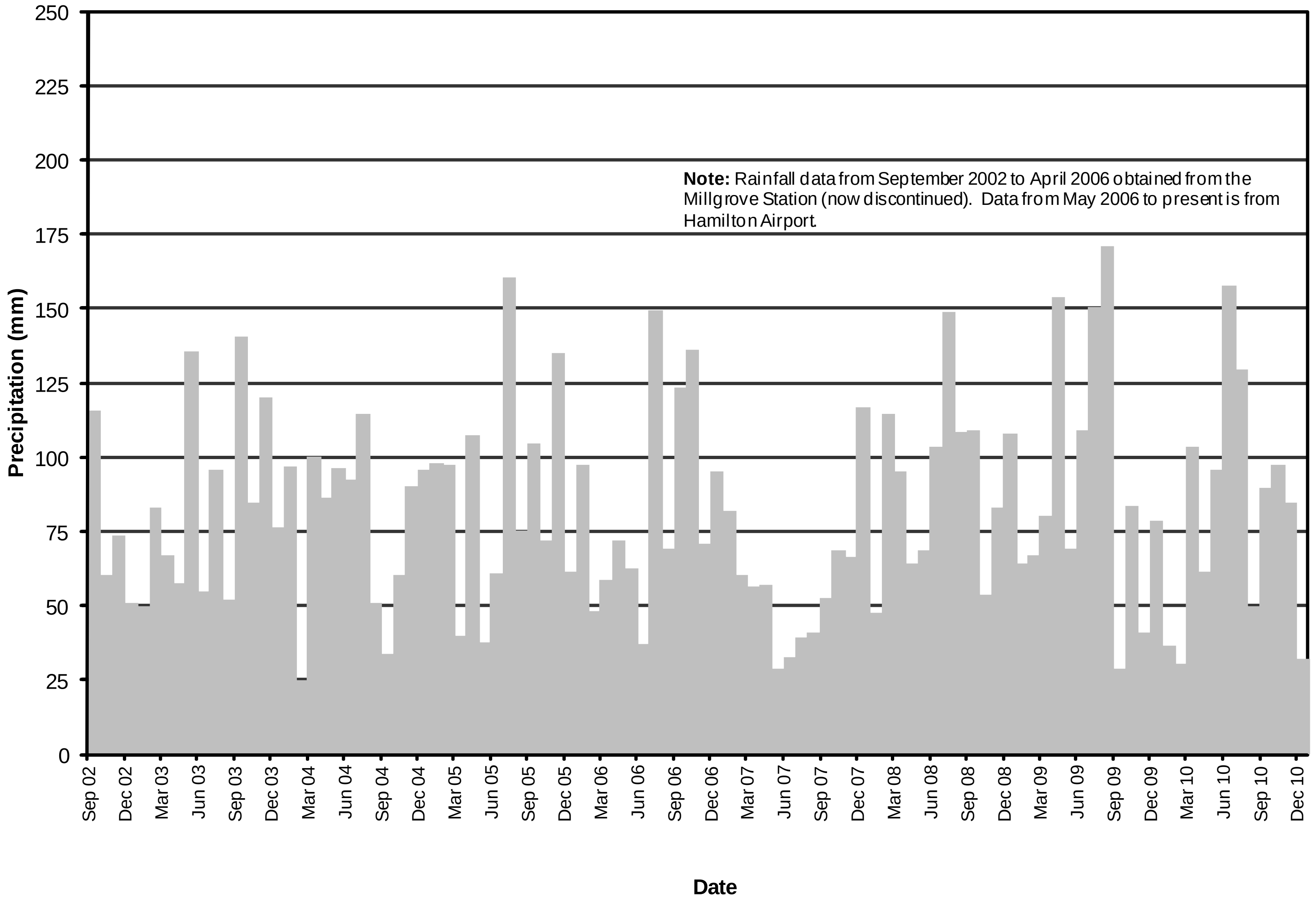
SCALE	AS SHOWN	TITLE	WELL LOCATION PLAN
DATE	10/25/11		
DESIGN			
CAD	FC/KD/CD		
CHECK	MB		TANSLEY QUARRY, HANSON BRICK LTD.
REVIEW	PMMC	FIGURE	1

FILE No. R1228GA001.dwg

PROJECT No. 021-1228 (1090) REV. A

PLOT DATE: October 25, 2011
FILENAME: T:\Projects\2002\021-1228\-GA- Phase1090\R1228GA001.dwg

PLOT DATE: October 18, 2011
FILENAME: T:\Projects\2002\021-1228\-IA- PHASE 1090\R1228IA002.dwg



Note: Rainfall data from September 2002 to April 2006 obtained from the Millgrove Station (now discontinued). Data from May 2006 to present is from Hamilton Airport.

Golder Associates
Mississauga, Ontario, Canada

SCALE	AS SHOWN
DATE	10/18/2011
DESIGN	KD
CAD	KD/DD
CHECK	MB
REVIEW	PMMC

TITLE

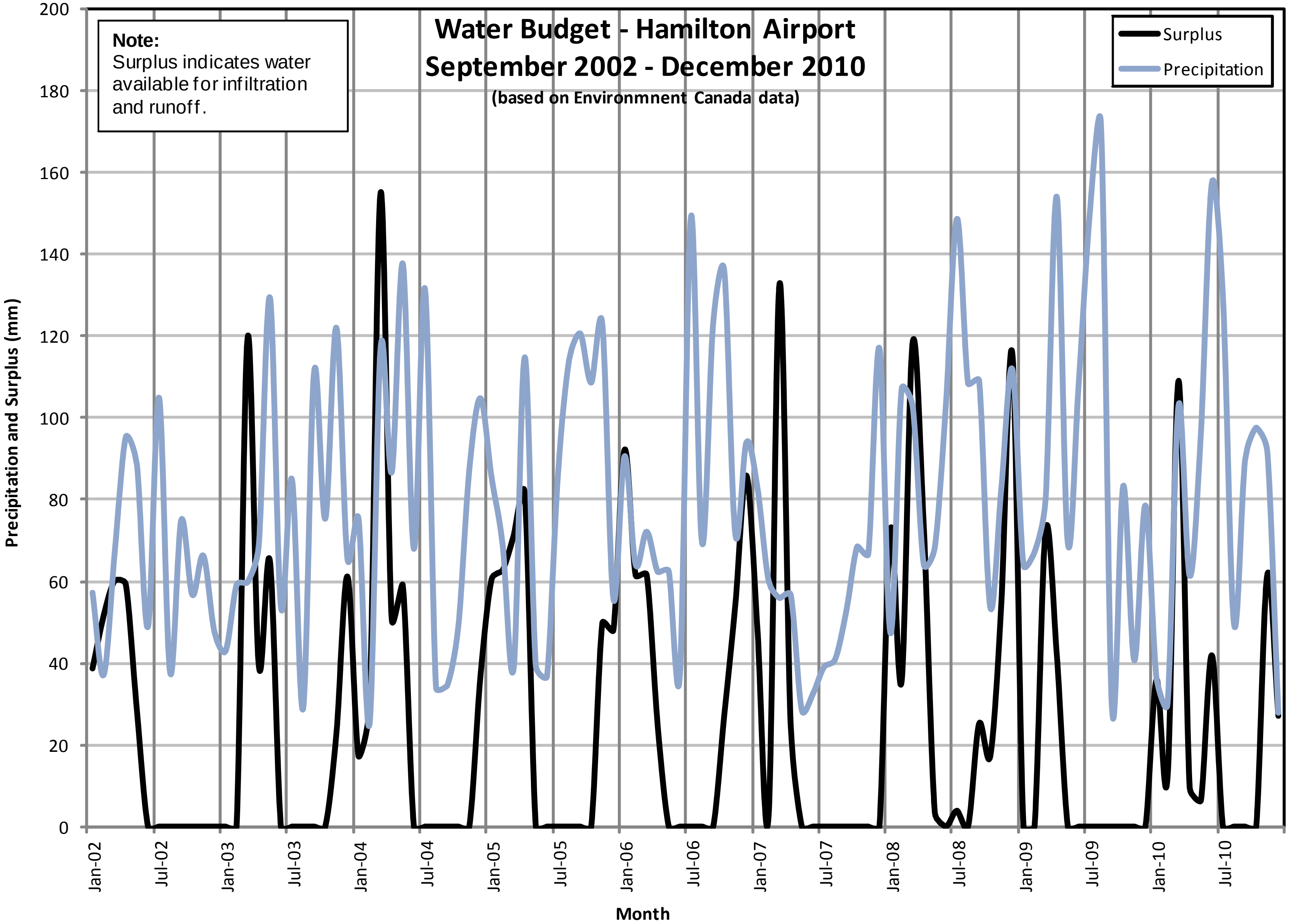
MONTHLY PRECIPITATION (mm)
MILLGROVE STATION / HAMILTON AIRPORT

TANSLEY QUARRY, HANSON BRICK LTD.

FILE No. R1228IA002.dwg
PROJECT No. 021-1228 (1090)
REV.

FIGURE 2

PLOT DATE: October 18, 2011
FILENAME: T:\Projects\2002\021-1228\-IA- PHASE 1090\R1228IA003.dwg



Golder Associates
Mississauga, Ontario, Canada

SCALE	AS SHOWN
DATE	10/18/2011
DESIGN	KD
CAD	KD/DD
CHECK	MB
REVIEW	PMMC

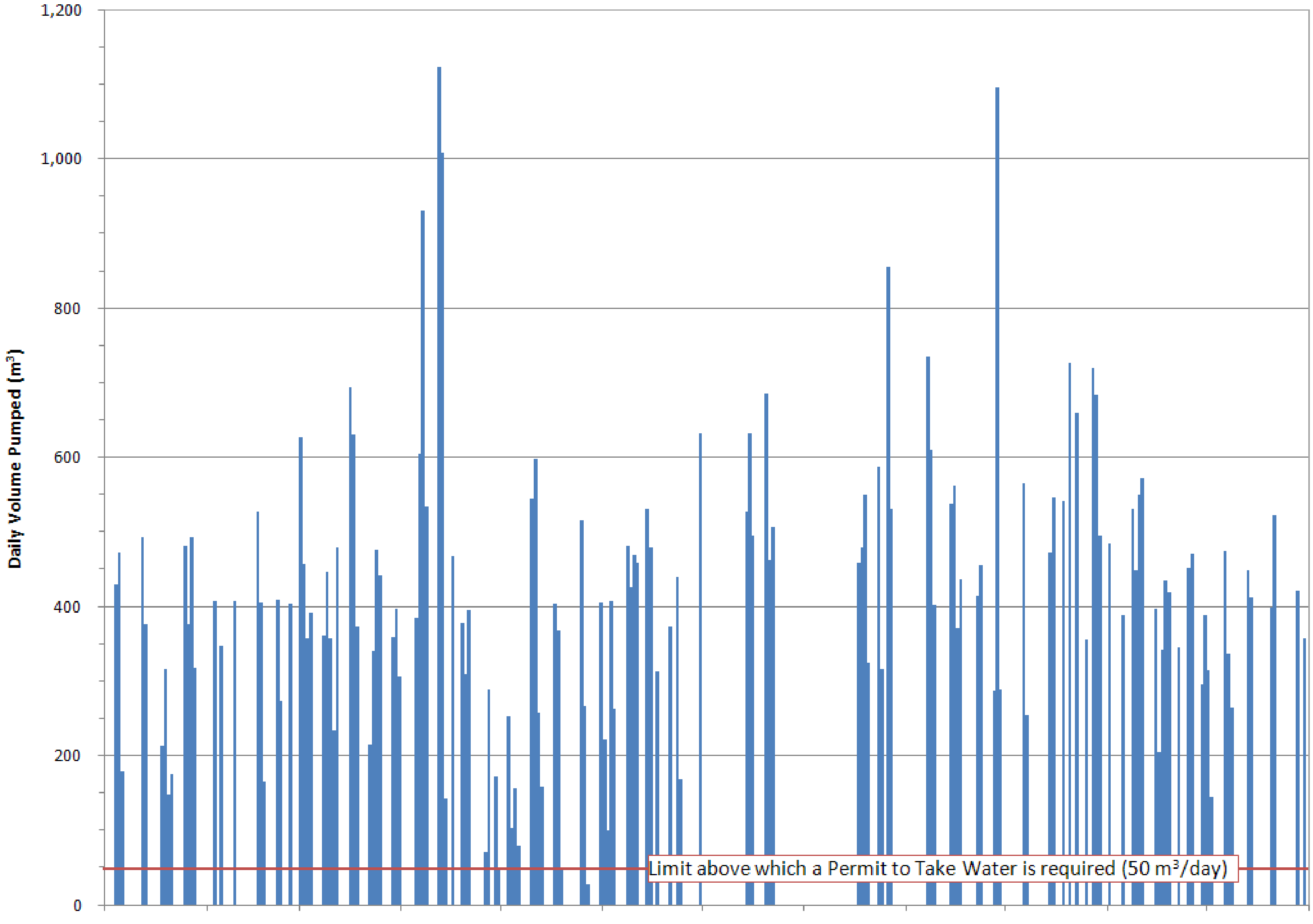
FILE No. R1228IA003.dwg
PROJECT No. 021-1228 (1090) REV.

TITLE

WATER BUDGET - HAMILTON AIRPORT SEPTEMBER 2002 - DECEMBER 2009
(based on Environment Canada data)

TANSLEY QUARRY, HANSON BRICK LTD.

FIGURE 3

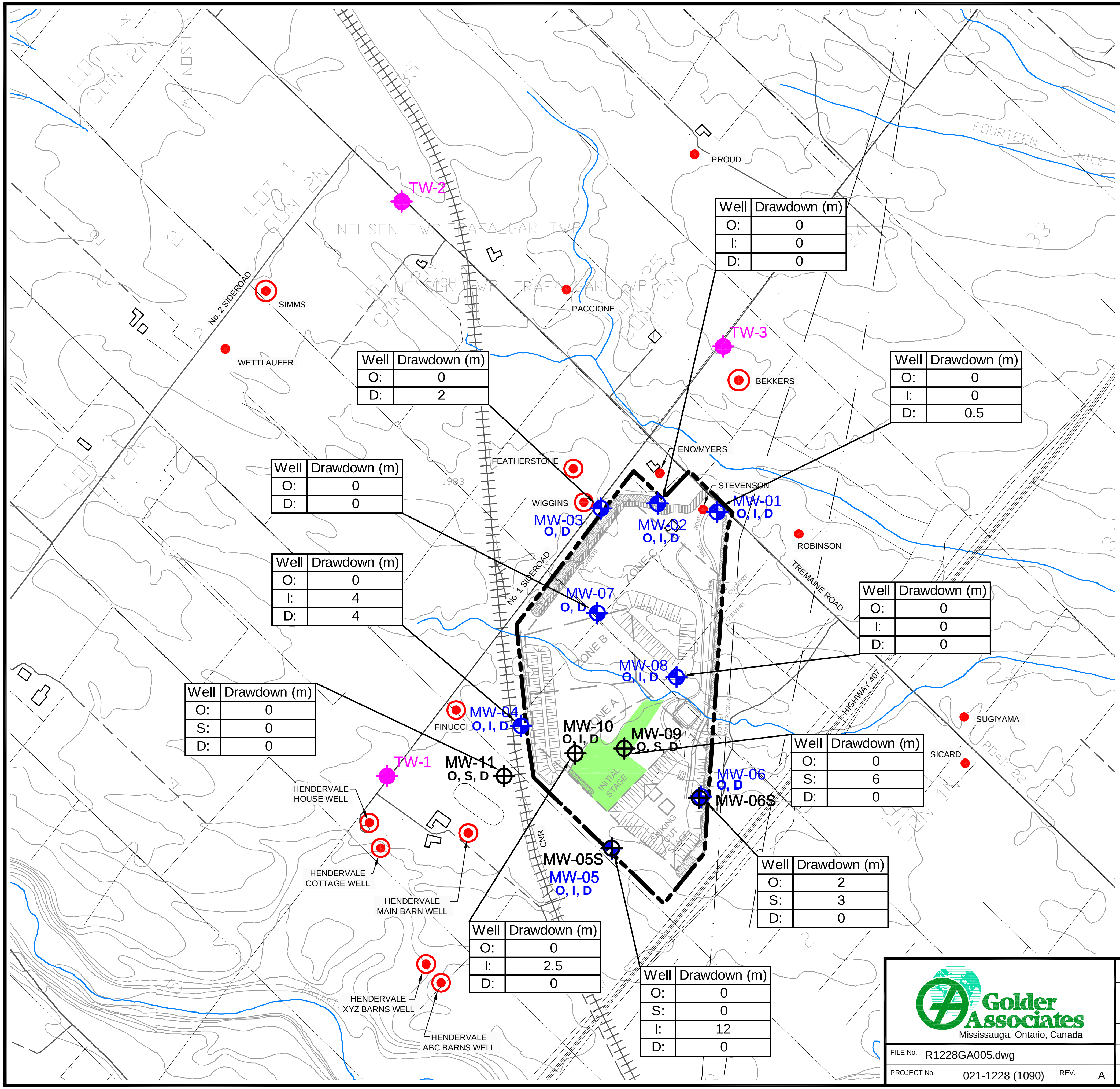


Golder Associates
Mississauga, Ontario, Canada

SCALE	AS SHOWN	TITLE	DAILY SUMP DISCHARGE VS. TIME
DATE	5/4/2011		
DESIGN	KD		
CAD	KD		
CHECK	MB		TANSLEY QUARRY, HANSON BRICK LTD.
REVIEW	PMMC	FIGURE	4

FILE No. R1228GA004.dwg

PROJECT No. 021-1228 (1090) REV.



Well	Drawdown (m)
O:	0
I:	0
D:	0

Well	Drawdown (m)
O:	0
D:	2

Well	Drawdown (m)
O:	0
I:	0
D:	0.5

Well	Drawdown (m)
O:	0
D:	0

Well	Drawdown (m)
O:	0
I:	4
D:	4

Well	Drawdown (m)
O:	0
I:	0
D:	0

Well	Drawdown (m)
O:	0
S:	0
D:	0

Well	Drawdown (m)
O:	0
S:	6
D:	0

Well	Drawdown (m)
O:	2
S:	3
D:	0

Well	Drawdown (m)
O:	0
I:	2.5
D:	0

Well	Drawdown (m)
O:	0
S:	0
I:	12
D:	0

LEGEND:

▬ ▬ ▬	TANSLEY QUARRY BOUNDARY
▥	STORAGE BERM
▨	LANDSCAPED BERM
▨	VEGETATED BERM
∼	SURFACE WATER COURSES
●	PRIVATE WELL
○	LEVEL LOGGER INSTALLED
⊕ MW-09	MONITORING WELL (GOLDER, JUNE/JULY 2007)
⊕ MW-01	MONITORING WELL (GOLDER, 2002)
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3. LEVEL LOGGERS INSTALLED IN ALL OVERBURDEN WELLS AND ALL GOLDER 2007 MONITORING WELLS..

REFERENCES:

BASE DATA - PRODUCED BY GOLDER ASSOCIATES Ltd.UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, @ QUEENS PRINTER 2005.

200 0 200 400
SCALE 1:10000 METRES

Golder Associates
Mississauga, Ontario, Canada

SCALE	AS SHOWN
DATE	10/25/11
DESIGN	
CAD	FC/KD/CD
CHECK	MB
REVIEW	PMMC

FILE No. R1228GA005.dwg
PROJECT No. 021-1228 (1090) REV. A

TITLE

SUMMARY OF GROUNDWATER LEVEL DRAWDOWN

TANSLEY QUARRY, HANSON BRICK LTD.

FIGURE 5

PLOT DATE: October 25, 2011
FILENAME: T:\Projects\2002\021-1228\-GA- Phase1090\R1228GA005.dwg

APPENDIX A

Adaptive Groundwater Management Plan (AMP) and Certificate of Approval, Industrial Sewage Works No. 4408-7AUL75

May 9, 2007

HANSON BRICK LTD.

TREMAINE QUARRY APPLICATIONS

ADAPTIVE GROUNDWATER MANAGEMENT PLAN (AMP)

1. RATIONALE AND GOAL

1.1 Hanson proposes to develop a 38.5 ha quarry in stages, over a relatively long period of time, producing 100,000 to 300,000 tonnes of shale annually. Hanson will first excavate the area described as "Sinking Cut Stage" and then excavate the area described as "Initial Stage", both areas are shown on Figure 1 and Figure 4. There are no predicted groundwater impacts during the Sinking Cut Stage. The Sinking Cut Stage will be completed in five to eight years. The Initial Stage will likely continue for another 10 to 20 years; Full Extraction will likely continue for another 40 to 60 years; and it may take approximately 80 years to fill the rehabilitated, 18.2 ha. lake, based upon average annual precipitation ("Surface Water Assessment Proposed Tremaine Quarry," Phillips Engineering Ltd., January 23, 2004) (Philips, 2004).

1.2 Excavation of shale bedrock during the Initial Stage from below the water table may influence the availability of potable water from private wells within the Potential Zone of Influence ("PZI"). The PZI in this context, refers to the potential drawdown contours, determined by the groundwater flow model shown on Figure 1 ("Hydrogeological Assessment of the Proposed Hanson Brick Tremaine Quarry, Burlington Ontario," Golder Associates, January 2004) (Golder, 2004). This model will be updated periodically as set out in subsection 5.2(h).

1.3 Properties listed in subsections 9.1 and 9.2 with wells within the 0.2 m PZI shown on Figure 1 are referred to herein as "Eligible Properties" and their owners from time to time are referred to as "Eligible Property Owners". Notwithstanding any changes to the PZI area based on additional modeling or data, it is agreed all provisions of this AMP applicable to Eligible Properties or Eligible Property Owners at the date of the AMP Agreement shall always apply to those Eligible Properties and Eligible Property Owners.

1.4 This AMP has been prepared to set out the program by which the potential effects of the quarry can be monitored and to guarantee that affected property owners will have access to an uninterrupted supply of potable water through well restoration; temporary imported water for onsite storage, or private communal water system ("PCWS"). Potable water means water that meets the drinking water quality standards set out in the *Safe Drinking Water Act*, 2002 and its regulations as amended or replaced by law governing drinking water.

1.5 The goals of this AMP are to:

a) Proactively ensure a continuous supply of potable water for property owners whose private wells may be adversely affected by the quarry operation; and

b) Update and refine the groundwater flow model, data and analysis, based upon measured data, to enable proactive prediction of the Potential Zone of Influence, as warranted.

1.6 The following attachments form part of this AMP and may be amended as outlined in subsection 5.2:

Figure 1	Potential Steady State Zones of Influence
Figure 2	Onsite Monitor Network
Figure 3	Communal Water Supply Line
Figure 4	Sinking Cut and Initial Stages
Table 1	Groundwater Level Monitoring Program
Table 2	Groundwater Quality Monitoring Program; and
Schedule 1	Expedited Arbitration for Technical Disputes

Reference in this AMP to Figures 1, 2, 3, and 4 Tables 1 and 2, Schedule 1, and the list in subsection 9.3, should be read to include amendments from time to time as provided for under this AMP and the AMP Agreement.

1.7 All reports prepared under this AMP will be prepared by experts selected and paid for by Hanson, and acceptable to the Region, and will provide for reliance by both Hanson and the Region.

1.8 This AMP is intended to provide the basis for a) an Adaptive Groundwater Management Plan Agreement, between the Region of Halton and Hanson Brick Ltd., b) agreements between owners of the existing business and residences listed in subsection 9.1 of this AMP and c) the Site Plan Drawing 7 – *"Adaptive Groundwater Management Plan"* that accompanies the *Aggregate Resources Act* (ARA) Licence, including excerpts of this AMP. The AMP includes 10 sections:

1. Rationale and Goal
2. Pre-Development Requirements;
3. Related Agreements;
4. Groundwater Monitoring Program;
5. Reporting and Annual Review;
6. Complaints Response Program;
7. Water Supply Restoration Program;
8. Communal Water Servicing;
9. Communal Water Supply Line; and
10. Definitions

2. PRE-DEVELOPMENT REQUIREMENTS

2.1 The groundwater flow model, Golder, 2004, indicates that two existing private wells could be affected, by up to 0.5 m of drawdown, by the completion of the Initial Stage as shown in Figure 1. These wells, (the Finucci Well and the Hendervale Farms' Main Barn Well) are predicted to have sufficient capacity to sustain this order of drawdown. However, continuous monitoring of those wells, selected on and offsite monitor wells installed for the quarry; and monitoring of other potentially affected wells in the area will enable regular updating of the flow model and the corresponding PZI.

2.2 As soon as possible after the Halton Region Council has adopted the Official Plan Amendment, including policy amendments, to permit a private communal water system, Hanson will commence the class environmental assessment approval process for the establishment of the PCWS and will, to the extent permission from private landowners is granted:

a) Complete the baseline survey of private wells listed in subsection 9.1 and any other private wells located within 1,000 m of the boundaries of the site, generally on Tremaine and Burnhamthorpe Roads, No. 1 and No. 2 Sideroad, and including these lots substantially within the 0.2 M PZI :

Road	PIN
No. 2 Sideroad	07201-0008
No. 2 Sideroad	07201-0045
Tremaine Road	07201-0101
Tremaine Road	24927-0133

b) Complete upgrades, meter and monitor installations, for private wells listed in subsection 9.1. Upgrades, subject to the consent of the well owners, will include repairs to the existing wells and water systems, by Hanson's licensed contractor, at a cost of up to $3,000 (as adjusted annually to reflect C.P.I. increase plus GST) ("as Adjusted") per well.

c) After work in subsection 2 b) is completed, estimate yield of private wells ("Well Yield Estimate") for the Finucci well, the Wiggins well, Hendervale house well, Hendervale cottage well, Hendervale XYZ barn well. Well Yield will be estimated by the following procedure: i) remove pump from well, ii) conduct step drawdown test at 3 specific rates (30 minute test per step) iii) monitor well recovery to static conditions to within 90% of the initial water level; iv) pump well dry iv) monitor well recovery to static conditions to within 90% of the initial water level and v) determine an estimate of well yield by interpreting results of step drawdown test and results of monitoring water level recovery in well.

d) Complete the installation of the proposed initial onsite and offsite groundwater monitoring network comprised of the monitoring wells and private wells described in Tables 1.1 and 1.4 in the locations shown on Figure 1, a continuous groundwater level monitor and meter on the drilled well of the lands municipally known as 3369 Burnhamthorpe Road owned by Mr. Jack Proud as of the date of the AMP Agreement (PIN 24927-0021), and a continuous groundwater level monitor and meter on Productive Wells. A Productive Well is a well which, when pumped continuously, is capable of sustaining its pumping rate and recovering to 90% of its yield after 30 minutes.

2.3 Hanson will initiate the monitoring program, set out in section 4, upon issuance of the ARA Licence; and will complete the Initial Monitoring Report, described in section 5, within 90 days after issuance of the ARA Licence.

3. RELATED AGREEMENTS

3.1 Prior to issuance of the ARA Licence, Hanson will enter the following Agreements with the Region:

a) Adaptive Groundwater Management Plan Agreement (AMP Agreement)

b) Private Communal Water System Agreement

c) Transportation Servicing Agreement

d) Access Agreement

e) Framework Agreement

3.2 Hanson will provide the Region of Halton with letters of credit and other financial assurance required by the Region to guarantee Hanson's performance under the agreements referred to in 3.1, above.

4. GROUNDWATER MONITORING PROGRAM

4.1 The annual monitoring program will initially include (in the first year), to the extent permission from landowners is granted:

a) Monthly collection of water level data from transducers and data loggers from monitoring wells on Figure 1 and more particularly described as "continuous" in Tables 1.1 to 1.4, for the first Annual Report during the initial period of monitoring, with future expansion of data collection, as developed through reporting and annual review.

b) Monthly collection of manual water levels from the Existing Private Wells on Figures 1 and 2.

c) Monthly collection of continuous monitor and meter data from on-site and private monitoring wells referred to in paragraph 2.2(d).

4.2 Annual collection of water samples from the wells set out in Tables 1.1 to 1.4, for laboratory analysis for the parameter suite listed in Table 2. Hanson will collect quarterly water samples from Productive Wells of Eligible Property Owners who request re-sampling until the dwellings are connected to the PCWS.

5. REPORTING AND ANNUAL REVIEW

5.1 Annual reporting will be implemented during the first calendar year following issuance of ARA Licence and continue for the term of the AMP Agreement. The following interim reporting will be provided prior to the preparation of the first annual report:

a) An Initial Monitoring Report on the baseline survey and monitoring, described in sections 2 and 4, prepared to the standard of the annual reports, set out below, including updated modeling; and

b) Monthly submissions of all monitoring results, within 30 days of commencement of monthly monitoring, to the Ministry of Natural Resources (MNR), Ministry of Environment (MOE) and the Region of Halton Planning & Public Works Department, with a letter report and updated tables and hydrographs, during Year 1.

5.2 Annual reports will be submitted by April 30th each year, for the preceding calendar year, to the MNR, MOE and the Region of Halton Planning & Public Works Department. Summaries and any information collected that relates to each Eligible Property Owner's well will be provided by Hanson to the Eligible Property Owner. Annual Reports will be available for viewing at the Region and on the water informational website of Hanson Brick. The reports will include:

a) The results of groundwater level and quality monitoring for the period, with comparisons to the results of historical monitoring;

b) Assessment of the water levels and quality at the onsite and offsite monitors and private wells, for evidence of any adverse effects or indication that adverse effects may occur;

c) Review onsite and offsite monitors and private wells to assess, report and provide recommendations on their adequacy, configuration, replacement and monitoring frequency (i.e. manual or transducer recording), and on the need for additional testing to determine Well Yield Estimates;

d) Recommendations for setting triggers for Hanson to implement contingency mechanisms and responses to triggers, as identified in the Initial Monitoring Report, based upon the available monitoring data;

e) An opinion on the potential for and time frame over which one or more other private wells, referred to in subsection 2.2 a) might be compromised to the extent that restoration may be required;

f) An opinion about the sufficiency of data to predict whether the wells on lots substantially within the 0.2 m PZI listed in subsection 2.2 a) might be compromised to the extent that well restoration could be required;

g) A comparison of neighbouring wells assessments to previous modeling and assessments, with a recommendation for revising the model assumptions, and updating the scope of monitoring and modeling;

h) The modeling will be updated for the annual report that applies to the year that the Sinking Cut Stage is completed, and prior to commencing excavation beyond the northern limit of the Sinking Cut Stage;

i) A review of the Potential Zone of Influence, with recommendation for revising the zone and the configuration and measurement frequency for onsite and offsite monitors and private wells; and

j) A concise evaluation of the effects of the quarry operation, with recommendations for adjustment of Quarry operations to minimize adverse effects on water supply;

5.3 Notwithstanding the requirement to report annually, Hanson will report any unusual water level or quality data, during the year, within 30 days of detection. "Unusual data" refers to changes in levels or quality which were not anticipated, based upon previous modeling and monitoring.

5.4 Annual Reports will be submitted for the approval of the Region of Halton and at the same time, a summary and any information collected about any Eligible Property Owner's well will be provided by Hanson to the Eligible Property Owner.

5.5 Hanson will compensate the Region of Halton for its costs to administer this AMP and to review and approve the Annual Reports.

5.6 Hanson will comply at its expense with recommendations in the Annual Report within the timelines set out in the Annual Report. Revisions and amendments to this AMP, approved by the Region and the MNR as a result of Annual Report review and approval, will be reflected in an updated version but will not require formal amendments to the AMP Agreement, ARA Site Plan, or Permit to Take Water, unless so required by the approving agency. Hanson and the Region will confirm in writing that the revised AMP replaces Schedule A of the AMP Agreement. Such amendments will be binding on Hanson, and upon amendment, Hanson shall be responsible for preparing a consolidation of the AMP.

5.7 Any recommended change(s) to the operation of the quarry and/or to the ARA site plan will be submitted to the Ministry of Natural Resources to be formally reviewed and processed as a site plan amendment in accordance with section 16 of the Aggregate Resources Act.

5.8 Any revised or consolidated AMP will be circulated by Hanson to the Region, MOE, MNR, and Eligible Property Owners.

6. COMPLAINTS RESPONSE PROGRAM

6.1 This section 6 applies to responding to complaints about wells of Eligible Property Owners, except i) that complaints about the barn wells on the property municipally known as 5244 No. 1 Sideroad with PIN 07201-0018 ("the Hendervale Barn Well(s)") are to be resolved in accordance with section 7 and ii) as indicated below in subsections 6.7 and 6.8. Notwithstanding any potential future changes to the 0.2 m PZI, this section shall apply, and continue to apply to Eligible Properties to which it applied at the date of the AMP Agreement.

6.2 At any time prior to operation of the PCWS, Hanson will, at its expense, provide, install, and maintain (including any necessary cleaning and disinfection) a Cistern System for any of the Eligible Property Owners, upon request. A Cistern System refers to an underground storage tank and any plumbing required to connect the tank up to the property owner's internal water system, with a minimum storage capacity of 3,000 Imperial Gallons (13,600 litres). The tank will be installed in an area directed by the homeowner which is clear of trees, utilities and similar obstacles in close proximity to the dwelling, if, and that is clearly identified to, and approved by, Hanson.

6.3 Hanson will, at its cost, engage a local licenced Water Supply Maintenance Contractor, ("Contractor") on call 24/7, and Potable Water Supplier ("Water Supplier") for the Eligible Property Owners as set out in subsections 6.4, 6.5 and 6.6 and provide contact details to those owners.

6.4 Hanson will be responsible to keep the cisterns filled with water in the amounts set out in subsection 6.6. The cisterns will be equipped with a low level alarm. At any time that an Eligible Property Owner believes that the cistern requires refilling, he may contact the Water Supplier, who will fill the cistern at Hanson's expense.

6.5 The Eligible Property Owners may at any time they believe their water quality or quantity has been compromised, contact the Contractor at no charge or cost to the Region or the Owner (at Hanson's expense).

6.6 In the event that a complaint has been received pursuant to subsection 6.5 for an Eligible Property, the Contractor will provide as soon as practicable, and in any event within twenty-four hours of receiving the complaint, at Hanson's expense, a temporary supply in the form of trucked delivery of potable water, as frequently as required, in an amount up to the greater of:

a) the difference in daily volume between the Well Yield Estimate before excavation of the Initial Stage commenced and the Well Yield Estimate at the time of complaint, if the difference is more than 10%; or

b) 360 litres (79 imperial gallons) per day per resident with a minimum of 1000 litres (220 imperial gallons) per day for each Eligible Property.

6.7 This subsection 6.7 applies to wells on Eligible Properties set out in subsections 9.1 and 9.2 at the date of the Initial Monitoring Report ("Pre-existing Wells"). The Contractor will, as soon as practical, conduct a private well water system inspection on Pre-existing Wells, and complete any required maintenance or repair, at a cost of up to $3,000, as Adjusted, without authorization from Hanson. This is a one time expenditure per well by Hanson.

6.8 This subsection applies to i) Pre-existing Wells in subsection 9.1 properties that are Productive Wells, that is the Finucci well, Wiggins well, Hendervale house and cottage wells, ii) Pre-existing Wells in the subsection 9.2 properties that are Productive Wells at the date of the Initial Monitoring Report or an Annual Report iii) any Pre-existing Well on the property municipally known as 3500 Tremaine Road (PIN 07201-0064) that is a Productive Well at the date of the Initial Monitoring Report or Annual Report.

a) If the water supply has not been restored with the expenditures in subsection 6.7, the matter will be immediately referred to a qualified hydrogeologist selected by Hanson, and approved by the Region, (the "Hydrogeologist").

b) The Hydrogeologist shall, within six weeks of his or her retainer by Hanson complete an assessment and report on the well failure, the cause of the well failure (although cause of well failure does not affect Hanson's obligations in this section 6), whether it can be restored, and recommend a restoration option or options which will be based on consideration of all reasonable restoration options that can be achieved for a cost of less than $15,000 (as Adjusted). Restoration options shall include the well restoration options set out in subsection 7.3 below. Well restoration will be achieved if a well is restored to 90% of the Well Yield Estimate before the effect of the Quarry ("Successful Well Restoration").

c) Hanson will ensure that the Hydrogeologist's report is provided to the MOE, Region of Halton, and any Eligible Property Owner whose well is being restored. The Eligible Property Owner may engage a hydrogeologist to review the report up to an amount of $2,000, as Adjusted at Hanson's expense.

d) If the Hydrogeologist report concludes that restoration of water quality and/or quantity is not achievable at a cost of less than $15,000 (as Adjusted), Hanson will, at its cost, supply trucked, potable water in the amount set out in subsection 6.6, until connection to the PCWS is provided in subsection 6.9.

e) If the Hydrogeologist's report concludes that water quantity and/or quality can be restored by implementing a restoration option at a cost of less than $15,000 (as Adjusted) in addition to the $3,000, As Adjusted spent on repairs referred to in subsection 6.7, Hanson will, subject to obtaining the Owner's consent, implement the well restoration option at Hanson's expense, such expense to not more than $15,000 (as Adjusted).

f) If at some future date, the recommended restoration option fails, and a complaint is received with respect to a well which has been restored under this subsection, Hanson will investigate and implement further possible restoration measures. The cost of this investigation and restoration will not exceed $5,000 (as Adjusted). This is a one time expenditure per well by Hanson.

g) In the case where Hanson is unable to achieve Successful Well Restoration, Hanson will continue to be responsible to provide trucked potable water to the Eligible Property Owner pursuant to subsection 6.6.

6.9 The well restoration and trucked potable water supply program provided for in this section 6 will cease to apply once the property is connected to the PCWS, and supplied with potable water in compliance with the PCWS Agreement.

7. WATER SUPPLY RESTORATION PROGRAM

7.1 The Water Supply Restoration Program will be implemented to restore a) private wells beyond the 0.2M PZ1, b) private wells on lots listed in subsection 2.2 a), lots substantially within the 0.2 m PZI to the extent that these lots have wells within the 0.2 m PZI, c) lots within any future revised 0.2 m PZI, and d) the Hendervale Main Barn and ABC Barn Wells.

7.2 Wells will be restored under this section 7 if the Well Yield Estimate is reduced as a result of the quarry excavation. Successful Well Restoration is as defined in subsection 6.8 b). The objective is to restore water with an on-site groundwater supply, if feasible. As such, all feasible well restoration options will be explored first before connecting the property to the PCWS through subsection 7.5 b).

7.3 If a private well owner believes his well is compromised, he may contact Hanson. Hanson's Contractor and Hydrogeologist will investigate, at Hanson's costs, whether the well has been adversely affected by operation of the quarry, based upon Well Yield Estimates and historical groundwater monitoring data. If the Well Yield Estimate has not been reduced by more than 10% as a result of the operation of the quarry, Hanson will not be responsible to restore the well. If the Well Yield Estimate has been reduced by more than 10%, as a result of operation of the quarry, Hanson's Contractor and Hydrogeologist will recommend feasible restoration options through the steps in subsection 6.8 a) to e) except that the cost limit referred to in subsections 6.8 b) d) and e) will be $30,000 (as Adjusted). Feasible restoration options may include the following:

a) Well System Rehabilitation
The well system could be rehabilitated by deepening or replacement of pumps, pump lines flushing, etc., to improve well performance.

b) Well Replacement
The well could be replaced or augmented with a new well that could be located further from the quarry excavation. The feasibility of well replacement would be based on a test drilling program that could include more than one test well.

c) Additional Wells
Additional wells could be installed to supplement the supply of existing well(s). The feasibility of well replacement would be based upon a test drilling program that could include more than one test well.

d) Trickle Well(s) with Cistern(s)
Where feasible, the existing well(s) would be converted to a low yield pumping system, or installation of an additional well, including large diameter bored well(s) if appropriate; along with construction of a cistern to increase water storage.

7.4 While determining the cause of well failure and feasible options, Hanson will supply sufficient potable water to the owner. If it is found that the Quarry excavation did not compromise the well, and that the Owner's request is frivolous, Hanson may seek private remedies against the owners for costs of supplying potable water.

7.5 The Region, after considering the Hydrogeologist's report in consultation with Hanson and the MOE, will determine whether the well has been compromised by quarry caused interference and the feasibility of well restoration options. In the event that the Region determines that the well has been compromised by Hanson's quarry and

a) a well restoration option is feasible, the Region will determine which option and Hanson will implement it at Hanson's cost, or

b) well restoration options are not feasible, or if the restoration option fails to provide adequate supply of potable water, Hanson will continue to supply trucked, potable water until the owner of the well can be provided with water service by connection to the extended PCWS on an expeditious basis. The amount of water provided by the PCWS shall be a maximum rate of 2000 l/day/dwelling. The amount of water provided for private wells serving uses other than domestic use shall be the difference between the Well Yield Estimate before the effect of the quarry and the current Well Yield Estimate.

If Hanson, the Owner or Well Owner disagrees with the Region's determination in a) or b), Hanson, the Region, Owner or Well Owner may initiate expedited arbitration set out in Schedule 1 of this AMP by sending a Notice of Technical Arbitration to the other Parties within fourteen (14) calendar days of receipt of the determination.

7.6 Subsection 9.3 will be revised from time to time to include a list of any additional dwellings and buildings serviced by the private communal water system.

8. COMMUNAL WATER SERVICING

8.1 A private communal water system will be designed, constructed, maintained and operated to provide potable water supply to properties identified through the AMP process, all at Hanson's expense. Without derogating from the obligations in the PCWS Agreement or AMP Agreement, Hanson will operate the PCWS in compliance with the *Safe Drinking Water Act* and its regulations as amended or replaced from time to time. The PCWS may be expanded as a result of recommendations from the Reporting and Annual Review described above. The Environmental Study Report prepared for the Class Environmental Assessment shall evaluate all reasonable alternative solutions and identify a preferred option for the establishment of the PCWS, including the source of water. Prior to construction, the Region of Halton will approve the design, plans, specifications and location of the PCWS and any expansions to the PCWS. The PCWS will be completed in accordance with the PCWS Agreement.

8.2 The rural water line is expected to be of 100 mm diameter and located on Tremaine Road, from 300 m south of Highway 407 northerly to No. 1 Sideroad; then westerly on No. 1 Sideroad to the Hendervale residence at No. 5244 No. 1 Sideroad with PIN 07201-0018, as drawn on Figure 3. Hanson will install, at its own expense, prior to PCWS operation, a Service to, and a Service Valve on, the property line of all lots of record listed in subsections 9.1, 9.2 and 9.3.

8.3 In order to effect connection to the PCWS:

a) property owners listed in subsection 9.1 and 9.3 (as determined in subsection 7.5(b)) with dwellings at the time of installation of the PCWS, must install, at Hanson's expense, a Private Service from the Service Valve to the interior of dwellings identified in subsection 9.1, Water Meter, Backflow preventers, and, if requested by Hanson, a Remote Reader;

b) Property owners listed in subsection 9.2 (vacant lots) must install and pay for the Private Service, Water Meter, Backflow Preventer, and if requested by Hanson, Remote Reader;

c) Water Service components must be established, installed and maintained to Regional Standards; and

d) Individual property owners will abide by standard Water Service Terms provided by Hanson setting out the terms and conditions for the supply of water, including, but not limited to, all of the responsibilities in this section 8.

8.4 The property owners shall be responsible to maintain the Private Service and Backflow Preventer, including thawing of frozen Private Services. Hanson is not responsible to thaw frozen Private Services. At no time shall a Private Service be used to service more than one registered lot (Lot of Record) or dwellings not identified in section 9.

8.5 Hanson shall own and be responsible to maintain the Service, Water Meter, and Remote Reader. Hanson shall not be liable for any damages which may arise as a consequence of the thawing of frozen Water Service components, or the interruption or discontinuation of water supply as a result of an emergency, breakdown, repair or extension if reasonable notice of intention to interrupt or reduce service is given. Hanson will have the usual rights that a municipal water supplier and operator has such as the rights: to set limits on water use; to enter land and buildings in order to inspect, install, repair, alter or disconnect Water Service components; to discontinue or reduce the supply of water if the owner does not maintain the Private Service or Backflow Preventer or for non-payment of water bills.

8.6 Whenever Hanson connects a building or dwelling to the PCWS, Hanson will, at its own expense, decommission the well(s) using a Licenced Well Driller, and in accordance with the Wells Regulation (Ontario Regulation 903), subject to the owner's permission to use the well for monitoring purposes, and will decommission cistern systems to the satisfaction of the Region. Property owners may elect to continue to use their wells in addition to the PCWS water supply, on the conditions that a) there is no cost or liability to Hanson in relation to the well once the dwelling is connected, and b) the property owner establishes to the Region's satisfaction that the existing well and associated plumbing are in good structural condition, comply with applicable laws, guidelines and regulations including the MOE Wells Regulation and *Building Code Act,* and that the two water supply systems have been separated by a Backflow Preventer in accordance with Halton Region By-law nos. 157-05 and 42-04, as amended or replaced.

8.7 Hanson has agreed to assume the cost of maintaining the Private Communal Water System in perpetuity as further provided in the PCWS Agreement, unless municipal service becomes permitted and is available.

8.8 The serviced property owners connected to the PCWS will be expected to pay Hanson for their metered water consumption no more than the Region's 12-20 mm monthly meter charge and the water usage charge, as amended by the Region from time to time, excluding the cast iron watermain and wastewater surcharges, to be adjusted as such charges are amended by the Region from time to time, subject to private arrangements that Hanson may make with the property owners. Such private arrangements will not bind the Region.

8.9 It is predicted that there will be no impact on private wells within the first five years of Quarry operation, during which time only the Sinking Cut Stage area depicted on Figure 4 will be excavated. If despite concerted efforts by Hanson:

a) approvals, including but not limited to the Region's consent to commence construction of the PCWS, are not obtained for the PCWS by the earliest of :

(i) within 42 months from obtaining its ARA Licence or

(ii) prior to excavating beyond the Sinking Cut Stage;

or

b) if the PCWS is not constructed, installed, tested and fully operational within the earliest of

(i) 18 months of receiving the Region's consent to commence construction of the PCWS,

(ii) 5 years of issuance of the ARA Licence, or

(iii) prior to excavating beyond the Sinking Cut Stage,

then Hanson will cease excavation and dewatering and notify the Region and owners of properties listed in section 9. Subject to the extension in subsection 8.10, Hanson will rehabilitate the excavated area of the quarry, allow it to fill with water and surrender the ARA Licence.

8.10 If construction has been commenced within 6 months of the Region's authorization to commence construction but not completed, installed, tested and fully operational within the earlier of

a) 2 years of the Region's authorization to commence construction of the PCWS; or

b) 5 years of the issuance of the ARA Licence,

in both cases for reasons outside of Hanson's control, then Hanson is permitted an extra 6 months to complete construction. In no event shall there be excavation beyond the Sinking Cut Stage until the PCWS is fully installed, tested and operational.

8.11 If the ARA Licence is surrendered, suspended or revoked before the PCWS is fully operational then Hanson will continue to provide potable water to Eligible Property Owner, until Hanson's hydrogeology report, as approved by the Region, shows that there is no interference from the Quarry operations on private wells.

9. COMMUNAL WATER SUPPLY LINE

The private communal water supply service will be initially available to the owner of any lot of record as set out in 9.1 and 9.2. The Potential Zone of Influence will be updated through the review process in section 5, and will assist, along with water level data and Well Yield Estimates, to identify wells that may be affected in the future by the quarry. The Private Communal Water Supply service will be provided to lots with wells that are affected by the operation of the quarry, and which cannot be restored, through the process set out in section 7. Additional lots that are connected to the PCWS will be added to 9.3.

9.1 Existing Dwellings and Buildings located within the 0.2M PZI

Address	Owner	Building to be connected	PIN
3278 Tremaine Road	Sicard	dwelling	07201-0072
3287 Tremaine Road	Sugiyama	dwelling	24927-0108
3451 Tremaine Road	Robinson	dwelling	24927-0022
3500 Tremaine Road	Eno/Myers	dwelling	07201-0064
3510 Tremaine Road	Hansen	dwelling	07201-0063
3466 Burhamthorpe Road	Bekker	dwelling	24927-0110
5493 No. 1 Sideroad	Featherstone	dwelling	07201-0049
5465 No. 1 Sideroad	Wiggins	dwelling	07201-0048
5300 No. 1 Sideroad	Finucci	dwelling	07201-0062
5244 No. 1 Sideroad	Hendervale	Main House Farm House Cottage	07201-0018

9.2 Existing Vacant Lots of Record located within the 0.2 M PZI

Road	Owner	# on Figure 3	PIN
Tremaine Road	Stevenson	1	07201-0066
Tremaine Road	Robinson	5	24927-0109
Tremaine Road	# 1251638 Ontario Inc.	6	07201 - 0011
No. 1 Sideroad	Ironrose Investments Ltd	2	07201-0104
No. 1 Sideroad	Ironrose Investments Ltd.	7	07201-0097
No. 1 Sideroad	Pelletterio	3	07201-0105

9.3 **Additional Dwellings, Buildings and lots which may be, or are, connected to the private communal water system through the Water Supply Restoration Program in section 7 of the AMP (to be revised as the program progresses).**

Address	Owner	Building	PIN	Status
52544 No. 1 Sideroad	Hendervale	Main Barn well	07201-0018	Potential connection

10.0 DEFINITIONS

In this AMP the following expressions have the meanings set out below.

ARA as defined in subsection 1.8

as Adjusted as defined in subsection 2.2 (b)

Backflow Preventer is the same as Backflow Prevention Device defined in the Regional Municipality of Halton By-law No. 42-04 as amended from time to time

Cistern System as defined in subsection 6.2

Contractor as defined in subsection 6.3

Eligible Properties as defined in subsection 1.3

Eligible Property Owners as defined in subsection 1.3

Hendervale Barn Wells as defined in subsection 6.1

Hydrogeologist as defined in subsection 6.8 (a)

Initial Stage as defined in subsection 1.1

MNR as defined in subsection 5.1 b)

MOE as defined in subsection 5.1 b)
Operative Agreements as defined in subsection 3.1

PCWS as defined in subsection 1.4

Potable Water is defined in subsection 1.4

Pre-existing Wells as defined in subsection 6.7

Private Service means the portion of the Service that is located on private property.

Productive Well as defined in subsection 2.2 d)

PZI as defined in subsection 1.2

Regional Standards means, for the Water Service, the standards required by the Region in By-law Nos. 42-04 and 157-05

Remote Reader means a device used to record the quantity of water and is locted in an area remote from the Water Meter to which it is connected.

Service means the pipe which is connected to a water main distribution system which is designed to carry potable water within the municipal right of way.

Service Valve means a device consisting of a valve and box located at the property boundary for controlling the flow of water to a Private Service.

Sinking Cut Stage as defined in subsection 1.1

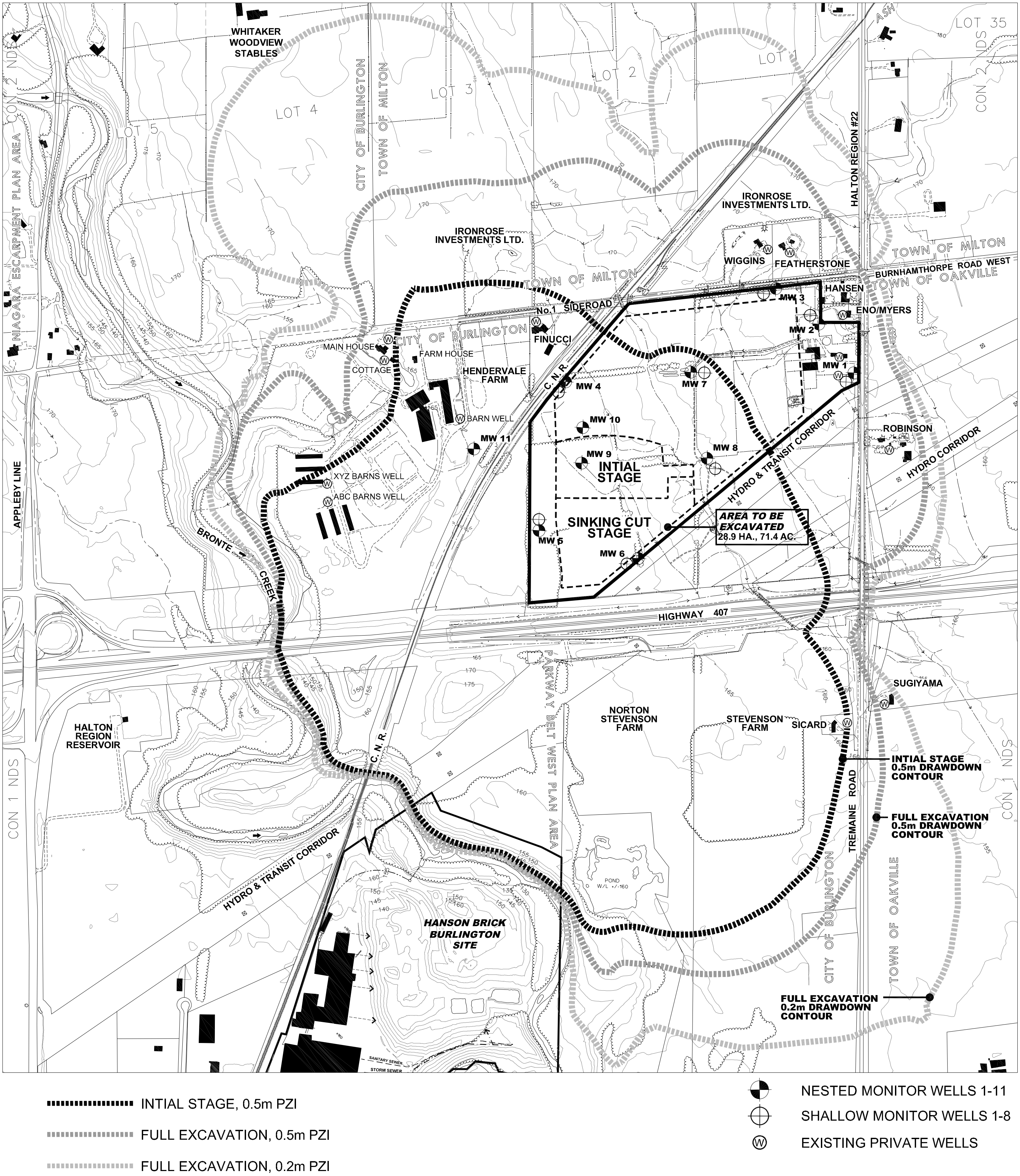
Successful Well Restoration as defined in subsection 6.8 b)

Water Meter means a device or mechanism which is the property of Hanson used for the purpose of measuring the flow and quantity of water consumed.

Water Service means all of the physical and mechanical equipment and devices to fully and completely service a property with water including the Water Meter.

Water Supplier as defined in subsection 6.3

Well Yield Estimate as defined in subsection 2.2 c)



Source: Golder Associates, June 2005

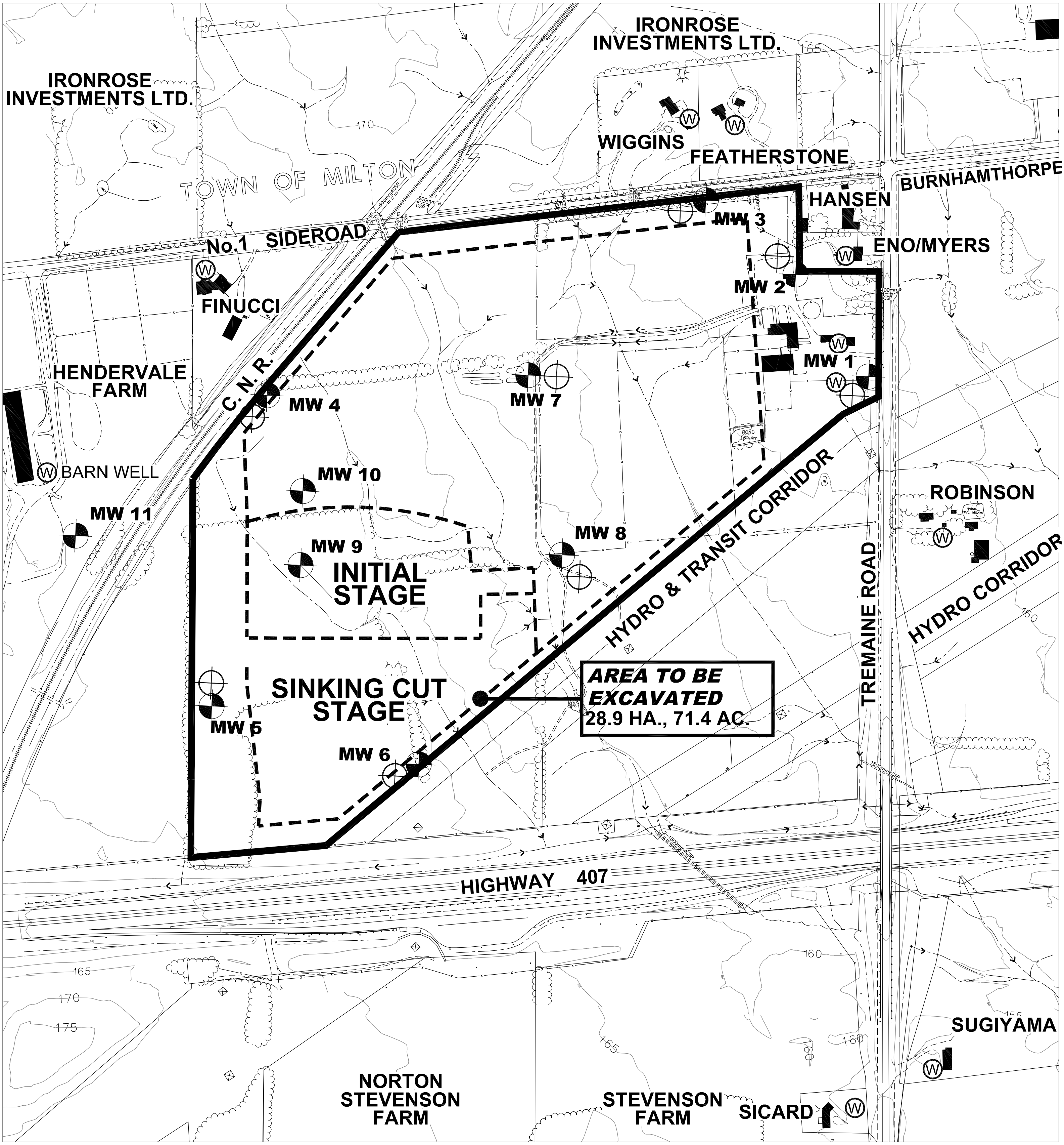
Figure 1

POTENTIAL STEADY STATE ZONES OF INFLUENCE

Scale: 1: 12,500

13 November 2006

Hanson Brick Ltd., Tremaine Quarry
ADAPTIVE GROUNDWATER MANAGEMENT PLAN



◕ EXISTING NESTED MONITOR WELLS MW1-MW8

⊕ PROPOSED SHALLOW MONITOR WELLS MWS1-MWS8

◕ PROPOSED SENTINEL WELLS MW9-MW11

Ⓦ EXISTING PRIVATE WELLS

Figure 2

ONSITE MONITOR NETWORK

Scale: 1: 6,000

Source: Golder Associates, June 2005

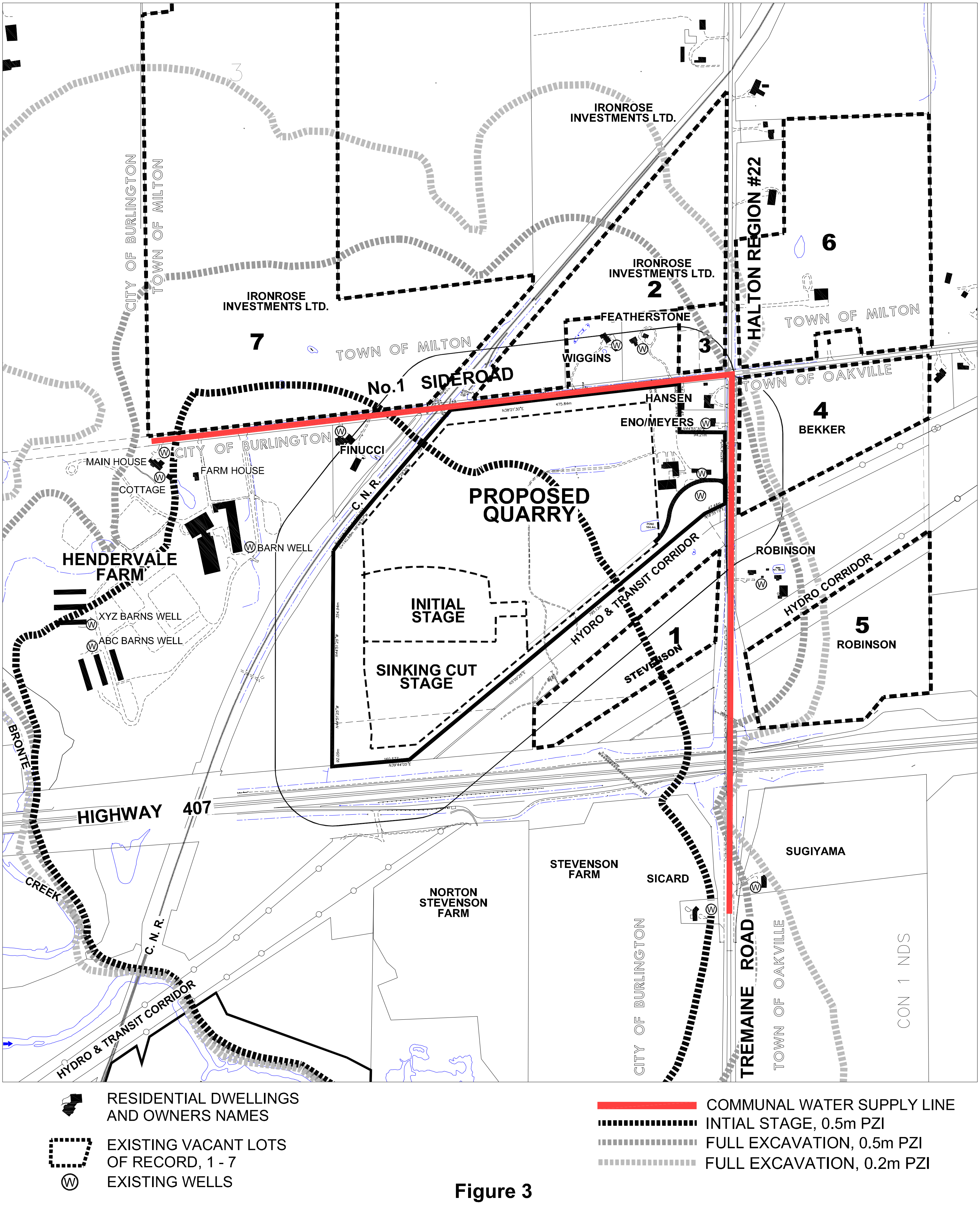


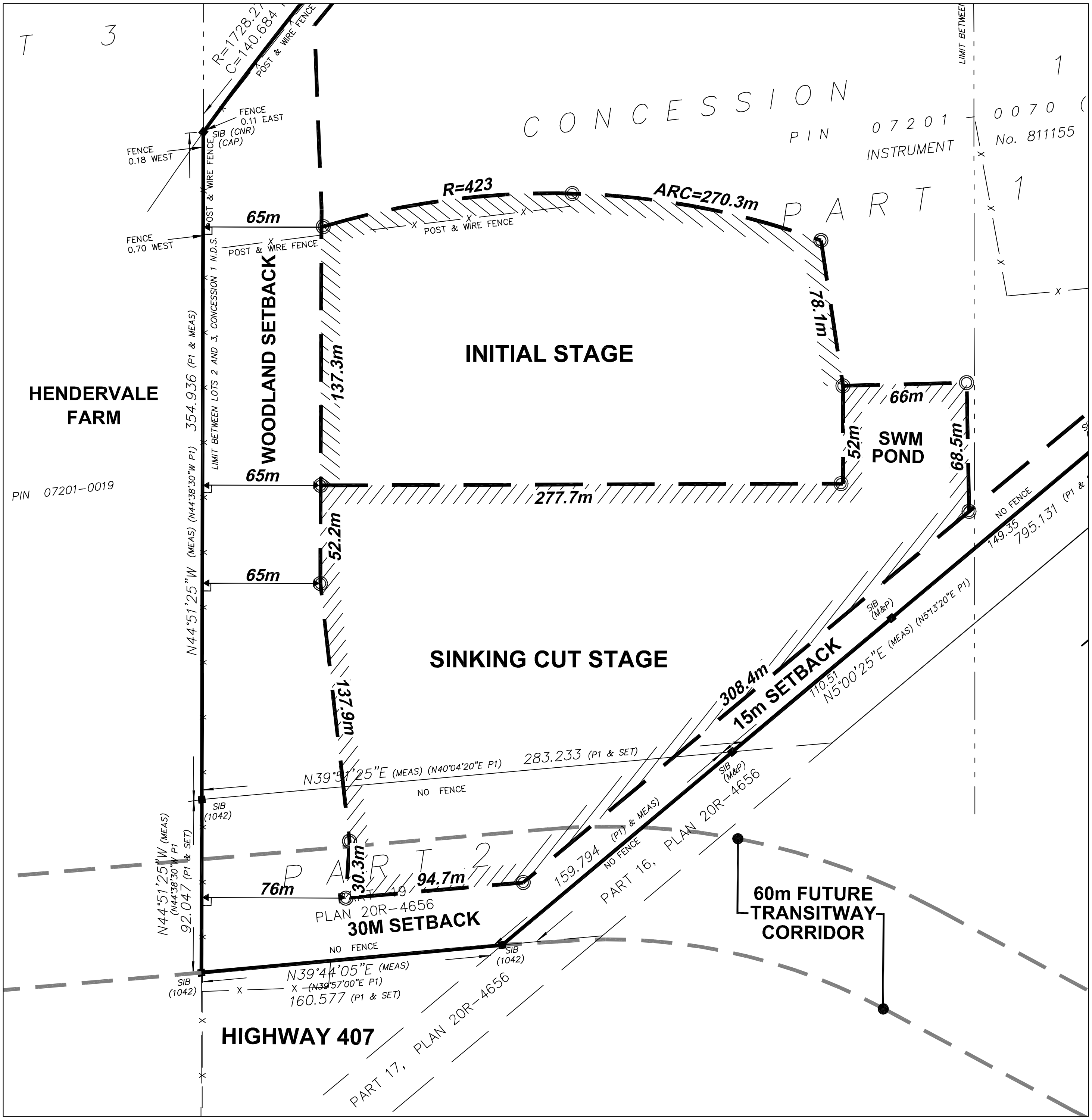
Figure 3

COMMUNAL WATER SUPPLY LINE

Scale: 1 : 10,000

13 November 2006

Hanson Brick Ltd., Tremaine Quarry
ADAPTIVE GROUNDWATER MANAGEMENT PLAN



Source: Plan of Survey, 20R-14660 by Mackay Mackay & Peters Limited Completed 21 May 2002.

MAXIMUM DEPTH OF EXCAVATION
TO ELEVATION 130.0 m.a.s.l.

◎ 1.2m WOOD MARKER POSTS

Figure 4

SINKING CUT & INITIAL STAGES

NORTH

Scale: 1:3,000

13 November 2006

TABLE 1.1 Groundwater Level Monitoring Program

Monitoring well /depth	*Monitoring Frequency*	*Comments*
MW1S	M	Previously called MW01-C
MW1I	M	Previously called MW01-B
MW1D	M	Previously called MW01-A
MW2S	M	Previously called MW02-C
MW2I	M	Previously called MW02-B
MW2D	M	Previously called MW02-A
MW3S / 26-47'	M	Previously called MW03-B
MW3D / 110-130'	C	Previously called MW03-A
MW4S	M	Previously called MW04-C
MW4I	M	Previously called MW04-B
MW4D	M	Previously called MW04-A
MW5S	M	Previously called MW05-C
MW5I	C	Previously called MW05-B
MW5D	M	Previously called MW05-A
MW6S / 10-23'	C	Previously called MW05-B
MW6I / 75-95'	M	Previously called MW05-A
MW7S / 17-27'	M	Previously called MW07-B
MW7D / 125-145'	M	Previously called MW07-A
MW8S	M	Previously called MW08-C
MW8I	M	Previously called MW08-B
MW8D	M	Previously called MW07-A

Notes:

1. **Names for existing wells**
   Original names from Golder Associates (2004); Figures 8, 9, 10 &A.1 to A.8
   Reference: Golder Technical Memorandum, October 16, 2006
   Revised names from R.J. Long Table 1 revised October 28, 2006

2. **Proposed monitoring**
   M: Monthly (manual)
   C: Continuous (pressure transducer)
   MW 1-6 inclusive and MW 11 are intended as permanent monitoring wells as they are located beyond the limit of excavation
   S = Shallow, I = Intermediate, D = Deep Piezometers

TABLE 1.2 Proposed new sentinel dedicated monitoring wells

Monitoring well	*Monitoring Frequency*	*Comments*
MW9S	C	
MW9I	C	
MW9D	C	
MW10S	C	
MW10I	C	
MW10D	C	
MW11S	C	
MW11I	C	
MW11D	C	

TABLE 1.3 Proposed new shallow dedicated monitoring wells

Monitoring well	*Monitoring Frequency*	*Comments*
MWS1	C	
MWS2	C	
MWS3	C	
MWS4	C	
MWS5	C	
MWS6	C	
MWS7	C	
MWS8	C	

TABLE 1.4 Domestic wells

*Domestic well**	*Monitoring Frequency*	*Comments*
Featherstone	C	
Finucci	C	
Proud	C	
Hendervale Main House	C	
Hendervale Cottage	C	
Hendervale Main Barn	C	
Hendervale ABC Barns	C	
Hendervale XYZ Barns	C	
All other available wells	M	

Notes:

* Subject to receiving Owner's permission

TABLE 2 Groundwater Quality Monitoring Program

General Chemistry	Anions	Metals	Other
Alkalinity, ammonia as N, nitrate as N, nitrite as N, hardness, pH, TSS, turbidity, sulphide.	bromide, chloride, fluoride, sulphate.	aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, chromium, cobalt, copper, free cyanide, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, phosphate, phosphorous, total phosphorous, potassium, selenium, silicon, silver, sodium, strontium, thallium, tin, titanium, uranium, vanadium, zinc.	Phenols

NOTE: ANNUAL REVISIONS TO TABLES 1 AND 2 AND THE ADAPTIVE GROUNDWATER MANAGEMENT PLAN, THROUGH ANNUAL REPORT REVIEW AND APPROVAL, WILL NOT REQUIRE FORMAL AMENDMENTS TO THE AMP AGREEMENT, PTTW CONDITIONS OR SITE PLAN.

SCHEDULE 1

Expedited Arbitration for Technical Disputes

The following rules and procedure shall apply to any matter to be arbitrated by the Parties (Hanson, the Region, and Well Owner) under subsection 7.5 of the AMP

1. INITIATION OF ARBITRATION PROCEEDINGS

a) A Party wishing to initiate Expedited Arbitration shall send out a Notice of Technical Arbitration to the other Parties setting out the particulars of the matter in dispute and name a Technical Arbitrator (defined below) who is available to decide the matter within the time periods specified in this schedule.

b) For the purposes of this Schedule, a Technical Arbitrator shall mean an individual agreed between the Parties as being qualified in the subject matter of the dispute. The Technical Arbitrator shall be at arm's length from the Parties and shall not be a member of any firm regularly retained by any of the Parties. Hanson and the Region will establish a list of Technical Arbitrators and may add to or delete from the list upon mutual agreement between the Hanson and the Region.

2. EXCHANGE OF WRITTEN SUBMISSIONS

a) Within twenty-one (21) days after the delivery of the Notice of Technical Arbitration, each party shall send the other Parties and the Technical Arbitrator a statement ("the Written Submissions") setting out in sufficient detail, the facts and any contentions of law on which it relies, and the relief that it is seeking. The Written Submissions shall be accompanied by copies of all essential documents on which the party concerned relies and which have not previously been submitted by any party.

b) Within twenty-one (21) days of the receipt of the Written Submissions the Technical Arbitrator shall hold a hearing to determine the dispute. Further the Parties agree to continue to negotiate in good faith to attempt to resolve the dispute up to the date of such hearing.

3. DECISION

a) The Technical Arbitrator shall decide the procedure for the hearing to ensure that the dispute is resolved as fairly, efficiently and cost effectively as possible. By submitting to arbitration under this Schedule, the Parties shall be taken to have conferred on the Technical Arbitrator the jurisdiction and powers set out in this Schedule.

b) The Technical Arbitrator will send her or his decision to the Parties as soon as practicable after the conclusion of the hearing.

c) Any decision made by the Technical Arbitrator is final and binding.

4. COSTS OF ARBITRATION

Hanson will pay for the administrative costs of the arbitration including the costs of the Technical Arbitrator, and costs for the room, if any. Each party will bear its own costs in the arbitration.

5. ARBITRATIONS ACT

The rules and procedures of the Arbitrations Act shall apply to any arbitration undertaken hereunder except to the extent that they are modified by express provisions of this Schedule.

Ministry of the Environment
Ministère de l'Environnement
Ontario

CERTIFICATE OF APPROVAL
INDUSTRIAL SEWAGE WORKS
NUMBER 4408-7AUL75
Issue Date: February 4, 2008

Hanson Brick Ltd.
5155 Dundas St W PO Box 248
Burlington, Ontario
L7R 3Y2

Site Location: Tansley Quarry
West Side of Tremaine Rd South Side of No. 1 Sideroad
Burlington City, Regional Municipality of Halton

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

the establishment of sewage works for the collection, transmission, treatment and disposal of groundwater and surface water accumulating in the confines of the excavated area of the quarry , consisting of the following:

- one (1) sump, with minimum measurements of 10 metres wide, 10 metres long and 2 metres deep, equipped with a pump operating at a minimum of 300 litres per minute, discharging to the decant pond;
- one (1) decant pond with a total active volume of 2,900 cubic metres and a sediment storage volume of approximately 1,225 cubic metres, discharging via an outlet control structure, consisting of a hickenbottom structure with a 150 millimetre diameter reverse gradient pipe, control manhole and 300 millimetre diameter discharge pipe with a control valve, to an existing watercourse that drains to 14 Mile Creek;
- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

all in accordance with the following submitted supporting documents:

1. Application for Approval of Industrial Sewage Works submitted by Stephen Luckett of Hanson Brick Ltd. dated October 30, 2007;
2. Tansley Quarry - Design Report for Industrial Storm Drainage, dated November 2007, prepared by Long Environmental Consultants Inc.;
3. Electronic mail and attachments dated December 18, 2007 and January 14, 2008 from Bob Long of Long Environmental Consultants Inc. to Randy Chin of the Ministry of the Environment.

RECEIVED
FEB 0 6 2008

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"Certificate" means this entire certificate of approval document, issued in accordance with Section 53 of the *Ontario Water Resources Act* , and includes any schedules;

"Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the *Ontario Water Resources Act* ;

"District Manager" means the District Manager of the Halton-Peel District Office of the Ministry;

"Ministry" means the Ontario Ministry of the Environment;

"Owner" means Hanson Brick Ltd. and includes its successors and assignees; and

"works" means the sewage works described in the Owner's application, this certificate and in the supporting documentation referred to herein, to the extent approved by this certificate.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

(1) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the works in accordance with the description given in this Certificate, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Certificate.

(2) Where there is a conflict between a provision of any submitted document referred to in this Certificate and the Conditions of this Certificate, the Conditions in this Certificate shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

2. CHANGE OF OWNER

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within 30 days of the change occurring:

(a) change of Owner or operating authority, or both;

(b) change of address of Owner or operating authority or address of new owner or operating authority;

(c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Partnerships Registration Act* ;

(d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (Form 1, 2 or 3 of O. Reg. 189, R.R.O. 1980, as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the District Manager;

(2) In the event of any change in ownership of the works, the Owner shall notify in writing the succeeding owner of the existence of this certificate, and a copy of such notice shall be forwarded to the District Manager.

(3) The Owner shall ensure that all communications made pursuant to this condition will refer to this certificate's number.

3. OPERATIONS MANUAL

(1) The Owner shall prepare an operations manual prior to the commencement of operation of the sewage works, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the works;

(b) inspection programs, including frequency of inspection, for the works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the works;

(d) contingency plans and procedures for dealing with potential spill, bypasses and any other abnormal situations and for notifying the District Manager; and

(e) complaint procedures for receiving and responding to public complaints.

(2) The Owner shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the sewage works. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

4. DISCHARGE OPERATIONS

(1) The decant pond shall be operated on a batch discharge basis such that the contents of the pond is allowed to settle for a period of at least 24 hours.

(2) Prior to initiating discharge from the decant pond, the Owner shall undertake pre-release water quality sampling, consisting of:

(a) the collection of a 4-Part composite sample, consisting of 4 grab samples from different locations in the pond; with

(b) the sample being analyzed for Total Suspended Solids and visible sheen; and

(c) analytical results conforming to Conditons 5 and 6.

5. EFFLUENT LIMITS

(1) The Owner shall design, construct and operate the works such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the works.

Table 1 - Effluent Limits

Effluent Parameter	**Concentration Limit** (milligrams per litre unless otherwise indicated)
Column 1	Column 2
Total Suspended Solids	15
Oil and Grease	10

(2) For the purposes of determining compliance with and enforcing subsection (1), non-compliance with respect to a Concentration Limit is deemed to have occurred when any single sample analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding maximum concentration set out in Column 2 of subsection (1).

6. EFFLUENT - VISUAL OBSERVATIONS

Notwithstanding any other condition in this certificate, the Owner shall ensure that the effluent from the works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.

7. EFFLUENT MONITORING AND RECORDING

The Owner shall, upon commencement of operation of the sewage works, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this certificate are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) Samples shall be collected of the contents of the decant pond prior to each discharge with samples analyzed for each parameter listed in Table 2:

Table 2 - Effluent Monitoring	
Frequency	Once each day of discharge
Sample Type	Grab
Parameters	Total Suspended Solids, Oil and Grease, Chloride, Sulphate, Boron, Iron and Zinc

(3) The methods and protocols for sampling, analysis and recording shall conform to the methods and protocols specified in the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions.

(4) A continuous flow measuring device shall be installed and maintained to measure the flowrate of the effluent from the sewage works, with an accuracy to within plus or minus 15 per cent of the actual flowrate for the entire design range of the flow measuring device and the Owner shall measure, record and calculate the flowrate for each effluent stream on each day of sampling.

(5) The Owner shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this certificate.

8. REPORTING

(1) One week prior to the start up of the operation of the works, the Owner shall notify the District Manager (in writing) of the pending start up date.

(2) In addition to the obligations under Part X of the *Environmental Protection Act* , the Owner shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(3) The Owner shall prepare and submit a performance report to the District Manager on an annual basis within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 4, including an overview of the success and adequacy of the sewage works;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the sewage works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Certificate and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the certificate and continue to operate the works in compliance with it.

3. Condition 3 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the owner and made available to the Ministry. Such a manual is an integral part of the operation of the works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the owner's operation of the work.

4. Conditions 4, 5 and 6 are imposed to ensure that the effluent discharged from the works and meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver.

6. Condition 7 is included to require the owner to demonstrate on a continual basis that the quality of the effluent from the approved works is consistent with the effluent limits specified in the certificate and that the approved works does not cause any impairment to the receiving watercourse.

7. Condition 8 is included to provide a performance record for future references and to ensure that the Ministry is made aware of problems as they arise, so that the Ministry can work with the Owner in resolving the problems in a timely manner.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, S.O. 1993, Chapter 28, the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Environmental Commissioner
1075 Bay Street, 6th Floor
Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ene.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 4th day of February, 2008

THIS CERTIFICATE WAS MAILED
ON Feb. 05, 2008
N.P
(Signed)

Mansoor Mahmood, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

RC/
c: District Manager, MOE Halton-Peel
Robert J. Long, Long Environmental Consultants Inc. ✓

APPENDIX B

Borehole Logs

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 1 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: Oct.1-3, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE	163.80			
0		One inch of grass sod overlying a rooty, moist SILT, trace clay, trace cobble, firm. (OH)	0.00			
		Compositional change: Firm/compact, fine SAND and SILT, brown, moist, rooty, occ. cobbles, rounded to sub-rounded. (TILL) (ML)	163.50 0.30			
1						BENTONITE SEAL
		TILL, Grades to very hard clay till, moist to slightly moist (almost dry), trace silt, trace gravel, no roots. Colour is mottled brown (more silty) and blue-grey (more clayey). (ML-CL)	162.66 1.14			
2						
3						
		Grades to firm-hard, dark grey to brown grey CLAY and SILT TILL. Slightly less firm than above, trace gravel. (ML-CL)	160.22 3.58			
4						
	Overburden	Change to a moist, firm/hard clayey fine sand till (grey coloured). (ML-SM)	159.38 4.42			
		Dry, crumbly, gravelly silt and clay till.	159.08 4.72			SAND
5		Grey, firm-hard, moist SILT and CLAY TILL, gravelly, occ. cobble. (GM-ML)	4.88			
		Brown, moist-dry, fine to firm-hard CLAY and SILT TILL.	158.08 5.72			
6		Brown, moist-dry, fine to firm-hard SILTY SAND TILL.	157.75 6.05			
		Brown-grey, moist-dry, hard CLAY TILL, occ. cobbles, gravelly. (GM-CL) Basal TILL	157.44 6.36			
7		Brown-grey, dry, cobbly SANDY TILL, very hard, dry. (SM)	156.56 7.24			
8		Light brown-grey, dry, hard SANDY SILT TILL, occ. cobbles. (SM)	155.65 8.15			
9						BENTONITE SEAL
	RQ Core	Very weak to weak, moderate to highly weathered red SHALE.	154.25 9.55	1	B,J BC	
10		*CONTINUED NEXT PAGE*				

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 2 OF 5

LOCATION: Refer to Plan

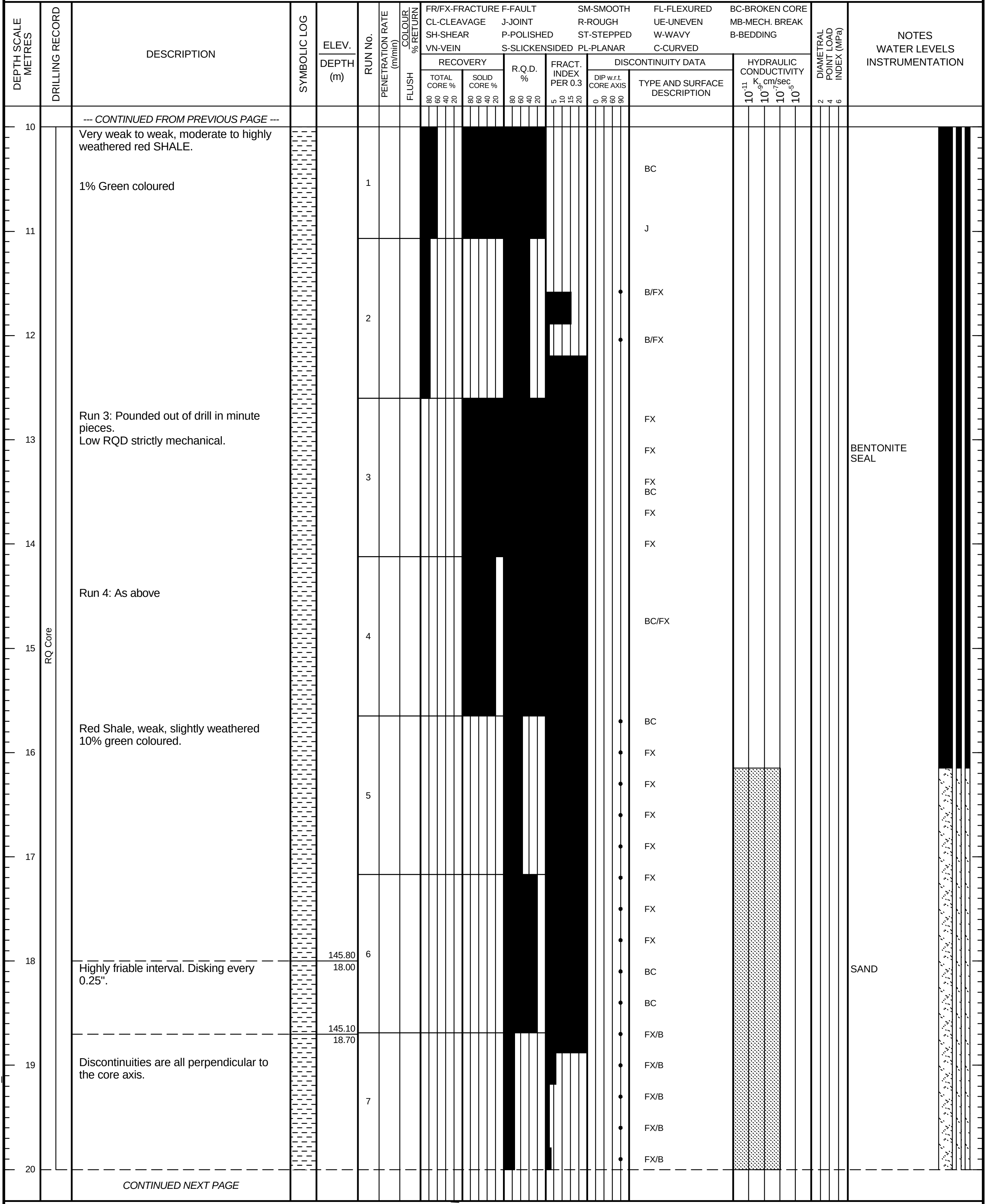
DRILLING DATE: Oct.1-3, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING



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Very weak to weak, moderate to highly weathered red SHALE.

1% Green coloured

Run 3: Pounded out of drill in minute pieces.
Low RQD strictly mechanical.

Run 4: As above

Red Shale, weak, slightly weathered 10% green coloured.

Highly friable interval. Disking every 0.25".

Discontinuities are all perpendicular to the core axis.

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 3 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Oct.1-3, 2002

DATUM:

DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

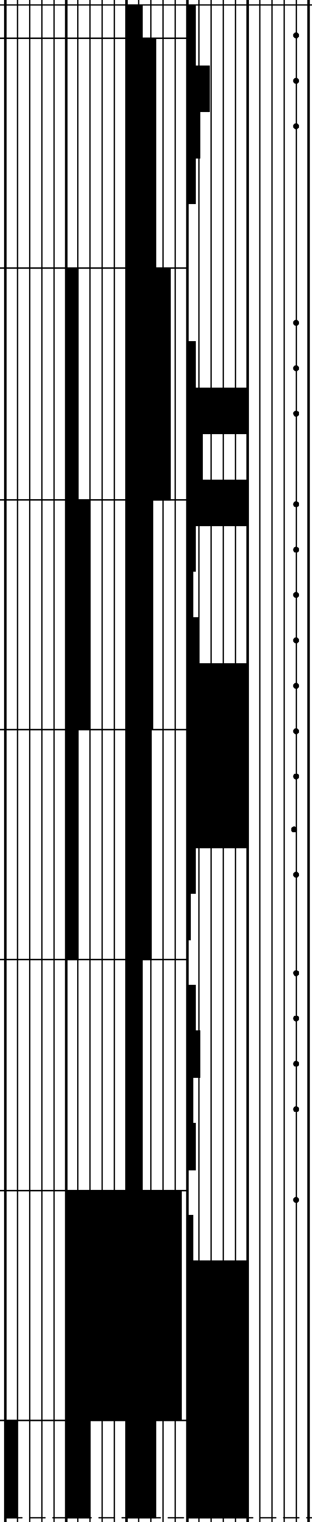
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

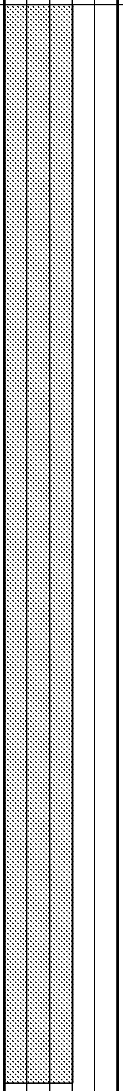
DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE (m/min) | FLUSH COLOUR % RETURN | RECOVERY TOTAL CORE % 80 60 40 20 | SOLID CORE % 80 60 40 20 | R.Q.D. % 80 60 40 20 | FRACT. INDEX PER 0.3 5 10 15 20 | DISCONTINUITY DATA: DIP w.r.t. CORE AXIS 0 30 60 90 | TYPE AND SURFACE DESCRIPTION | HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-11} 10^{-9} 10^{-7} 10^{-5} | DIAMETRAL POINT LOAD INDEX (MPa) 2 4 6 | NOTES WATER LEVELS INSTRUMENTATION

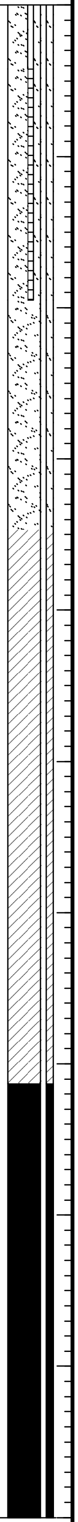
FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

--- CONTINUED FROM PREVIOUS PAGE ---

Depth (m)	Drilling record	Description	Elev. / Depth (m)	Run No.	Type and surface description	Notes
20	RQ Core	Red shale, slightly weathered, weak to very weak. 10% grey-green coloured bands.		7	FX	SAND
					FX	
					FX	
21				8		
22					FX/B	
				9	FX/B	
					BC	SAND
23					FX/B	
		Friable and pitted in intervals of broken core (BC).			FX/B	
24				10	FX/B	
					FX/B	
					FX/B	
					FX/B	
25		Fracture surfaces are planar and smooth to rough.			FX/B	PLUG BRIDGE/ROCK BRIDGE
				11	FX/B	
					FX/B	
26					FX/B	
					FX/B	
27				12	FX/B	
					FX/B	
			135.96 27.84			
28		Zone of broken core and increased weathering. Shale is highly friable, very weak and weathered.			FX/B	
					BC/B	
				13	BC/B	BENTONITE SEAL
					BC/B	
29					BC/B	
				14		
30						







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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 4 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Oct.1-3, 2002

DATUM:

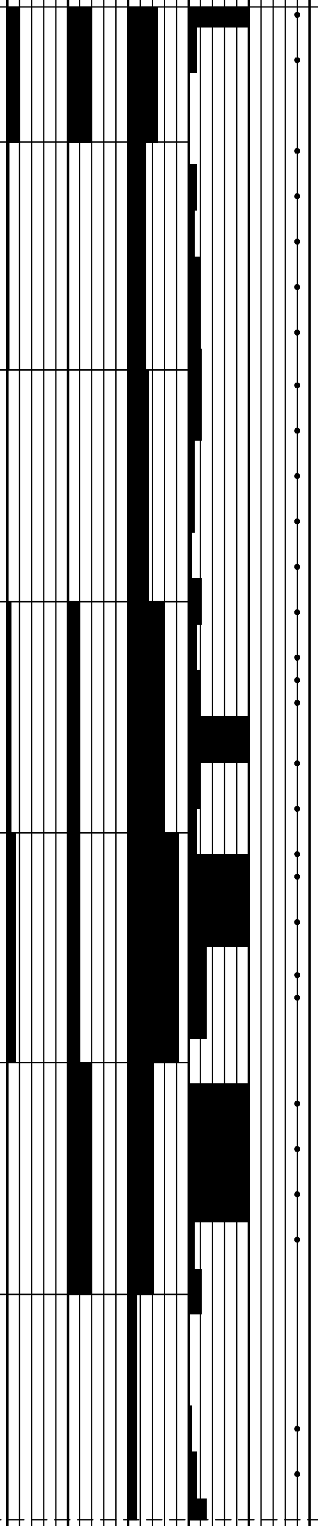
DRILL RIG: CME 75

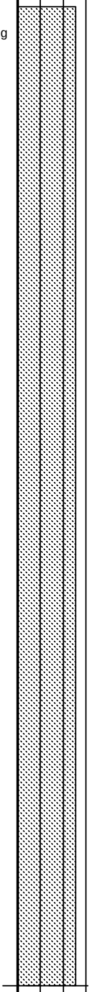
INCLINATION: -90° AZIMUTH: ---

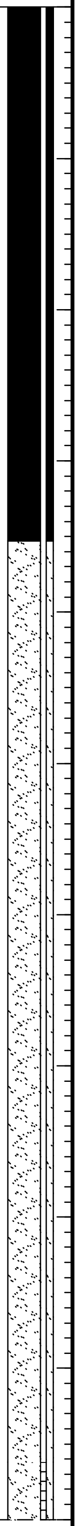
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH	COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 5 10 15 20	DIP w.r.t. CORE AXIS 0 30 60 90	TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-11} 10^{-9} 10^{-7} 10^{-5}	DIAMETRAL POINT LOAD INDEX (MPa) 2 4 6	NOTES WATER LEVELS INSTRUMENTATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---															
30	RQ Core	Zone of broken core and increased weathering. Shale is highly friable, very weak and weathered.			14									FX/B FX/B			
31		Highly weathered and friable.		132.91 30.89	15									FX/B, gypsum coating first noted. FX/B FX/B FX/B			BENTONITE SEAL
32		Red shale, moderately weathered, weak, friable.		131.71 32.09										FX/B			
33					16									FX/B FX/B FX/B FX/B FX/B, gypsum coating			
34					17									FX/B FX/B FX/B FX/B			
35		Fracture surfaces are planar and smooth to rough.												FX/B FX/B			
36					18									FX/B BC FX/B FX/B, gypsum, 4mm FX/B			
37		Extremely friable zone. Discontiniuites		126.70 37.10	19									FX/B FX/B FX/B			
38		Red shale, fresh, weak to moderately strong.		125.80 38.00										FX/B			
39					20									FX/B FX/B			SAND
40		*CONTINUED NEXT PAGE*															







DEPTH SCALE
1 : 50

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 5 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

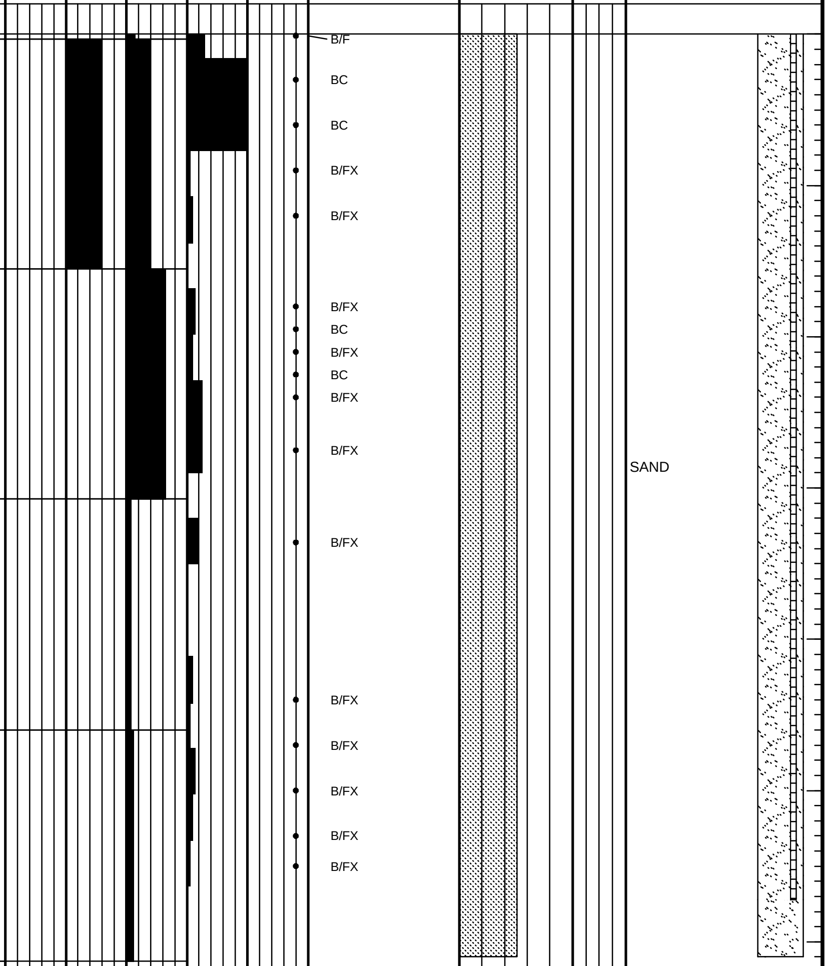
DRILLING DATE: Oct.1-3, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE
CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN	MB-MECH. BREAK
SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING
VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED	



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DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
40	RQ Core	Red shale, fresh, weak to moderately strong.			21	B/F BC BC B/FX	
41		10% grey-green coloured.				B/FX	
42					22	B/FX BC B/FX BC B/FX B/FX	SAND
43		Red shale, fresh, weak, 10% green coloured.		120.80 43.00	23	B/FX	
44						B/FX	
45					24	B/FX B/FX B/FX B/FX	
46		END OF BOREHOLE		117.67 46.13			
47							
48							
49							
50							

MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

RECORD OF DRILLHOLE: MW2

PROJECT: 021-1228

SHEET 1 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Sept.26&30, 2002

DATUM:

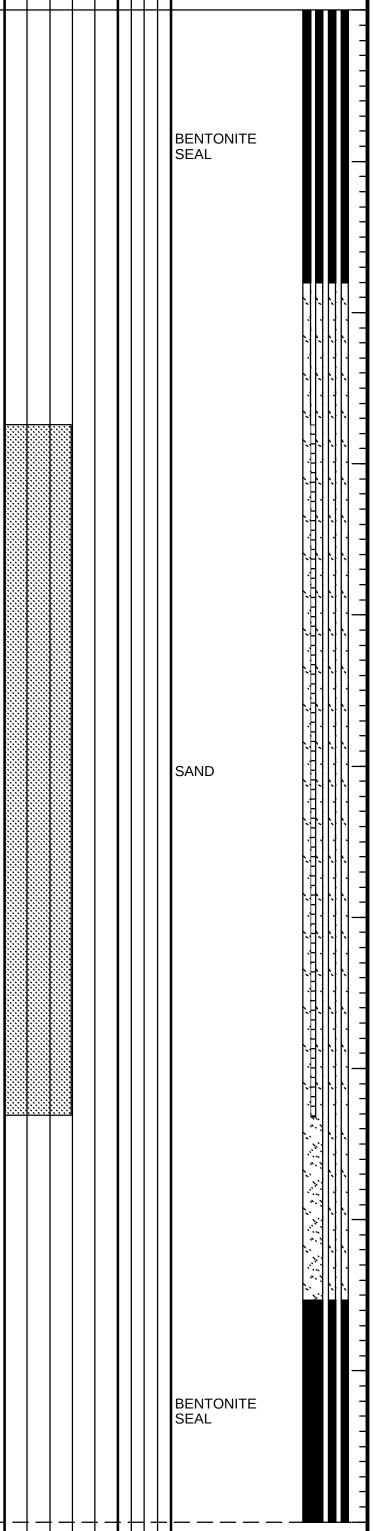
INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % (80 60 40 20)	RECOVERY SOLID CORE % (80 60 40 20)	R.Q.D. % (80 60 40 20)	FRACT. INDEX PER 0.3 (5 10 15 20)	DISCONTINUITY DATA DIP w.r.t. CORE AXIS (0 30 60 90)	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-11} 10^{-9} 10^{-7} 10^{-5})	DIAMETRAL POINT LOAD INDEX (MPa) (2 4 6)	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE	165.90												
0	AUGER	Dark brown soil, moist, loose, roots/organics. (OH)	0.00												
		TILL, brown, moist to slightly moist, firm to hard with depth, CLAYEY SAND and SILT, some gravel, occ. cobble. Coarser material is sub-ang to ang. (ML)	0.15												
1		As above Very dry and crumbly during sampling. (ML)	164.99 0.91												BENTONITE SEAL
2															
3		As above Colour changes to brownish-grey.	162.60 3.30												
4		TILL, grey, firm-hard, moist SILTY CLAY, occ. gravel. (GM-ML)	161.73 4.17												
5															SAND
6															
7		TILL, very hard, dry, brown bouldery CLAY SILT TILL, occ. cobbles. (CM)	158.89 7.01												
8															
9		BEDROCK Red shale, very weak, friable. Fresh, moderately weathered upper 3.05 to 4.57m from bedrock surface recovered as rubble/broken core.	156.86 9.04												BENTONITE SEAL
10															



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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

SHEET 2 OF 5

LOCATION: Refer to Plan

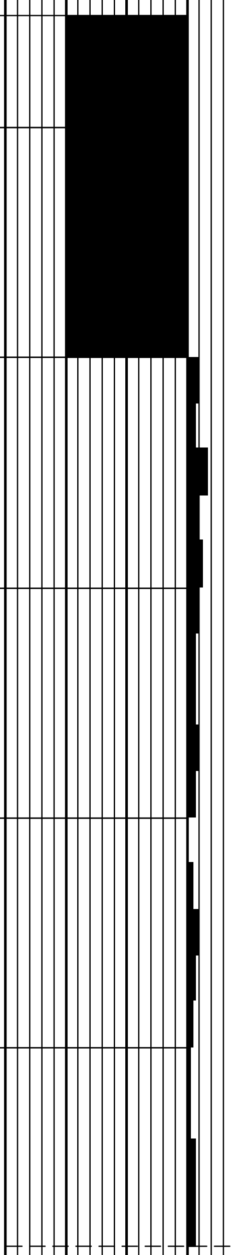
INCLINATION: -90° AZIMUTH: ---

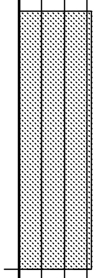
DRILLING DATE: Sept.26&30, 2002
DRILL RIG: CME 75
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

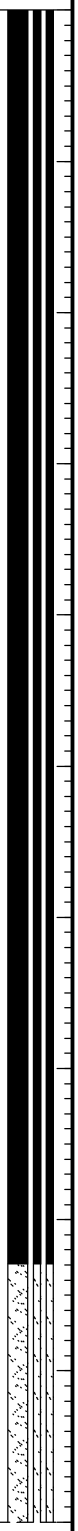
DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---				
10–11.81	AUGER	BEDROCK Red shale, very weak, friable. Fresh, moderately weathered upper 3.05 to 4.57m from bedrock surface recovered as rubble/broken core.	154.09 11.81			
11.81–14.12	HQ CORE	Red shale with occasional (10%+/-) green coloured bands, weak. This interval recovered as broken core.	151.78 14.12	1 2	FX Broken Core FX B	
14.12–20	HQ CORE	Intact core begins.	145.90	3 4 5 6	B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX B/FX	BENTONITE SEAL SAND
		CONTINUED NEXT PAGE				







DEPTH SCALE
1 : 50

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

SHEET 3 OF 5

LOCATION: Refer to Plan

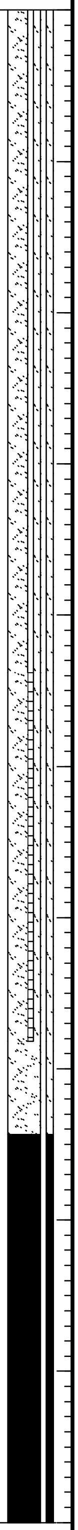
INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: Sept.26&30, 2002
DRILL RIG: CME 75
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
20		Red shale, weak, moderately weathered. Some very weak red shale bands. Friable.	20.00	6	B/FX	
					B/FX	
					B/FX	
21				7	B/FX	
					B/FX	
					B/FX	
22					B/FX	SAND
					B/FX	
				8	B/FX	
					B/FX	
23					B/FX	
		Slight strength increase to moderately strong in green coloured shale bands.	142.60 23.30		B/FX	
					B/FX	
24				9	B/FX	
					B/FX	
					B/FX	
25	HQ CORE				B/FX	
					B/FX	
				10	B/FX	
					B/FX	
26		Discontinuity surfaces are perpendicular to core axis, planar and smooth. They appear to be bedding parallel, mechanically induced fractures.			B/FX	
					B/FX	
					B/FX	
27				11	B/FX	SAND
					B/FX	
					B/FX	
28					B/FX	
					B/FX	
				12	B/FX	BENTONITE SEAL
29					B/FX	
					B/FX	
				13	B/FX	
30					B/FX	
		CONTINUED NEXT PAGE				



MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: Sept.26&30, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

Columns: DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE (m/min) | COLOUR % RETURN | FLUSH | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 (5 10 15 20) | DISCONTINUITY DATA: DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-11} 10^{-9} 10^{-7} 10^{-5}) | DIAMETRAL POINT LOAD INDEX (MPa) (2 4 6) | NOTES WATER LEVELS INSTRUMENTATION

--- *CONTINUED FROM PREVIOUS PAGE* ---

Depth scale: 30 – 40 m. Drilling record: HQ CORE. Runs: 13, 14, 15, 16, 17, 18, 19.

Depth (m)	Description
30	SHALE, Fresh to slightly weathered, weak, pitted and friable. Mainly red coloured, 5% to 10% green coloured bands, up to 10cm thick, spaced every 2 cm to 5 cm.
33–34	First gypsum coatings on joint surfaces noted at 29.18m and 32.10m.
37–38	Low RQD zone in red and green shales. Full of gypsum nodules.
38–39	As above, increased rock strength to moderately strong.

Discontinuity data, type and surface description (from 30 m downward):

- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX, gypsum coating
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX, gypsum coatings 1mm, 4mm
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX, gypsum nodules
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX
- B/FX, gypsum nodules
- B/FX

Notes / instrumentation:

BENTONITE SEAL

SAND

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

SHEET 5 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

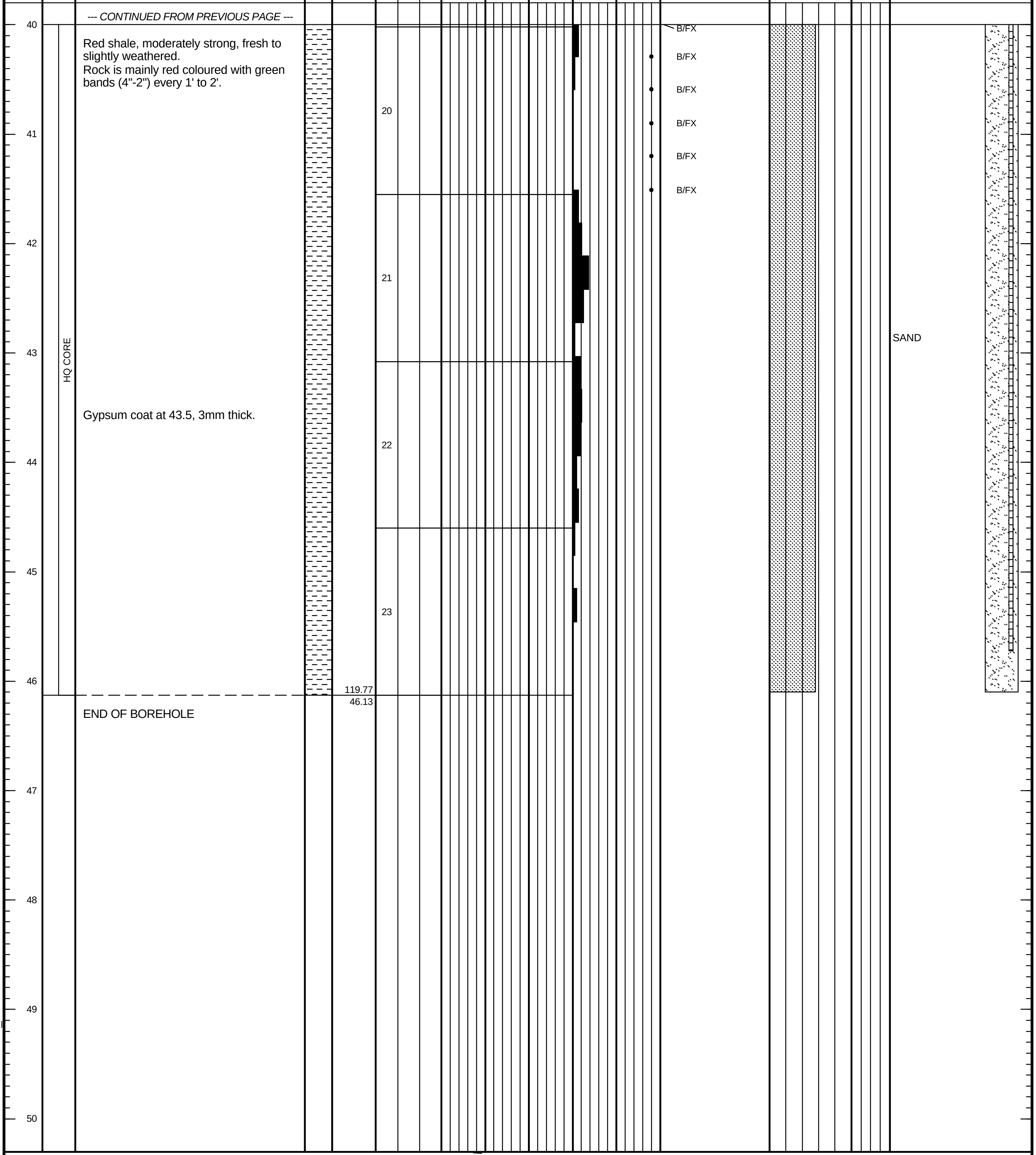
DRILLING DATE: Sept.26&30, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
40	HQ CORE	Red shale, moderately strong, fresh to slightly weathered. Rock is mainly red coloured with green bands (4"-2") every 1' to 2'.		20	B/FX B/FX B/FX B/FX B/FX B/FX	
41						
42				21		
43						SAND
		Gypsum coat at 43.5, 3mm thick.		22		
44						
45				23		
46			119.77 46.13			
		END OF BOREHOLE				
47						
48						
49						
50						

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW3

SHEET 1 OF 4

LOCATION: Refer to Plan

DRILLING DATE: July 24 & 25, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 5 10 15 20	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-11} 10^{-9} 10^{-7} 10^{-5}	DIAMETRAL POINT LOAD INDEX (MPa) 2 4 6	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE		162.20												
0	AUGER	Brown, organic sandy silt (roots), compact.		0.00												
		TILL, moist to slightly moist, firm to hard, rooty first 0.6m, SILTY CLAY with angular cobbles and coarse gravel. (CL)		161.59 0.61												BENTONITE SEAL
6		TILL, moist to dry, hard, mainly SILTY CLAY (CL), some sand, gravel and cobbles. Gravel and cobbles are sub-ang to sub-rounded.		156.10 6.10												SAND
10																

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW3

SHEET 2 OF 4

LOCATION: Refer to Plan

DRILLING DATE: July 24 & 25, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

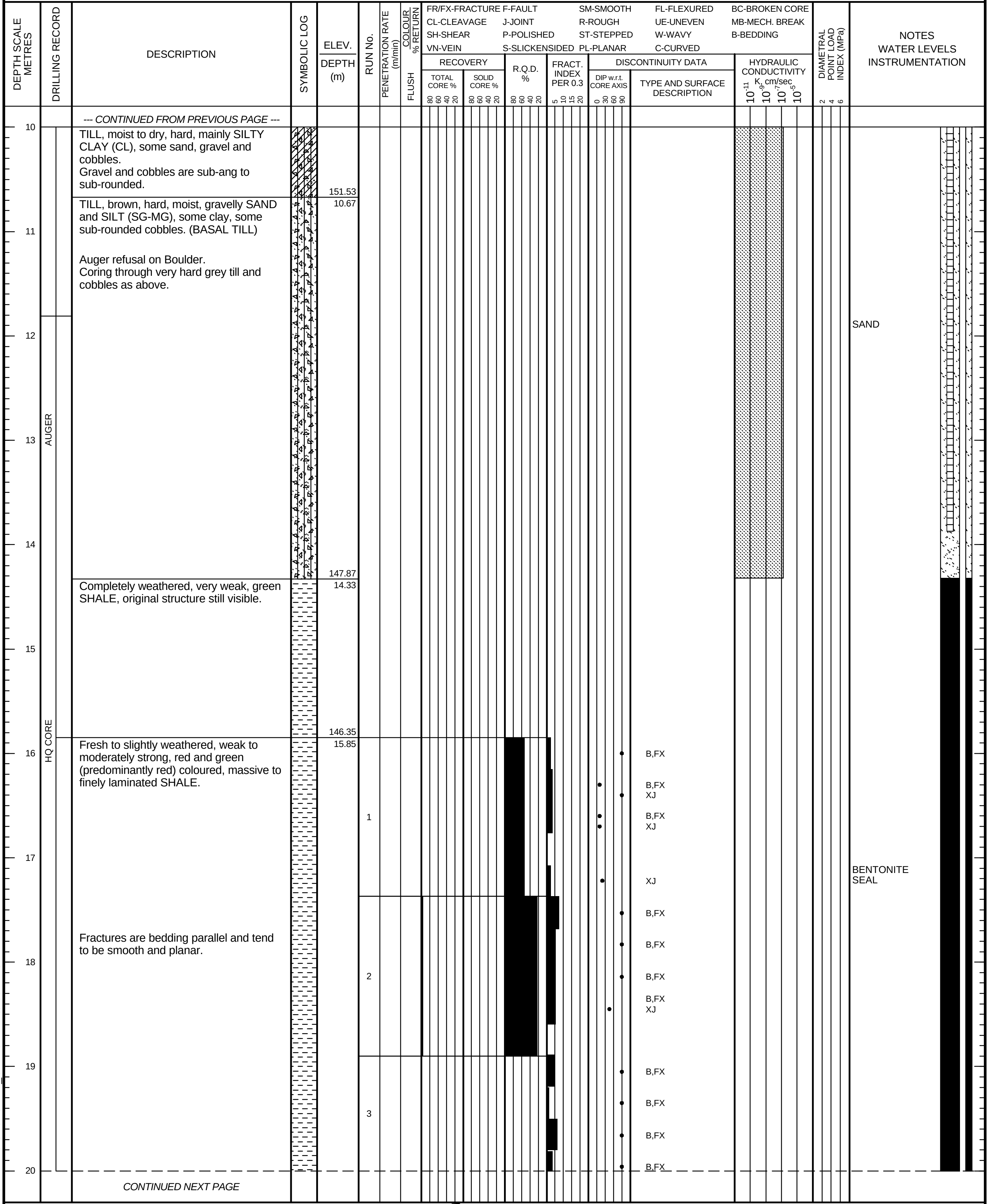
DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

--- *CONTINUED FROM PREVIOUS PAGE* ---

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
10		TILL, moist to dry, hard, mainly SILTY CLAY (CL), some sand, gravel and cobbles. Gravel and cobbles are sub-ang to sub-rounded.	151.53 10.67			
11		TILL, brown, hard, moist, gravelly SAND and SILT (SG-MG), some clay, some sub-rounded cobbles. (BASAL TILL) Auger refusal on Boulder. Coring through very hard grey till and cobbles as above.				
12						SAND
13	AUGER					
14			147.87 14.33			
15		Completely weathered, very weak, green SHALE, original structure still visible.	146.35 15.85			
16	HQ CORE	Fresh to slightly weathered, weak to moderately strong, red and green (predominantly red) coloured, massive to finely laminated SHALE.		1	B,FX B,FX XJ B,FX XJ	
17					XJ	BENTONITE SEAL
18		Fractures are bedding parallel and tend to be smooth and planar.		2	B,FX B,FX B,FX B,FX XJ	
19				3	B,FX B,FX B,FX	
20					B,FX	



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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW3

SHEET 3 OF 4

LOCATION: Refer to Plan
INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 24 & 25, 2002
DRILL RIG: CME 75
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

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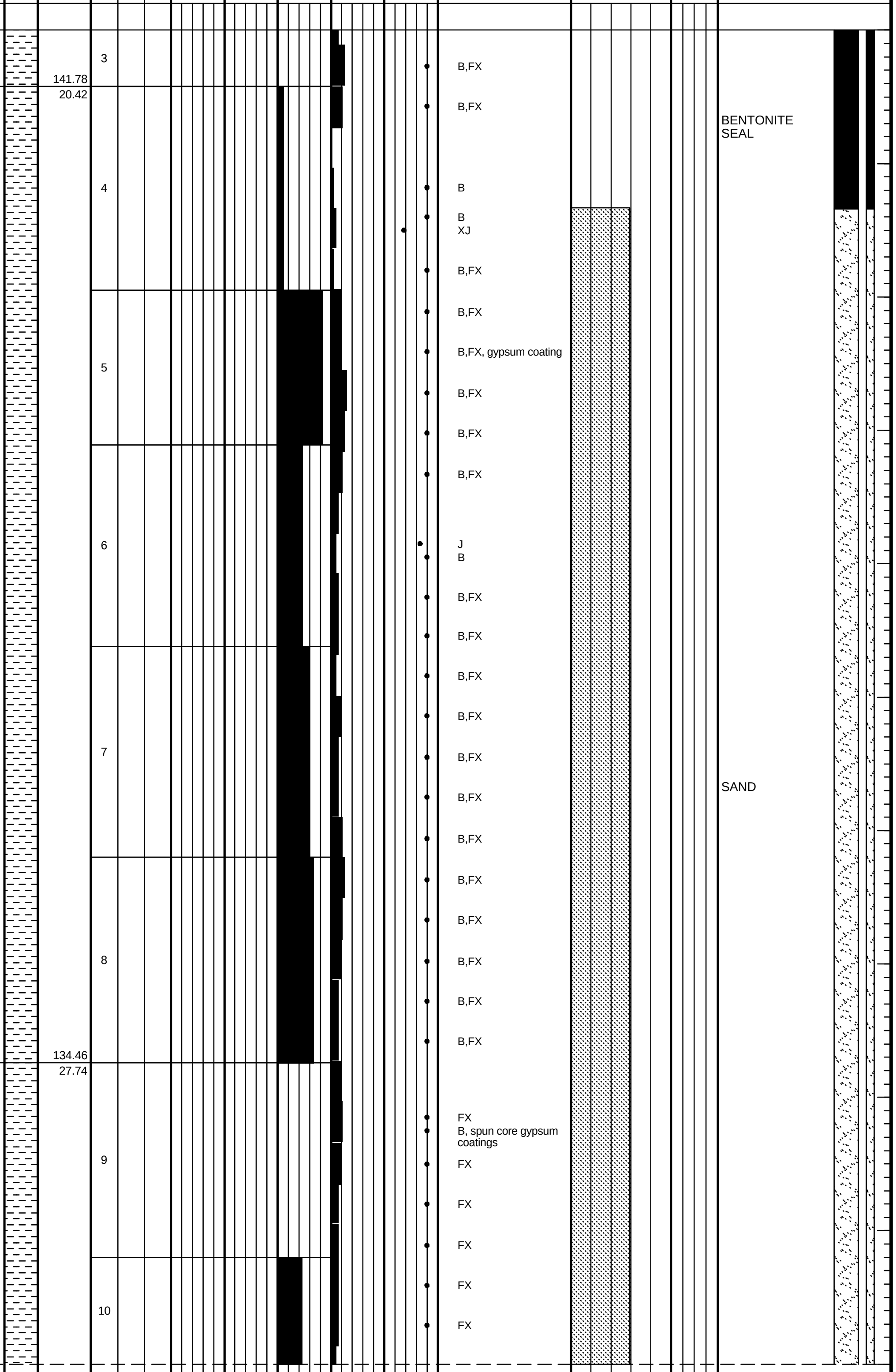

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
20			3	B,FX	
		141.78 20.42		B,FX	BENTONITE SEAL
	Fresh to slightly weathered, not friable, moderately strong to weak, mainly red coloured and massive with some green coloured bands. Thinly laminated.				
21			4	B	
				B XJ	
				B,FX	
22			5	B,FX	
	First noted occurence of gypsum.			B,FX, gypsum coating	
				B,FX	
23				B,FX	
			6	B,FX	
				J B	
24				B,FX	
				B,FX	
			7	B,FX	
25	Possible turbidity flow or debris torrent layer from 10.92m to 26.2m.			B,FX	
				B,FX	
				B,FX	SAND
26			8	B,FX	
				B,FX	
				B,FX	
27				B,FX	
				B,FX	
		134.46 27.74		B,FX	
28	Red SHALE, fresh to slightly weathered, weak to medium strong, occasional green coloured bands. Massive to thinly laminated.		9	FX B, spun core gypsum coatings	
				FX	
29				FX	
			10	FX	
				FX	
30	Discontinuities are fractures parallel to			FX	

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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW3

SHEET 4 OF 4

LOCATION: Refer to Plan

DRILLING DATE: July 24 & 25, 2002

DATUM:

DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

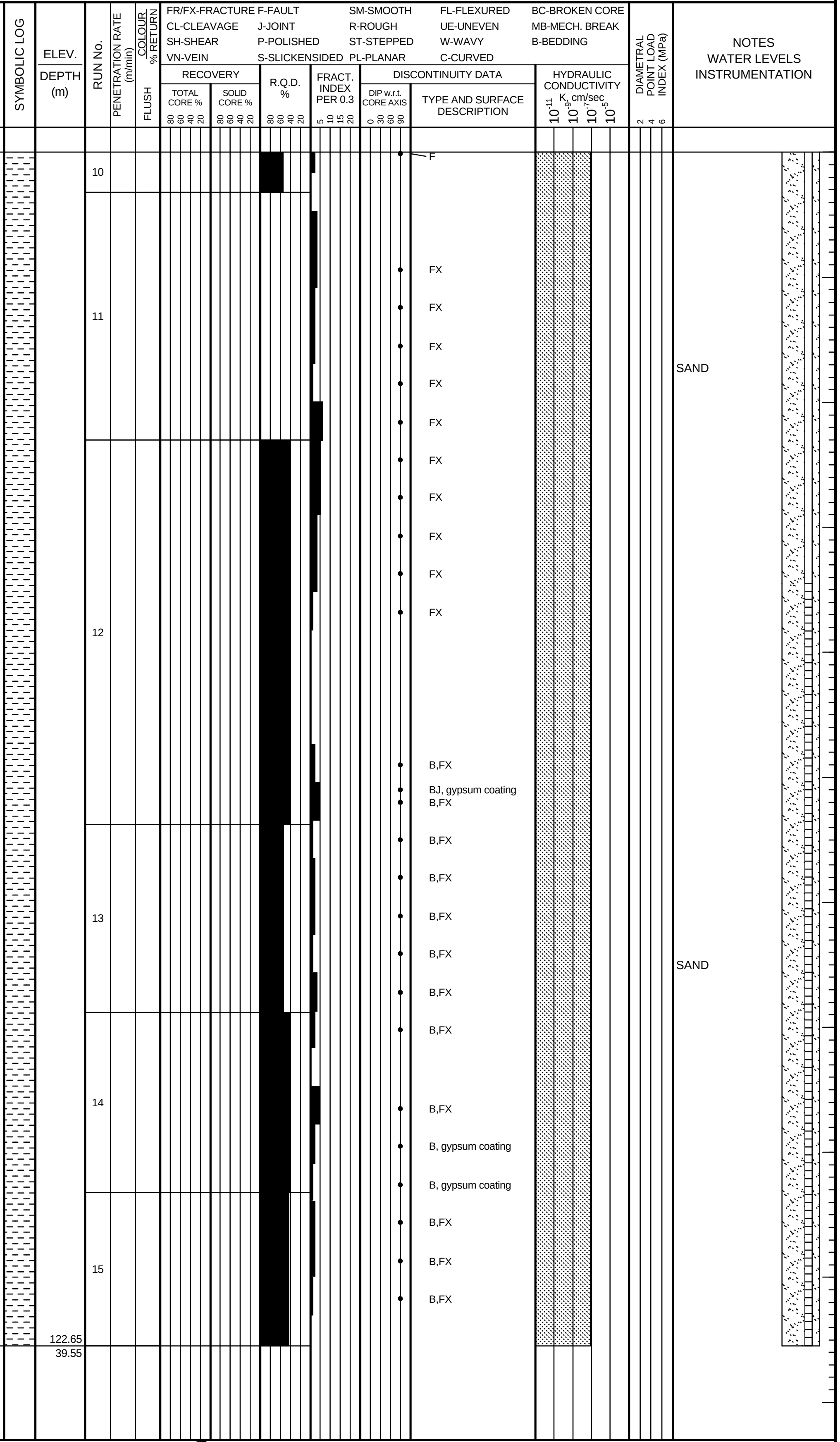
DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION

--- CONTINUED FROM PREVIOUS PAGE ---

bedding.
They are mainly mechanically induced.
Red SHALE, fresh to slightly weathered, weak to medium strong, occasional green coloured bands.
Massive to thinly laminated.

END OF HOLE

HQ CORE



30
31
32
33
34
35
36
37
38
39
40

DEPTH SCALE

1 : 50

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 1 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 4-9, 2002

DATUM:

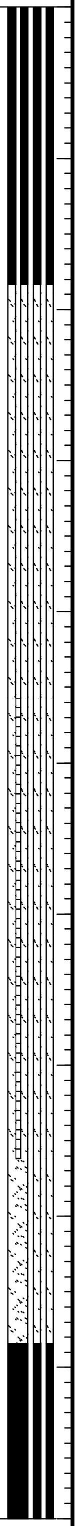
DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. / DEPTH (m)	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE	164.70	
0	Overburden	Brown, moist, firm to hard TILL. Soil is a clayey silt, trace sub-rounded cobbles and gravel, some sand. Well-graded. (CL)	0.00	
1			163.48	BENTONITE SEAL
		As above, firm, dry-slightly moist, friable, sandy silt, trace clay. (ML)	1.22	
2			161.96	
		Reddish brown, firm. Friable, dry-slightly moist, sandy silt and clay till, occ. sub-rounded gravel and cobbles. (CL/ML)	2.74	
3				
4			160.43	
		Sandy TILL, grey brown, firm, friable silty sand, trace clay, trace gravel. Dry to slightly moist. (ML) Fines to sandy silt till.	4.27	
5			158.91	
		Gravelly TILL, reddish-brown, dense, moist silty sand to silty gravel, trace cobbles and clay.	5.79	
6			158.30	SAND
		Brown grey, firm to hard sandy silt, trace clay, trace gravel, moist TILL.	6.40	
7			157.38	
		Red-brown, moist-wet, gravelly silt, firm-hard 30% rock/cobbles (angular), wet rock (shale) at 7.6m, trace sand TILL. (MG)	7.32	
8				
9			155.56	
		Inferred top of rock, moist, red-brown (80%) and green (20%), highly weathered, very weak, friable SHALE.	9.14	BENTONITE SEAL
10				



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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 2 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

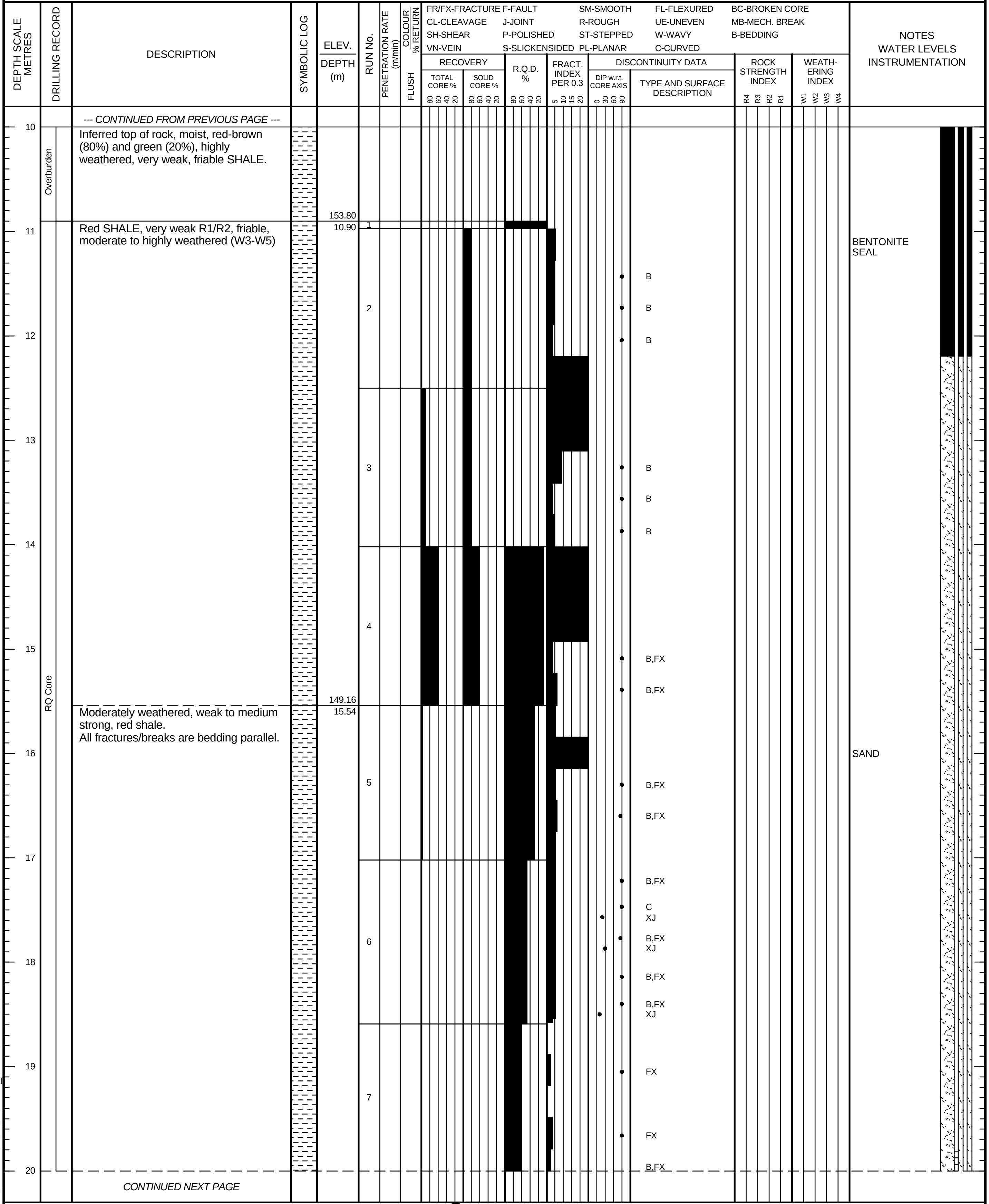
DRILLING DATE: July 4-9, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE
CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN	MB-MECH. BREAK
SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING
VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED	



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DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	NOTES WATER LEVELS INSTRUMENTATION
10	Overburden	Inferred top of rock, moist, red-brown (80%) and green (20%), highly weathered, very weak, friable SHALE.	153.80 10.90	
11	RQ Core	Red SHALE, very weak R1/R2, friable, moderate to highly weathered (W3-W5)		BENTONITE SEAL
		Moderately weathered, weak to medium strong, red shale. All fractures/breaks are bedding parallel.	149.16 15.54	
16				SAND

TYPE AND SURFACE DESCRIPTION: B; B; B; B; B; B; B,FX; B,FX; B,FX; B,FX; B,FX; C XJ; B,FX XJ; B,FX; B,FX XJ; FX; FX; B,FX

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 3 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 4-9, 2002

DATUM:

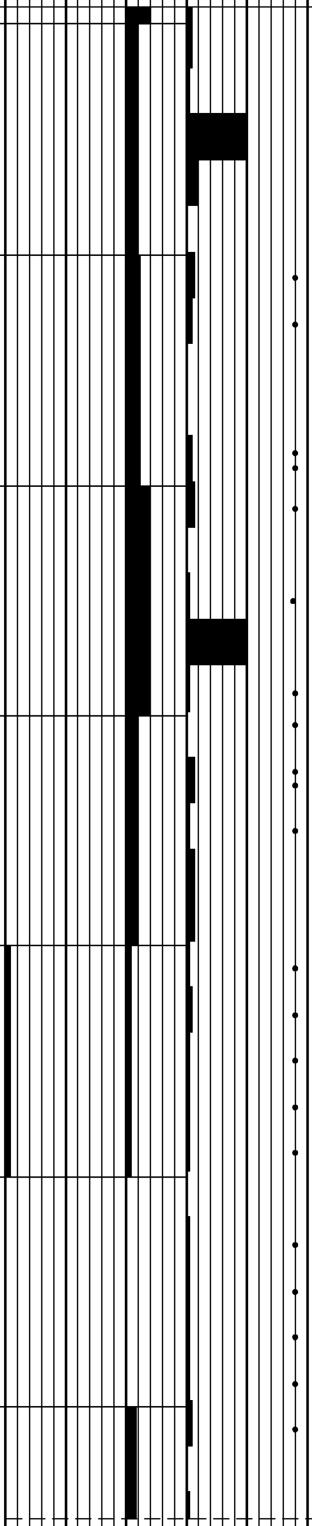
DRILL RIG: CME 75

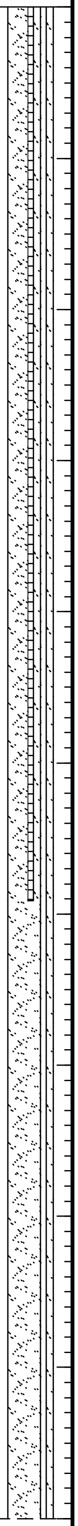
INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE
CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN	MB-MECH. BREAK
SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING
VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED	

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
20	RQ Core		144.58	7		
		SHALE, friable, moderately weathered, moderately strong, significantly more competent.	20.12	8	B,FX B,FX BC B,FX	
21						
		Weak to medium strong, friable, Tends to break along red.green colour contacts.	143.06 21.64	9	B,FX B,FX	
22						
23					B,FX B	
		Fractures/breaks all bedding and smooth.		10	B,FX B,FX B,FX	
24						
25				11	B,FX B,FX B,FX B,FX	
26				12	B,FX B,FX B,FX B,FX B,FX	
27						
28				13	B,FX B,FX B,FX B,FX	SAND
29		Slightly weathered, red (90%) and green (10%), medium strong, finely laminated SHALE.	135.44 29.26	14	FX,B	
30		*CONTINUED NEXT PAGE*				





MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 4 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 4-9, 2002

DATUM:

DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

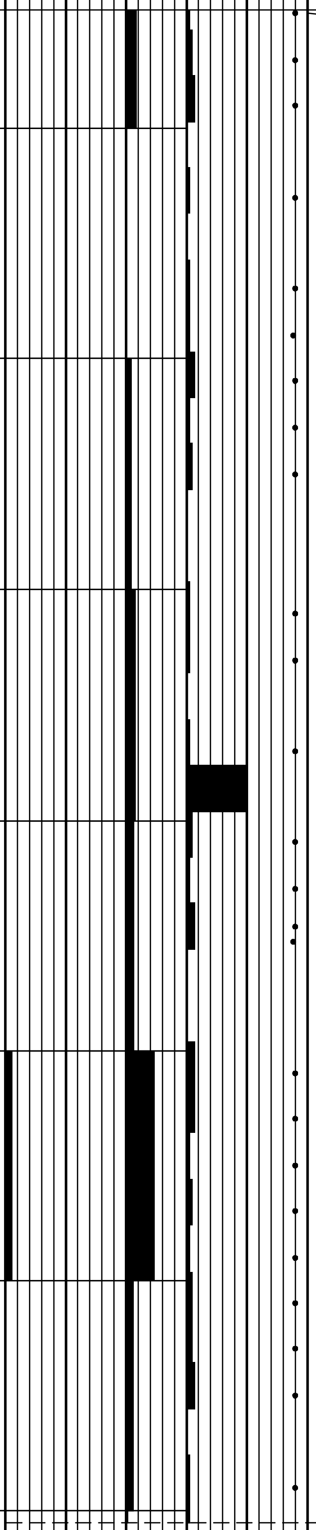
FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

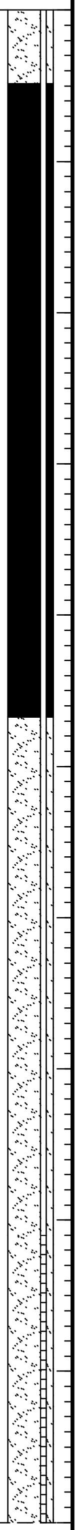
Columns: DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE (m/min) | COLOUR % RETURN | FLUSH | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 (5 10 15 20) | DISCONTINUITY DATA: DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION | ROCK STRENGTH INDEX (R4 R3 R2 R1) | WEATHERING INDEX (W1 W2 W3 W4) | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

Depth (m)	Drilling record	Description	Elev. / Depth (m)
30	RQ Core	Slightly weathered, red (90%) and green (10%), medium strong, finely laminated SHALE. This interval not friable. Fractures are all bedding parallel, smooth and planar. Green portions appear to be stronger.	
35.35	RQ Core	Red-brown, moderately weathered (red) to slightly weathered (green) shale. Medium strong, (R2), friable (especially one day after recovery).	129.35 35.35

Run No.	Type and surface description
14	FX,B FX,B F,B
15	FX,B FX,B B,J, gypsum
16	B,FX B,FX B,FX, gypsum
17	B,FX B,FX B,FX
18	B,FX B,FX B,FX B
19	B,FX B,FX B,FX B B,FX
20	B,FX B,FX B,FX B,FX





Notes / Water levels / Instrumentation:

SAND

BENTONITE SEAL

SAND

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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 5 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 4-9, 2002

DATUM:

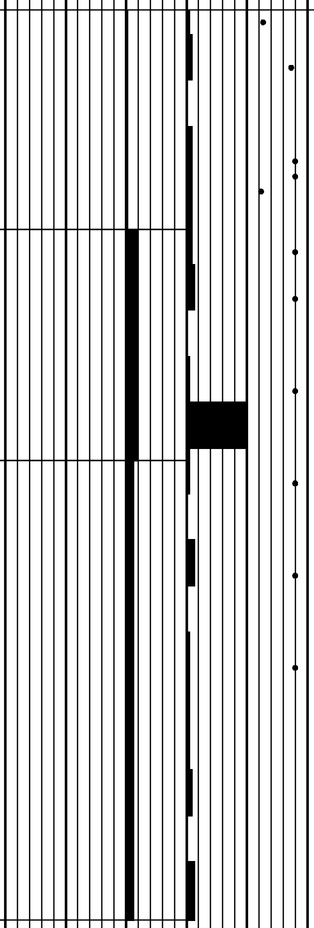
INCLINATION: -90° AZIMUTH: ---

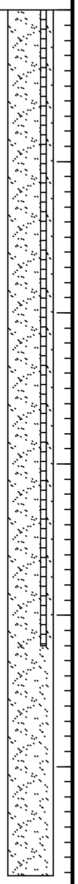
DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 5 10 15 20	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	ROCK STRENGTH INDEX R4 R3 R2 R1	WEATHERING INDEX W1 W2 W3 W4	NOTES WATER LEVELS INSTRUMENTATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---														
40	RQ Core	Red-brown, moderately weathered (red) to slightly weathered (green) shale. Medium strong, (R2), friable (especially one day after recovery).			21								J V,B			
41													B,FX B,FX J B			
42					22								B B			SAND
43													B,FX B,FX			
44					23								B,FX			
45		Gypsum blebs/nodules at 45.24-45.24m.		118.68 46.02												
46		END OF HOLE														
47																
48																
49																
50																





MISS_ROCK 021-1228.GPJ GLDR_CAN.GDT 15/1/04 PS

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 1 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 10-11, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE	160.50	
0	AUGER	Dry to slightly moist, loose-compact, yellow-brown silty sand to sandy silt, trace cobbles, gravel clay. (SM-ML)	0.00	
1		Firm, yellow-brown, moist to slightly moist, silty sand to sandy silt, some 5% gravel. (ML-TILL)	159.59 0.91	
2				BENTONITE SEAL
		Compact, moist, yellow-brown gravelly sand, some silt, trace clay, some cobbles. (TILL) (SG-ML)	158.06 2.44	
3		Yellow-brown, moist, compact, cobbley silty sand TILL. (SM)	157.30 3.20	
4				
5		Brown, damp, dense silty sand (SM), occ. gravel.	155.78 4.72	
6		Brown, moist, dense silty sand to silty gravel. (SM-GM)	155.01 5.49	
		Brown, moist, compact sand, trace some silt, some sub-ang gravel & cobbles, trace clay.	154.25 6.25	
7				SAND
8		Brown-yellow brown, wet, very dense sand TILL, some silt, clay, gravel and cobbles. (SM)	152.88 7.62	
		Grey, hard to very hard SILT, some sand, moist to slightly moist, some clay. (ML)	152.12 8.38	
9		Transition from moist to wet soil: water table inferred.		BENTONITE SEAL
10				

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 2 OF 5

LOCATION: Refer to Plan

DATUM:

INCLINATION: -90° AZIMUTH: ---

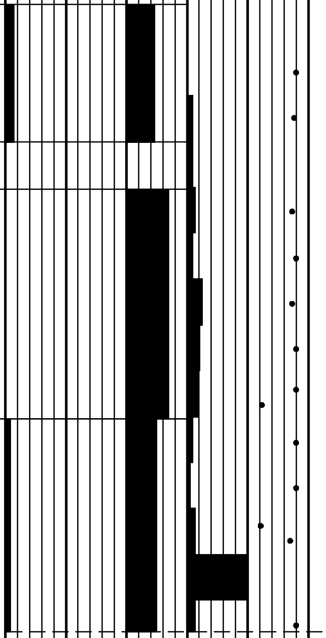
DRILLING DATE: July 10-11, 2002
DRILL RIG: CME 75
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

Columns: DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE (m/min) | COLOUR % RETURN | FLUSH | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 (5 10 15 20) | DISCONTINUITY DATA: DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-11} 10^{-9} 10^{-7} 10^{-5}) | DIAMETRAL POINT LOAD INDEX (MPa) (2 4 6) | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

Drilling record	Description	Elev. / Depth (m)
AUGER	Brown, dense, moist silty coarse gravelly sand to silty gravel TILL. (SM-GM)	150.44 / 10.06
AUGER	Brown, dense moist SILT, trace gravel.	149.68 / 10.82
AUGER	Wet, dense, grey SAND and GRAVEL, some silt. (TILL) (SG-GM)	148.92 / 11.58
AUGER	Brown, moist, hard, cobbley, gravelly SILT TILL. (SM)	148.16 / 12.34
AUGER	BEDROCK, highly weathered, very weak, friable red shale, easily augered.	146.63 / 13.87
HQ CORE	Red SHALE, finely laminated, weak to moderately strong, slightly weathered. Core is highly discked, reducing RQD.	144.65 / 15.85



Run No.	Type and surface description
1	B
1	B
2	B,FX
2	B,FX
2	B,FX
2	B,FX
2	B J
3	B,FX
3	B,FX
3	B,FX J
3	B,FX

Notes / Instrumentation: BENTONITE SEAL (10 – 17.3 m); SAND (17.3 – 20 m)

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 3 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 10-11, 2002

DATUM:

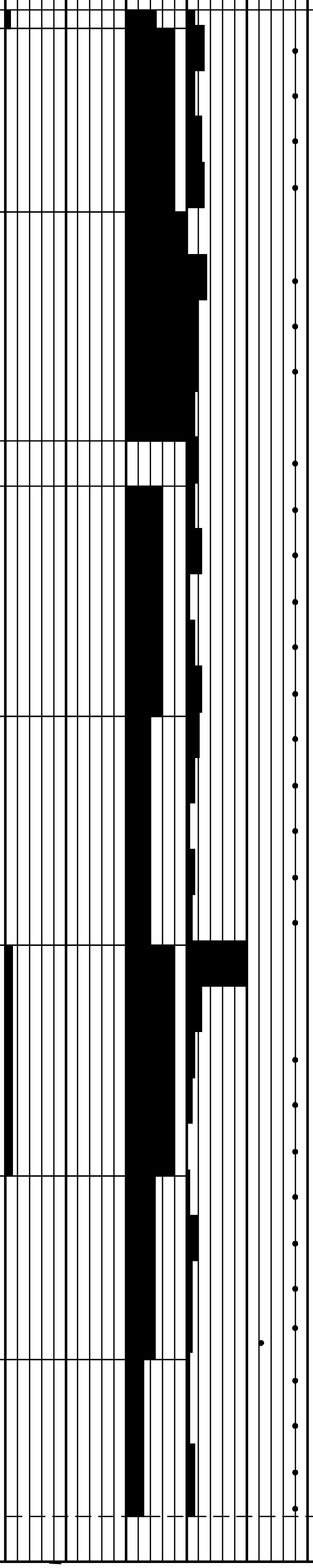
DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	NOTES WATER LEVELS INSTRUMENTATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---				
20	HQ CORE	Red SHALE, finely laminated, weak to moderately strong, slightly weathered. Green shale bands are slightly stronger than the red shale bands. (Metalic sound when tapped with geologic hammer)			3 4	
22		Run 5: Core wet at about 22.86m below ground. Slight strength decrease and weathering increase at water table.			5 6	
24.69		Red and green SHALE, moderate to slightly weathered, medium strong, finely laminated, not friable. Rock is up to 10% green coloured.		135.81 24.69	7	
26						SAND
26.5		Discontinuities are planar and rough to smooth. (DISCKING)			8 9	
28.5					10	BENTONITE SEAL
30		*CONTINUED NEXT PAGE*				

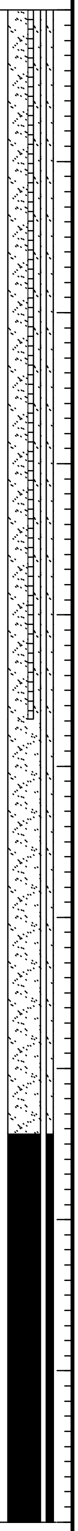


DISCONTINUITY DATA — TYPE AND SURFACE DESCRIPTION (20 m to 30 m, top to bottom):

B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
BC
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
J
B,FX
B,FX
B,FX
B, gypsum, <2mm

HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-11} 10^{-9} 10^{-7} 10^{-5}

DIAMETRAL POINT LOAD INDEX (MPa) 2 4 6



DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 4 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

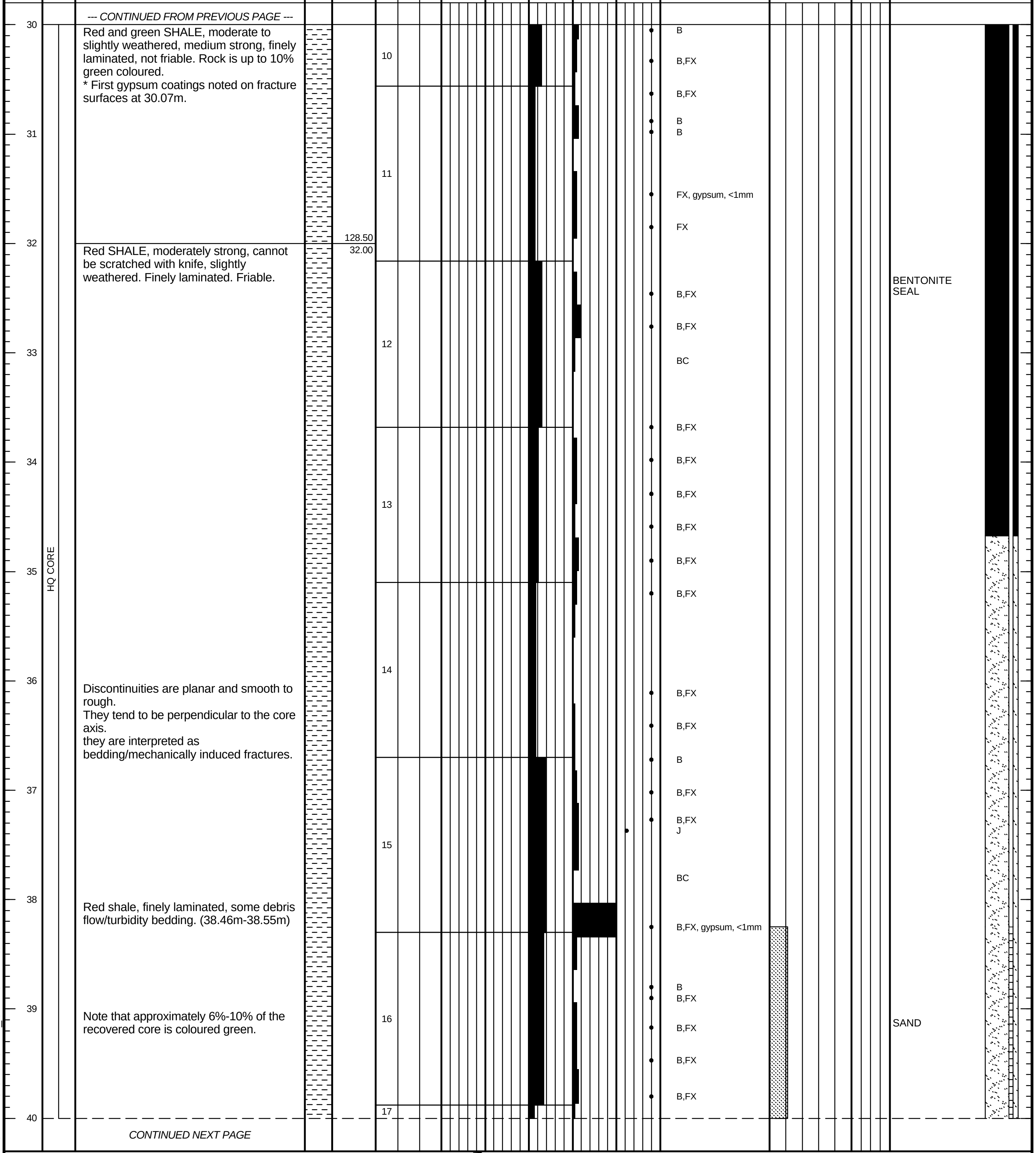
DRILLING DATE: July 10-11, 2002

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

DATUM:

FR/FX-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	BC-BROKEN CORE
CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN	MB-MECH. BREAK
SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY	B-BEDDING
VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED	



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Red and green SHALE, moderate to slightly weathered, medium strong, finely laminated, not friable. Rock is up to 10% green coloured.
* First gypsum coatings noted on fracture surfaces at 30.07m.

128.50
32.00

Red SHALE, moderately strong, cannot be scratched with knife, slightly weathered. Finely laminated. Friable.

Discontinuities are planar and smooth to rough.
They tend to be perpendicular to the core axis.
they are interpreted as bedding/mechanically induced fractures.

Red shale, finely laminated, some debris flow/turbidity bedding. (38.46m-38.55m)

Note that approximately 6%-10% of the recovered core is coloured green.

Discontinuity type and surface description (top to bottom):

- B
- B,FX
- B,FX
- B
- B
- FX, gypsum, <1mm
- FX
- B,FX
- B,FX
- BC
- B,FX
- B,FX
- B,FX
- B,FX
- B,FX
- B,FX
- B,FX
- B,FX
- B
- B,FX
- B,FX
J
- BC
- B,FX, gypsum, <1mm
- B
- B,FX
- B,FX
- B,FX
- B,FX

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 5 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 10-11, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH	COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 5 10 15 20	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-11} 10^{-9} 10^{-7} 10^{-5}	DIAMETRAL POINT LOAD INDEX (MPa) 2 4 6	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---															
40		Red SHALE, moderately strong, cannot be scratched with knife, slightly weathered. Finely laminated. Friable.												B,FX			
														B,FX			
					17									B,FX			
41														B,FX, gypsum coating			
														B			
														B,FX			
42														B			
					18									B,FX			SAND
														B			
43	HQ CORE													B,FX			
					19												
44																	
45														B,FX			
					20									B,FX			
														B			
														B			
46		END OF HOLE		114.48 46.02													
47																	
48																	
49																	
50																	

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-05S

SHEET 1 OF 2

LOCATION: N 596134.0 ;E 4808769.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 9, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

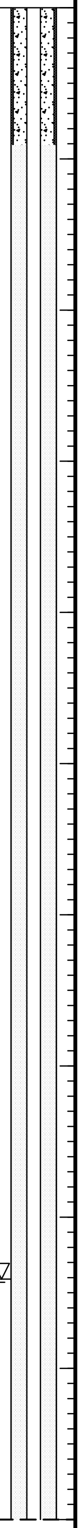
DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

Other columns: DRILLING RECORD; SYMBOLIC LOG; RUN No.; PENETRATION RATE min/(m); FLUSH; COLOUR % RETURN; RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20); R.Q.D. % (80 60 40 20); FRACT. INDEX PER 0.3 m (5 10 15 20); DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn; HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}); Diametral Point Load Index (MPa) (2 4 6); RMC -Q' AVG.

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	NOTES WATER LEVELS INSTRUMENTATION
	GROUND SURFACE	167.03	
0	Compact, dry, brown SILT with some clay and trace to some gravel, (0.5 cm to 3.03 cm) subangular to subrounded (TILL)	0.00	Cement
1			
2			
	Occasional cobbles after 2.74 m depth		
3			
4			
	Compact, moist to wet, brown SANDY SILT with some gravel, and occasional cobble, subrounded to subangular, heterogeneous (TILL)	162.83 4.20	
5			
			Grout
6			
	Compact, saturated, brown SAND with some gravel and silt	160.63 6.40	
7			
8			
	Compact, wet, brown SILT with some sand and gravel	158.87 8.16	▽
	Silt layer from 28.8 m to 30.5 m		
9			
	Becoming clayey at 9.29 m depth		
10			



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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: AI
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-05S

SHEET 2 OF 2

LOCATION: N 596134.0 ;E 4808769.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 9, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

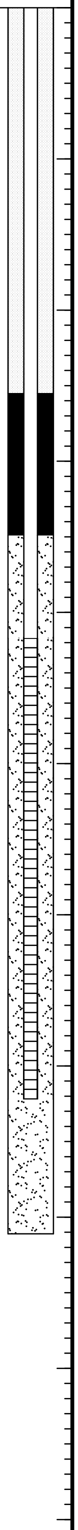
Column headings: DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | FLUSH | COLOUR % RETURN | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 m (5 10 15 20) | DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}) | Diametral Point Load Index (MPa) (2 4 6) | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

DESCRIPTION	ELEV.	DEPTH (m)
Compact, wet, brown SILT with some sand and gravel	156.73	10.30
Loose, grey, poorly graded, clean, homogeneous fine SAND	155.45	11.58
Very dense, brown SILTY fine SAND with gravel and cobbles	151.46	15.57
Slightly weathered, very thinly bedded, brownish red and green SHALE	148.90	18.13
END OF DRILLHOLE		

Depth scale: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

	TYPE AND SURFACE DESCRIPTION
	,BD,PL,UE
	,BD,SH,UE
	,SH, PL,UE,Ro
	,SH, BD,UE,Ro
	,PL,UE,Ro
	,PL,UE,Ro
	,SH,BD,Ro
	,PL,W,UE
	,PL,CU,UE
	,PL,UE,VR
	,PL,Ro,B.C.



	NOTES WATER LEVELS INSTRUMENTATION
	Grout
	Hole Plug
	Sand
	Screen
	Sand

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: AI

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-06S

SHEET 1 OF 2

LOCATION: N 596351.0 ;E 4808892.0

DRILLING DATE: July 6 and 10, 2007

DATUM:

DRILL RIG: CME - 75 Track Mount

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

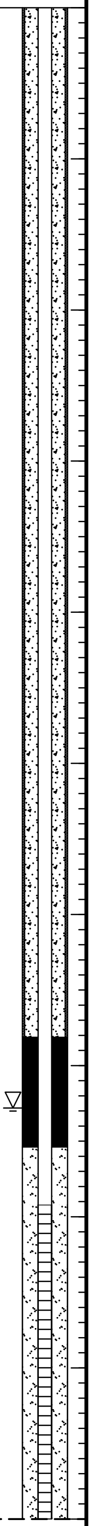
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	DISCONTINUITY DATA B Angle 0 90 180 270	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE		166.05																	
0		Loose to compact, dry, brown SILT, some clay (TILL)		0.00																	
2		Some gravel from 8.44 m to 2.84 m depth																			
		Slightly moist, brown SANDY SILT, some clay, cobble/gravel bands (TILL)		162.70 3.35																	Cement
		Wet, brown SAND and GRAVEL		160.27 5.78																	
7		Silty sand, reddish brown, lens of clay, gravel at 7.32 m depth																			Hole Plug Sand
		Reddish brown SILT, trace gravel (TILL)		158.13 7.92																	Screen
		SHALE, reddish, slightly porous, slight weathering, some gravel		156.91 9.14																	
10																					



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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-06S

SHEET 2 OF 2

LOCATION: N 596351.0 ;E 4808892.0

DRILLING DATE: July 6 and 10, 2007

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

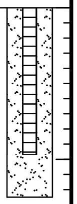
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	COLOUR % RETURN FLUSH	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	DISCONTINUITY DATA B Angle 0 90 180 270	DIP w.r.t. CORE AXIS 0 30 60 90	TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---																			
10		Moderately weathered, thinly bedded, redish brown and green SHALE		156.00 10.05																	Screen
11				154.80																	Sand
		END OF DRILLHOLE		11.25																	
12																					
13																					
14																					
15																					
16																					
17																					
18																					
19																					
20																					



DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 1 OF 5

LOCATION: N 596166.0 ;E 4809014.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 3 to 5, 2007

DRILL RIG: CME - 75 Track Mount

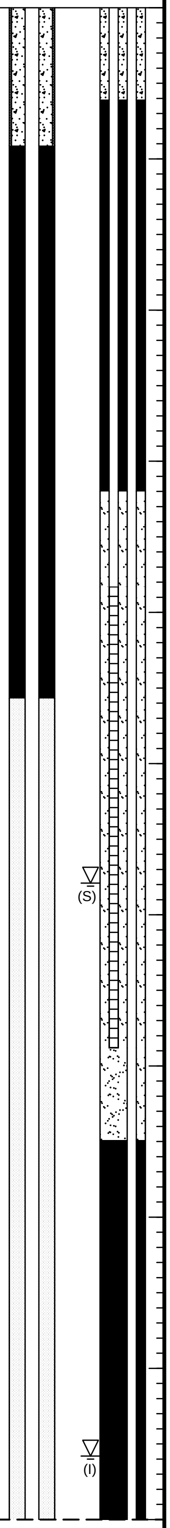
DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	DISCONTINUITY DATA B Angle 0 90 180 270	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE		165.53																	
0		Stiff, brown clayey silt till with trace gravel and organics (TOPSOIL)		0.00																	
		Firm, brown SILT with some clay, sand, semirounded gravel and cobbles (TILL)		164.08 1.45																	
		Slightly firm, reddish brown CLAYEY SILT with very fine and very course semirounded sand, gravel and cobbles (TILL)		159.75 5.78																	(S)
		Stiff, brown SILTY CLAY with very course sand and cobbles (TILL)		157.00 8.53																	(I)
		Stiff, reddish brown SILTY CLAY (Weathered Shale)		155.78 9.75																	
10																					



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DEPTH SCALE
1 : 50

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 2 OF 5

LOCATION: N 596166.0 ;E 4809014.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 3 to 5, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint	BD - Bedding	PL - Planar	PO - Polished	BR - Broken Rock
FLT - Fault	FO - Foliation	CU - Curved	K - Slickensided	**NOTE:** For additional abbreviations refer to list of abbreviations & symbols.
SHR - Shear	CO - Contact	UN - Undulating	SM - Smooth	
VN - Vein	OR - Orthogonal	ST - Stepped	Ro - Rough	
CJ - Conjugate	CL - Cleavage	IR - Irregular	MB - Mechanical Break	

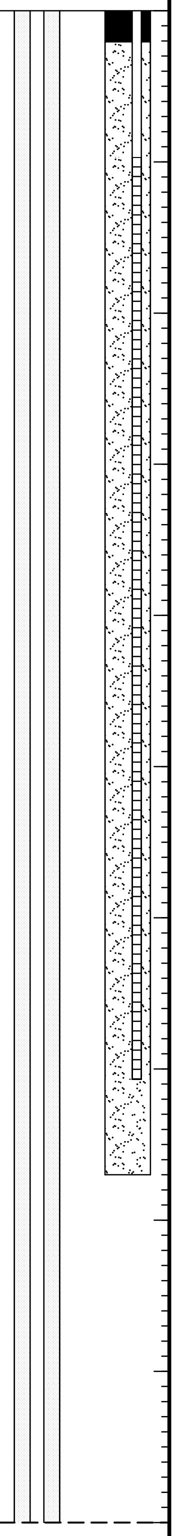
DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | COLOUR % RETURN | FLUSH | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 m (5 10 15 20) | DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}) | Diametral Point Load Index (MPa) (2 4 6) | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.
10	Stiff, reddish brown SILTY CLAY (Weathered Shale)		
12	Stiff, reddish brown SILTY CLAY with some broken shale (Weathered Shale)	153.34 12.19	
13	Slightly weathered, weak, very thinly to thinly bedded, redish brown and green SHALE	151.81 13.72	1
14			2
15–17			3
17			4
18			5
19			6
20			

TYPE AND SURFACE DESCRIPTION:

,JN,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,FO,IR,Ro
,BD,IR,Ro
,JN,IR,Ro
,FR,IR,Ro
,JN,IR,Ro
,FO,IR,Ro
,JN,IR,Ro
,JN,ST,Ro
,JN,IR,Ro
,FR,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,FR,IR,Ro
,FR,IR,Ro
,JN,PL,SM
,JN,IR,Ro
,FO,PL,SM
,FO,IR,Ro
,FO,IR,Ro
,JN,PL,Ro



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DEPTH SCALE

1 : 50

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 3 OF 5

LOCATION: N 596166.0 ;E 4809014.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 3 to 5, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | FLUSH | COLOUR % RETURN | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 m (5 10 15 20) | DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}) | Diametral Point Load Index (MPa) (2 4 6) | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

--- *CONTINUED FROM PREVIOUS PAGE* ---

20

Slightly weathered, weak, very thinly to thinly bedded, redish brown and green SHALE

6

,JN,CU,Ro
,JN,IR,Ro
,FO,PL,SM
,FO,IR,Ro

21

7

,JN,PL,Ro
,FO,IR,Ro
,JN,IR,Ro

22

,BD,PL,Ro
,JN,IR,Ro
,BD,PL,Ro

8

,FR,IR,Ro

23

,JN,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,FO,IR,SM

24

,JN,IR,Ro

9

,FO,IR,Ro
,JN,UE,SM
,FO,IR,Ro
,JN,IR,Ro

25

,FR,IR,VR
,JN,,Ro
,BD,PL,Ro

10

,JN,PL,SM

26

,FR,IR,Ro
,JN,IR,Ro
,FR,IR,SM
,JN,IR,Ro
,JN,IR,VR

27

11

,JN,CU,SM
,JN,PL,SM

28

,JN,CU,SM

12

,FR,IR,Ro
,JN,IR,Ro

29

,FR,PL,Ro
,JN,UE,Ro

13

30

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 4 OF 5

LOCATION: N 596166.0 ;E 4809014.0

DRILLING DATE: July 3 to 5, 2007

DATUM:

INCLINATION: -90° AZIMUTH: ---

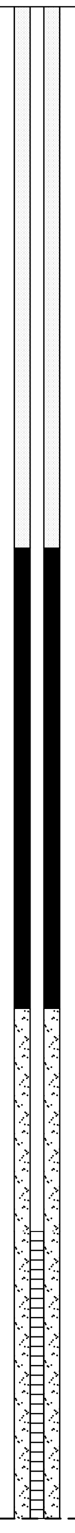
DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	COLOUR % RETURN FLUSH	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	DISCONTINUITY DATA B Angle 0 90 180 270	DIP w.r.t. CORE AXIS 0 30 60 90	TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---																			
30		Slightly weathered, weak, very thinly to thinly bedded, redish brown and green SHALE			13									,JN,IR,SM							
31					14									,JN,IR,PO ,FR,IR,SM ,JN,UE,Ro							
32														,JN,IR,SM ,JN,PL,SM							
					15									,JN,IR,Ro ,JN,IR,SM							
33														,JN,IR,Ro ,FR,IR,Ro ,JN,IR,Ro							
34					16									,FR,IR,Ro ,JN,UE,SM ,JN,IR,Ro							
35														,FR,IR,VR ,FR,IR,Ro ,JN,PL,SM							
36					17									,JN,UE,SM ,JN,PL,Ro ,FR,IR,Ro							
37					18									,JN,IR,Ro ,JN,PL,SM							
38														,FO,IR,Ro ,JN,IR,Ro ,JN,PL,SM							
					19									,FR,IR,VR							
39														,JN,IR,Ro ,JN,IR,Ro ,FR,IR,Ro ,JN,IR,Ro ,JN,ST,Ro							
40		*CONTINUED NEXT PAGE*																			



DEPTH SCALE
1 : 50

Golder Associates

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 5 OF 5

LOCATION: N 596166.0 ;E 4809014.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 3 to 5, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

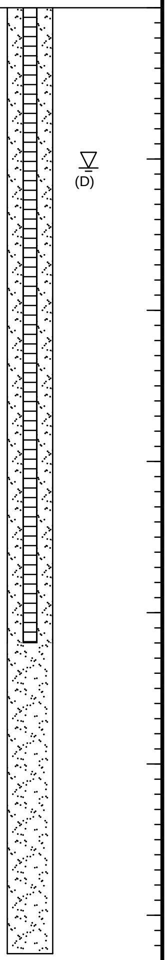
DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---					
40				125.43 40.10	19	,JN,IR,Ro	
		Slightly weathered, weak, thinly bedded, redish brown and green SHALE			20	,JN,IR,Ro ,JN,PL,SM	
41						,JN,IR,Ro ,JN,CU,SM	∇ (D)
42					21	,FR,IR,Ro ,JN,IR,Ro ,FR,IR,Ro ,FR,IR,VR ,FR,IR,VR ,FR,IR,Ro ,JN,CU,SM	
43				122.43 43.10			
		Slightly weathered, weak, layered, redish brown and green SHALE			22	,JN,IR,Ro ,FR,IR,Ro ,JN,PL,SM	
44						,JN,IR,Ro ,FR,IR,SM	
45					23	,JN,PL,SM	
46				119.28 46.25			
		END OF DRILLHOLE					
47							
48							
49							
50							

Other column headings: PENETRATION RATE min/(m); COLOUR % RETURN; FLUSH; RECOVERY TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20); R.Q.D. % (80 60 40 20); FRACT. INDEX PER 0.3 m (5 10 15 20); B Angle (0 90 180 270); DIP w.r.t. CORE AXIS (0 30 60 90); Jr; Ja; Jn; HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}); Diametral Point Load Index (MPa) (2 4 6); RMC -Q' AVG.



DEPTH SCALE

1 : 50

Golder Associates

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 1 OF 5

LOCATION: N 596045.0 ;E 4809002.0

DRILLING DATE: June 20 to 21, 2007

DATUM:

DRILL RIG: CME - 75 Track Mount

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

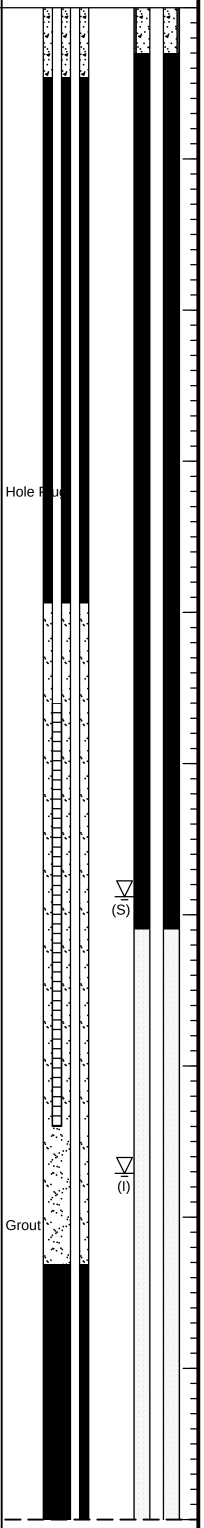
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | FLUSH COLOUR % RETURN | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 m (5 10 15 20) | DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}) | Diametral Point Load Index (MPa) (2 4 6) | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

DESCRIPTION	ELEV.	DEPTH (m)
GROUND SURFACE	166.78	
Soft, brown clayey silt with organics and trace grey silt and gravel (TOPSOIL)		0.05
Stiff, brown to grey brown CLAYEY SILT with semiangular gravel (TILL)		
Very soft, reddish brown very fine SANDY SILT with semirounded gravel and cobbles (TILL)	162.72	4.06
Stiff, reddish brown CLAYEY SILT with trace sand and gravel (TILL)	158.25	8.53
Soft, grey brown fine SILTY SAND with gravel (TILL)	157.79	8.99
Stiff, grey brown very fine SANDY SILT with coarse sand, gravel and cobble s (TILL)	157.18	9.60



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DEPTH SCALE
1 : 50

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 2 OF 5

LOCATION: N 596045.0 ;E 4809002.0

INCLINATION: -90° AZIMUTH: ---

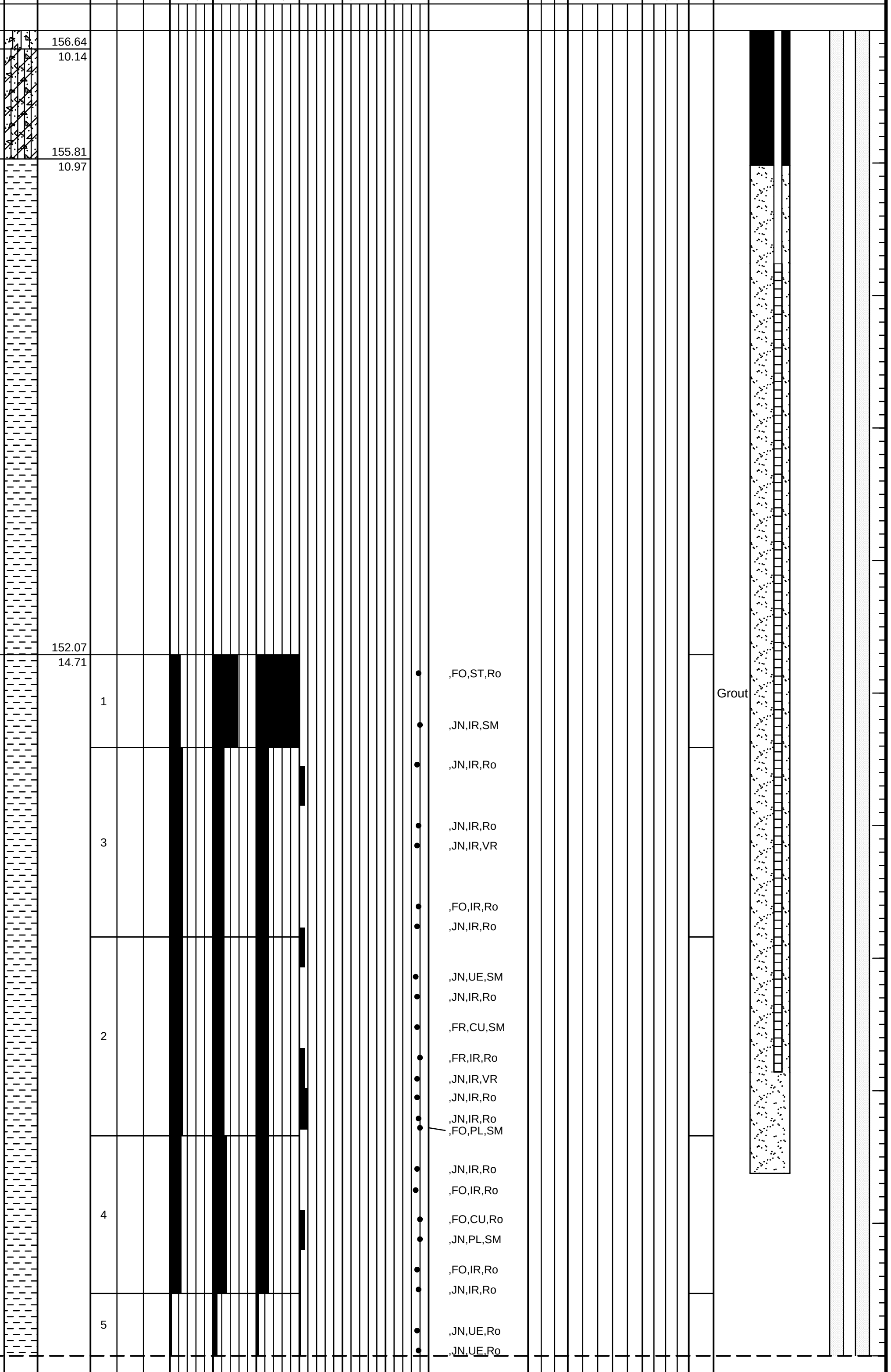
DRILLING DATE: June 20 to 21, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint	BD - Bedding	PL - Planar	PO - Polished	BR - Broken Rock
FLT - Fault	FO - Foliation	CU - Curved	K - Slickensided	**NOTE:** For additional abbreviations refer to list of abbreviations & symbols.
SHR - Shear	CO - Contact	UN - Undulating	SM - Smooth	
VN - Vein	OR - Orthogonal	ST - Stepped	Ro - Rough	
CJ - Conjugate	CL - Cleavage	IR - Irregular	MB - Mechanical Break	



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.
		--- CONTINUED FROM PREVIOUS PAGE ---		
10			156.64 10.14	
		Stiff, reddish brown CLAYEY SILT with semiangular gravel (TILL)	155.81 10.97	
11		SHALE		
12				
13				
14			152.07 14.71	
15		Slightly to moderately weathered, weak, very thinly to thinly bedded, redish brown and green SHALE		1
16				3
17				2
18				
19				4
				5
20		*CONTINUED NEXT PAGE*		

TYPE AND SURFACE DESCRIPTION

,FO,ST,Ro
,JN,IR,SM
,JN,IR,Ro
,JN,IR,Ro
,JN,IR,VR
,FO,IR,Ro
,JN,IR,Ro
,JN,UE,SM
,JN,IR,Ro
,FR,CU,SM
,FR,IR,Ro
,JN,IR,VR
,JN,IR,Ro
,JN,IR,Ro
,FO,PL,SM
,JN,IR,Ro
,FO,IR,Ro
,FO,CU,Ro
,JN,PL,SM
,FO,IR,Ro
,JN,IR,Ro
,JN,UE,Ro
,JN,UE,Ro

DEPTH SCALE

1 : 50

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 3 OF 5

LOCATION: N 596045.0 ;E 4809002.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: June 20 to 21, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint	BD- Bedding	PL - Planar	PO- Polished
FLT - Fault	FO- Foliation	CU- Curved	K - Slickensided
SHR- Shear	CO- Contact	UN- Undulating	SM- Smooth
VN - Vein	OR- Orthogonal	ST - Stepped	Ro - Rough
CJ - Conjugate	CL - Cleavage	IR - Irregular	MB- Mechanical Break

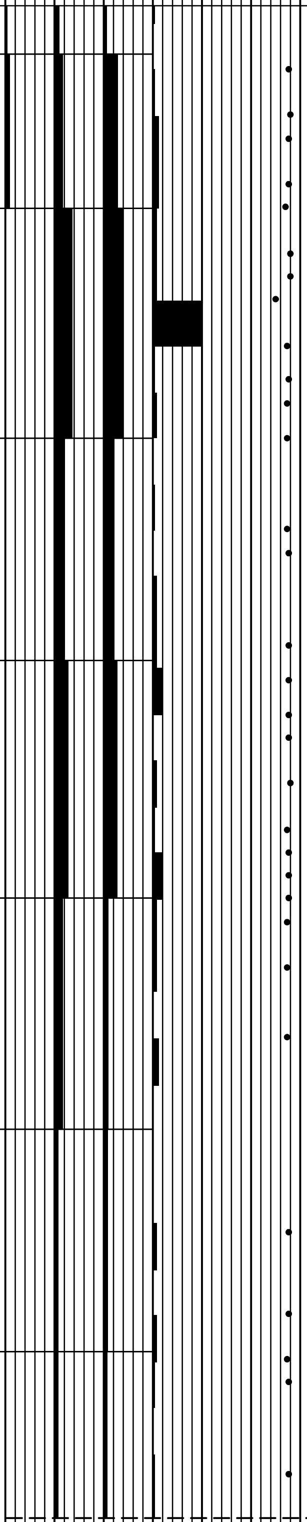
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

Column headings: DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | FLUSH | COLOUR % RETURN | RECOVERY: TOTAL CORE % (80 60 40 20), SOLID CORE % (80 60 40 20) | R.Q.D. % (80 60 40 20) | FRACT. INDEX PER 0.3 m (5 10 15 20) | DISCONTINUITY DATA: B Angle (0 90 180 270), DIP w.r.t. CORE AXIS (0 30 60 90), TYPE AND SURFACE DESCRIPTION, Jr, Ja, Jn | HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3}) | Diametral Point Load Index (MPa) (2 4 6) | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.
20	Slightly to moderately weathered, weak, very thinly to thinly bedded, redish brown and green SHALE	145.48 21.30	5 6
21–22	Highly weathered, very weak, thinly bedded, redish brown and green SHALE	143.98 22.80	7
23–30	Slightly weathered, weak, redish brown and green SHALE		8 9 10 11 12



Discontinuity type and surface description (in depth order):

,JN,IR,SM
,FO,ST,Ro
,FO,PL,SM
,BD,IR,Ro
,FO,IR,Ro
,FO,ST,SM
,FO,PL,SM
,JN,PL,SM
,JN,IR,Ro
,JN,IR,Ro
,JN,IR,Ro
,FO,ST,Ro
,JN,IR,Ro
,FR,PL,SM
,FR,ST,SM
,JN,PL,SM
,JN,IR,Ro
,JN,UE,SM
,FR,IR,Ro
,JN,IR,Ro
,BD,PL,SM
,BD,IR,Ro
,FO,PL,SM
,JN,ST,Ro
,FO,IR,SM
,JN,PL,SM
,JN,PL,SM
,FO,IR,Ro
,FO,IR,Ro
,JN,IR,Ro
,FR,IR,Ro
,JN,IR,Ro
,FO,PL,SM
,FO,ST,SM
,JN,UE,SM

Notes: Grout (about 25 m); Hole Plug (30 m)

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 4 OF 5

LOCATION: N 596045.0 ;E 4809002.0

DRILLING DATE: June 20 to 21, 2007

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate

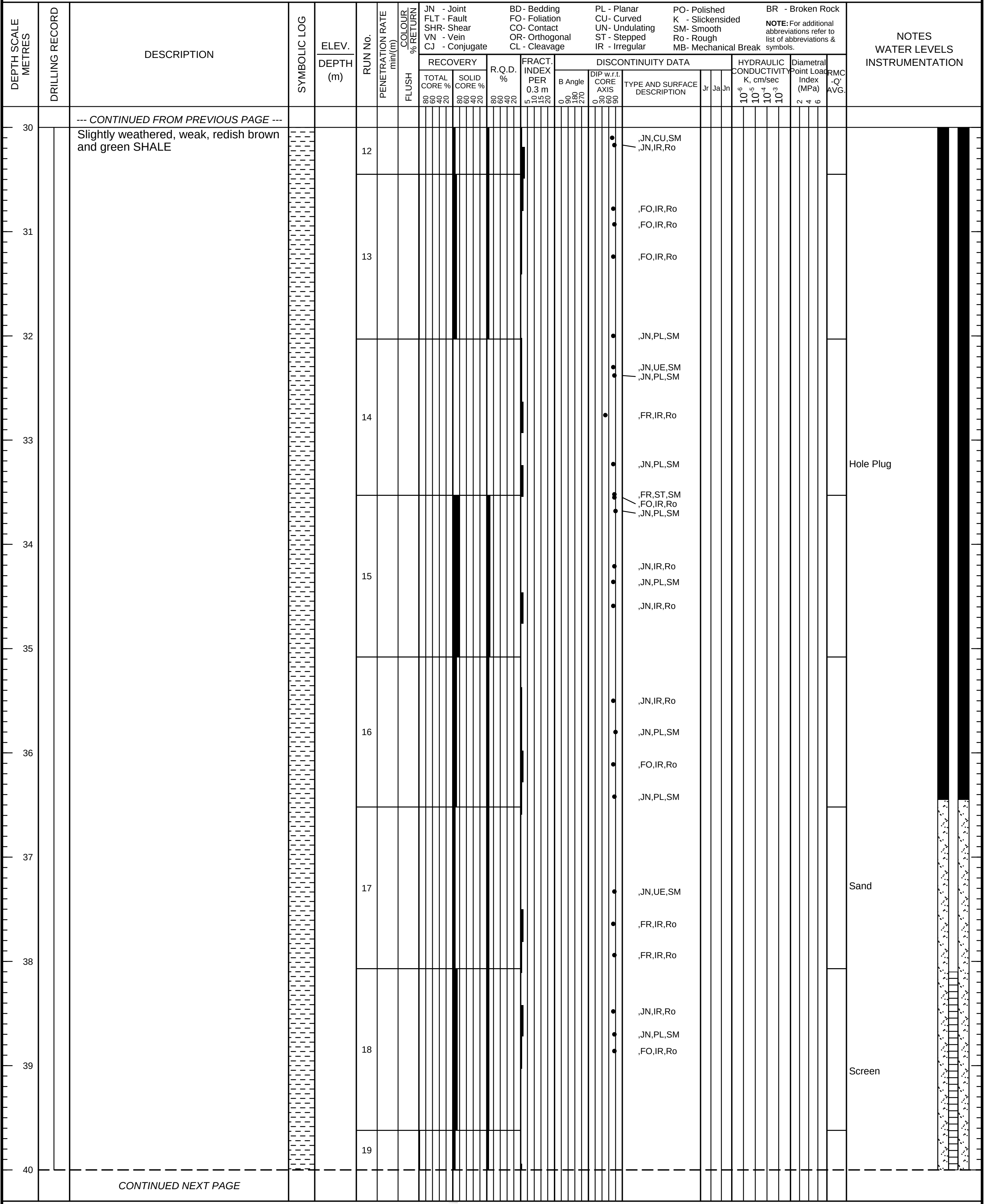
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break

BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.



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Slightly weathered, weak, redish brown and green SHALE

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 5 OF 5

LOCATION: N 596045.0 ;E 4809002.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: June 20 to 21, 2007

DRILL RIG: CME - 75 Track Mount

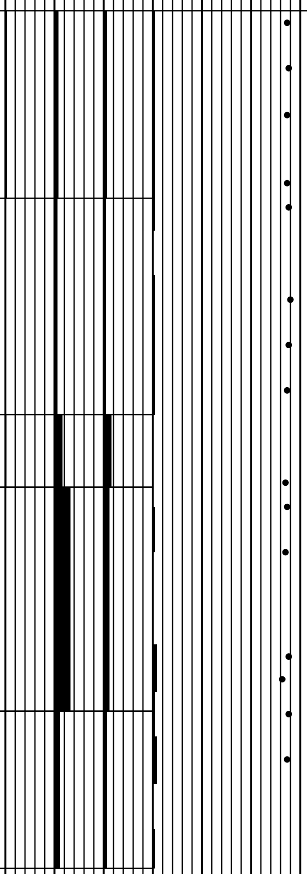
DRILLING CONTRACTOR: All-Terrain Drilling Limited

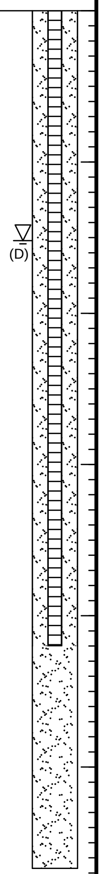
DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3 m	DISCONTINUITY DATA: B Angle	DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec	Diametral Point Load Index (MPa)	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---																			
40		Slightly weathered, weak, redish brown and green SHALE			19									,FR,ST,SM ,JN,PL,SM ,FO,PL,SM							
41														,JN,IR,Ro ,JN,IR,Ro							(D)
42					20									,JN,PL,VR ,JN,PL,Ro ,JN,IR,Ro							Screen
43					21									,JN,ST,Ro ,JN,UE,Ro ,FR,UE,Ro							
44					22									,JN,PL,Ro ,JN,ST,SM ,JN,UE,SM							
45				121.11 45.67	23									,FO,PL,SM ,JN,IR,Ro							Sand
		END OF DRILLHOLE																			
46																					
47																					
48																					
49																					
50																					





DEPTH SCALE
1 : 50

Golder Associates

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 1 OF 5

LOCATION: N 595870.0 ;E 4808946.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 11, 2007

DRILL RIG: CME - 75 Track Mount

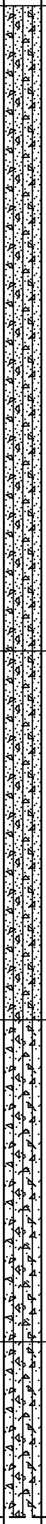
DRILLING CONTRACTOR: All-Terrain Drilling Limited

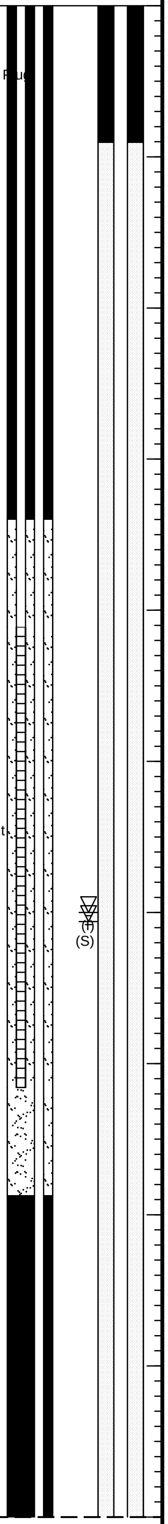
DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	DISCONTINUITY DATA B Angle 0 90 180 270	DISCONTINUITY DATA DIP w.r.t. CORE AXIS 0 30 60 90	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		GROUND SURFACE		168.31																	
0		Compact, dry, brown SILT, trace clay (TILL)		0.00																	Hole P
1		Loose to compact silty clay till from 1.2 m to 2.4 m depth																			
2		Damp from 1.8 m to 2.4 m depth																			
3																					
4		Dry, brown to grey SILT, trace gravel/cobbles, angular to subangular gravel (TILL)		164.04 4.27																	
5																					Grout
6																					(S)
7		Damp, brown to grey SANDY SILT with trace subangular rounded gravel, hetero (TILL)		161.60 6.71																	
8																					
9		Soft, grey to brown silty fine SAND (TILL)		159.47 8.84																	
10																					





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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD & AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 2 OF 5

LOCATION: N 595870.0 ;E 4808946.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 11, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

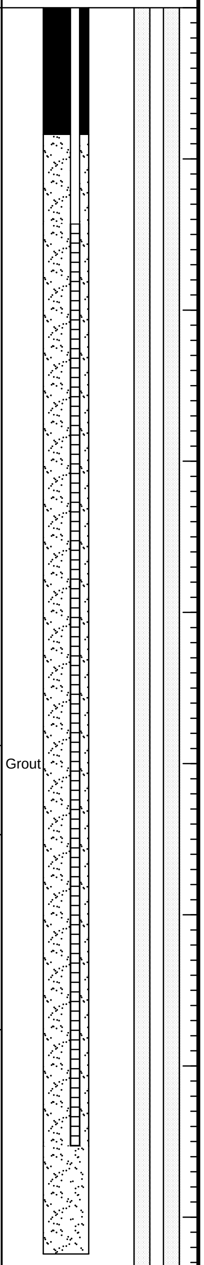
DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. DEPTH (m) | RUN No. | PENETRATION RATE min/(m) | COLOUR % RETURN | FLUSH | RECOVERY: TOTAL CORE % 80 60 40 20; SOLID CORE % 80 60 40 20 | R.Q.D. % 80 60 40 20 | FRACT. INDEX PER 0.3 m 5 10 15 20 | DISCONTINUITY DATA: B Angle 0 90 180 270; DIP w.r.t. CORE AXIS 0 30 60 90; TYPE AND SURFACE DESCRIPTION; Jr Ja Jn | HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3} | Diametral Point Load Index (MPa) 2 4 6 | RMC -Q' AVG. | NOTES WATER LEVELS INSTRUMENTATION

--- CONTINUED FROM PREVIOUS PAGE ---

Depth (m)	Description	Elev. / Depth (m)
10	Soft, grey to brown silty fine SAND (TILL)	
14.88	Slightly to moderately weathered, weak, thinly bedded, redish brown and green SHALE	153.43 14.88
16.76	Moderately to highly weathered, thinly bedded, redish brown SHALE with some thin greyish green beds	151.55 16.76
20		148.31

Depth scale marks: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Run No.	Type and surface description
1	,JN,IR,Ro ,JN,CU,SM ,JN,IR,Ro
2	,JN,IR,VR ,JN,IR,Ro ,JN,IR,Ro ,JN,IR,SM ,JN,IR,Ro
3	,JN,IR,SM ,JN,IR,SM ,JN,IR,Ro ,JN,IR,SM ,JN,IR,SM ,JN,IR,SM
4	,JN,IR,Ro ,JN,IR,Ro ,JN,ST,Ro ,JN,IR,SM ,JN,IR,Ro ,JN,IR,SM ,JN,IR,Ro ,JN,IR,Ro ,JN,ST,SM ,JN,IR,SM



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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD & AK

CHECKED: SW

MIS-RCK 004 021-1228 (2007).GPJ GAL-MISS.GDT 25/9/09 DD

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 3 OF 5

LOCATION: N 595870.0 ;E 4808946.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 11, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
	--- CONTINUED FROM PREVIOUS PAGE ---				
20	Slightly weathered, thinly bedded, redish brown SHALE with some thin green beds	20.00			
				,JN,IR,Ro	
				,JN,IR,SM	
				,JN,IR,Ro	
			5		
				,JN,IR,Ro	
21					
				,JN,IR,Ro	
				,JN,IR,Ro	
22					
				,JN,IR,SM	
			6		
				,JN,IR,SM	
				,JN,IR,Ro	
23				,JN,IR,Ro	
				,JN,IR,Ro	
				,JN,IR,Ro	
				,JN,IR,Ro	
				,JN,ST,Ro	
24			7		
				,JN,IR,SM	
				,JN,IR,Ro	
				,JN,IR,SM	
				,JN,IR,Ro	
25					Grout
				,JN,IR,SM	
				,JN,IR,Ro	
				,JN,IR,SM	
				,JN,IR,Ro	
			8		
26					
				,JN,IR,Ro	
	Slightly weathered, very thinly to thinly bedded, weak, redish brown and green SHALE	142.10 26.21			
				,JN,CU,SM	
				,JN,IR,SM	
				,JN,IR,SM	
			9	,JN,IR,SM	
27				,JN,IR,Ro	
				,JN,IR,Ro	
				,JN,IR,Ro	
				,JN,IR,SM	
28					
				,JN,IR,Ro	
			10		
				,JN,IR,Ro	
29					
				,JN,IR,Ro	
				,JN,IR,SM	
				,JN,IR,Ro	
			11		
				,JN,IR,SM	
30					
	CONTINUED NEXT PAGE				

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD & AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 4 OF 5

LOCATION: N 595870.0 ;E 4808946.0

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 11, 2007

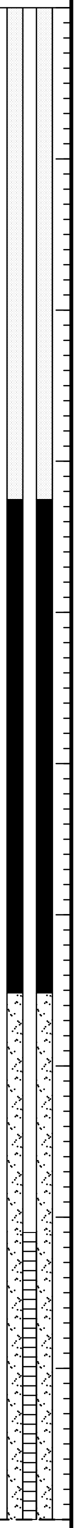
DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE % 80 60 40 20	RECOVERY SOLID CORE % 80 60 40 20	R.Q.D. % 80 60 40 20	FRACT. INDEX PER 0.3 m 5 10 15 20	B Angle 0 90 180 270	DIP w.r.t. CORE AXIS 0 30 60 90	TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec 10^{-6} 10^{-5} 10^{-4} 10^{-3}	Diametral Point Load Index (MPa) 2 4 6	RMC -Q' AVG.	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---																			
30		Slightly weathered, very thinly to thinly bedded, weak, redish brown and green SHALE			11									,JN,IR,Ro							
														,JN,IR,SM							
31														,JN,IR,Ro							
					12									,JN,IR,SM							
														,JN,IR,Ro							
														,JN,IR,Ro							Grout
														,JN,IR,Ro							
32														,JN,IR,Ro							
														,JN,IR,Ro							
														,JN,IR,Ro							
33					13									,JN,IR,Ro							
														,JN,IR,Ro							
														,JN,IR,Ro							
														,JN,IR,SM							
														,JN,IR,Ro							
														,JN,UE,Ro							
34														,JN,IR,SM							
					14									,JN,IR,PO							
35																					Hole Plug
														,JN,IR,SM							
														,JN,IR,Ro							
36					15									,JN,IR,Ro							
														,JN,PL,SM							
37																					Sand
					16									,JN,IR,SM							
														,JN,PL,PO							
38														,FR,IR,Ro							
														,JN,PL,Ro							
39					17									,JN,CU,Ro							Screen
					18									,JN,IR,Ro							
40		*CONTINUED NEXT PAGE*																			



DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD & AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 5 OF 5

LOCATION: N 595870.0 ;E 4808946.0

INCLINATION: -90° AZIMUTH: ---

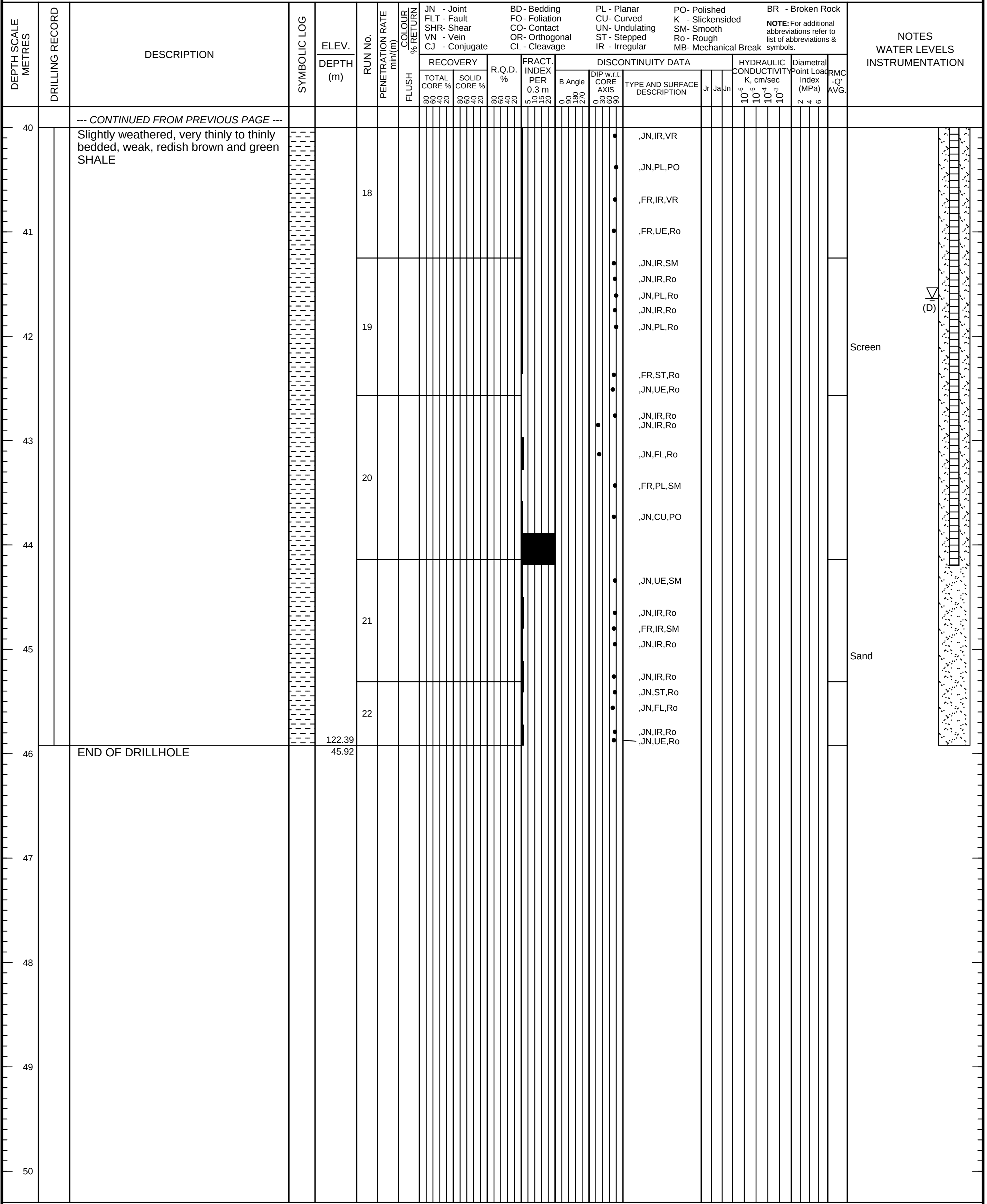
DRILLING DATE: July 11, 2007

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint	BD - Bedding	PL - Planar	PO - Polished	BR - Broken Rock
FLT - Fault	FO - Foliation	CU - Curved	K - Slickensided	**NOTE:** For additional abbreviations refer to list of abbreviations & symbols.
SHR - Shear	CO - Contact	UN - Undulating	SM - Smooth	
VN - Vein	OR - Orthogonal	ST - Stepped	Ro - Rough	
CJ - Conjugate	CL - Cleavage	IR - Irregular	MB - Mechanical Break	



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DEPTH SCALE METRES	DESCRIPTION	ELEV. / DEPTH (m)	RUN No.	TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
40	Slightly weathered, very thinly to thinly bedded, weak, redish brown and green SHALE		18	,JN,IR,VR ,JN,PL,PO ,FR,IR,VR ,FR,UE,Ro	
41			19	,JN,IR,SM ,JN,IR,Ro ,JN,PL,Ro ,JN,IR,Ro ,JN,PL,Ro	(D)
42				,FR,ST,Ro ,JN,UE,Ro	Screen
43			20	,JN,IR,Ro ,JN,IR,Ro ,JN,FL,Ro ,FR,PL,SM ,JN,CU,PO	
44			21	,JN,UE,SM ,JN,IR,Ro ,FR,IR,SM ,JN,IR,Ro	
45			22	,JN,IR,Ro ,JN,ST,Ro ,JN,FL,Ro ,JN,IR,Ro ,JN,UE,Ro	Sand
		122.39 45.92			
46	END OF DRILLHOLE				

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD & AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF BOREHOLE: TW1

SHEET 1 OF 2

LOCATION: N 4808946.0 ;E 595581.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) SHEAR STRENGTH Cu, kPa: nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		167.64							
0	Air Rotary Drilling 152.4 mm Diameter	Dense, brown, fine grained SILT (TILL) (HALTON TILL)		0.00							
4.5											▽ Sept. 14/07
6.10		Dense, brown, fine grained SILT, some gravel , trace clay (TILL) (HALTON TILL)		161.54 6.10							
10											

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

LOGGED: MD
CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW1

SHEET 2 OF 2

LOCATION: N 4808946.0 ;E 595581.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Air Rotary Drilling 152.4 mm Diameter	Dense, brown, fine grained SILT, some gravel , trace clay (TILL) (HALTON TILL)									
11											
12											
13											
14											
15											
16		Weathered red SHALE		151.66 15.98							Casing ends at 15.98m depth Open hole to 18.29m depth
17											
18		END OF BOREHOLE		149.35 18.29							
19											
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW2

SHEET 1 OF 4

LOCATION: N 4810362.0 ;E 595617.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢ ○W ⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		176.33							
0	Air Rotary Drilling 152.4 mm Diameter	Dense, brown/grey fine grained SILT, trace gravel (TILL) (HALTON TILL)		0.00							
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD
CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW2

SHEET 2 OF 4

LOCATION: N 4810362.0 ;E 595617.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Air Rotary Drilling 152.4 mm Diameter	Dense, brown/grey fine grained SILT, trace gravel (TILL) (HALTON TILL)									
11											
12											
13											
14											
15											
16											
17											
18											
		Dense, reddish brown fine grained SILT, some gravel (TILL) (HALTON TILL)		158.03 18.30							Casing ends at 18.3m depth Open hole to 32.01m depth
19											
20											
		CONTINUED NEXT PAGE									

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW2

SHEET 3 OF 4

LOCATION: N 4810362.0 ;E 595617.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
20	Air Rotary Drilling 152.4 mm Diameter	Dense, reddish brown fine grained SILT, some gravel (TILL) (HALTON TILL)									
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
		CONTINUED NEXT PAGE									

MIS-BHS 001 021-1228 (2007).GPJ GAL-MIS.GDT 25/9/09 DD

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW2

SHEET 4 OF 4

LOCATION: N 4810362.0 ;E 595617.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m				
		--- CONTINUED FROM PREVIOUS PAGE ---									
30	Air Rotary Drilling 152.4 mm Diameter	Dense, reddish brown fine grained SILT, some gravel (TILL) (HALTON TILL)									
31											
32		END OF BOREHOLE		144.32 32.01							
33											
34											
35											
36											
37											
38											
39											
40											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW3

SHEET 1 OF 3

LOCATION: N 4810005.0 ;E 596410.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80 SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		166.85							
0	Air Rotary Drilling 152.4 mm Diameter	Dense, brown fine grained SILT, trace gravel (TILL) (HALTON TILL)		0.00							
6		Dense, brown fine grained SILT, some gravel (TILL) (HALTON TILL)		160.76 6.09							
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW3

SHEET 2 OF 3

LOCATION: N 4810005.0 ;E 596410.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ● rem V. ⊕ U - ○ — 20 40 60 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl — 10 20 30 40

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---							
10	Air Rotary Drilling 152.4 mm Diameter	Dense, brown fine grained SILT, some gravel (TILL) (HALTON TILL)							
12		Dense, brownish grey, fine grained SILT, trace gravel, trace weathered shalt throughout (TILL) (HALTON TILL)		154.65 12.20					
13									∇ Sept. 14/07
20		Red SHALE		147.03 19.82					
		CONTINUED NEXT PAGE							

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

PROJECT: 021-1228

RECORD OF BOREHOLE: TW3

SHEET 3 OF 3

LOCATION: N 4810005.0 ;E 596410.0

BORING DATE: August 29, 2007

DATUM:

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) WATER CONTENT PERCENT Wp ⊢ ○W ⊣ Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
20	Air Rotary Drilling 152.4 mm Diameter	Red SHALE									Casing ends at 20.4m depth Open hole to 23.62m depth
21											
22											
23				143.23							
		END OF BOREHOLE		23.62							
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

Finucci

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Halton	City of Burlington	Conc. 1NDS	3

OWNER (SURNAME FIRST): Finuccr, Mario
ADDRESS: 333 Warminster Dr., Oakville, L6L-4N1
DATE COMPLETED: DAY 14 MO 01 YR 92

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay	Sand	Loose	0	32
Brown	Clay	Sand & Boulders	Loose	32	34
Red	Clay	Sand	Loose	34	39
Red	Shale		Hard	39	55

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
39	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼"	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	.188	+1	39
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		39	55
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)
DIAMETER INCHES
LENGTH FEET
MATERIAL AND TYPE
DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD: ☐ PUMP ☒ BAILER
PUMPING RATE: 4.5 GPM
DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
19 FEET	50 FEET	50 FEET	50 FEET	50 FEET	50 FEET

WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY
IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: ☐ CLEAR ☒ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: FEET
RECOMMENDED PUMPING RATE: 4.0 GPM

FINAL STATUS OF WELL

☒ WATER SUPPLY
☐ OBSERVATION WELL
☐ TEST HOLE
☐ RECHARGE WELL
☐ ABANDONED, INSUFFICIENT SUPPLY
☐ ABANDONED, POOR QUALITY
☐ UNFINISHED
☐ DEWATERING

WATER USE

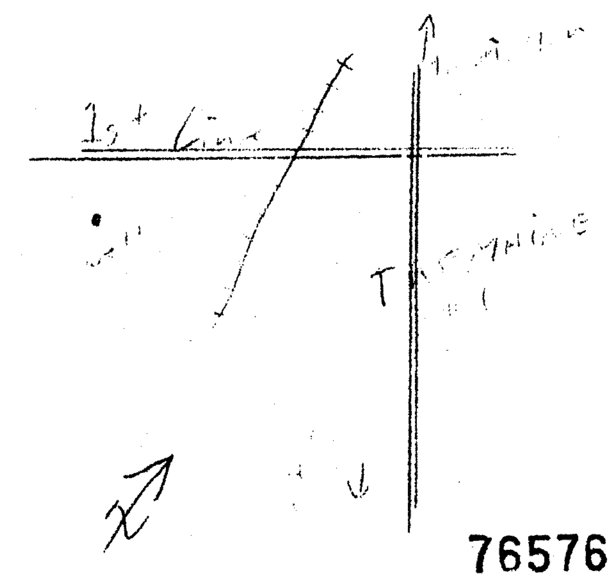
☒ DOMESTIC
☐ STOCK
☐ IRRIGATION
☐ INDUSTRIAL
☐ OTHER
☐ COMMERCIAL
☐ MUNICIPAL
☐ PUBLIC SUPPLY
☐ COOLING OR AIR CONDITIONING
☐ NOT USED

METHOD OF CONSTRUCTION

☒ CABLE TOOL
☐ ROTARY (CONVENTIONAL)
☐ ROTARY (REVERSE)
☐ ROTARY (AIR)
☐ AIR PERCUSSION
☐ BORING
☐ DIAMOND
☐ JETTING
☐ DRIVING
☐ DIGGING
☐ OTHER

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



76576

DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR: O'Connor Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 4005
ADDRESS: RR #1 Millgrove, Ont., L0R-1V0
NAME OF WELL TECHNICIAN: . Howe
WELL TECHNICIAN'S LICENCE NUMBER: T-0518
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY MO YR

OFFICE USE ONLY

FORM NO. 0506 (11/86) FORM 9

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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11

MUNICIP.

CON.

COUNTY ~~OR DISTRICT~~ HALTON	~~TOWNSHIP, BOROUGH, CITY,~~ TOWN, VILLAGE BURLINGTON	CON., ~~BLOCK, TRACT, SURVEY,~~ ETC. II N.D.S.	LOT 1 PART 3
OWNER (SURNAME FIRST) ASHVILLE FARMS	ADDRESS RR #6 MILTON		DATE COMPLETED DAY 30 MO. 09 YR. 74

21 ZONE EASTING NORTHING RC. ELEVATION RC. BASIN CODE II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
BROWN	TOPSOIL			0	1
"	CLAY	STONES		1	14
GREY	"	BLUE CLAY STONES		14	29
RED	SAND	GREY CLAY, BROWN SAND PACKED		29	49
GREY	SAND	SILT		49	61

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
55	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
30	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2½	0	55
32	1 ☐ STEEL 2 ☒ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	16ga	55	61
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)
DIAMETER INCHES
LENGTH FEET
MATERIAL AND TYPE: GRAVEL PAK
DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 7 GPM
DURATION OF PUMPING: 1 HOURS - MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
20 FEET	FEET	22½ FEET	25 FEET	27½ FEET	30 FEET

WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY
IF FLOWING, GIVE RATE: 1. GPM
PUMP INTAKE SET AT: 58 FEET
WATER AT END OF TEST: CLEARING 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 58 FEET
RECOMMENDED PUMPING RATE: 5 GPM
GPM./FT. SPECIFIC CAPACITY

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY
2 ☐ OBSERVATION WELL
3 ☐ TEST HOLE
4 ☐ RECHARGE WELL
5 ☐ ABANDONED, INSUFFICIENT SUPPLY
6 ☐ ABANDONED, POOR QUALITY
7 ☐ UNFINISHED

WATER USE

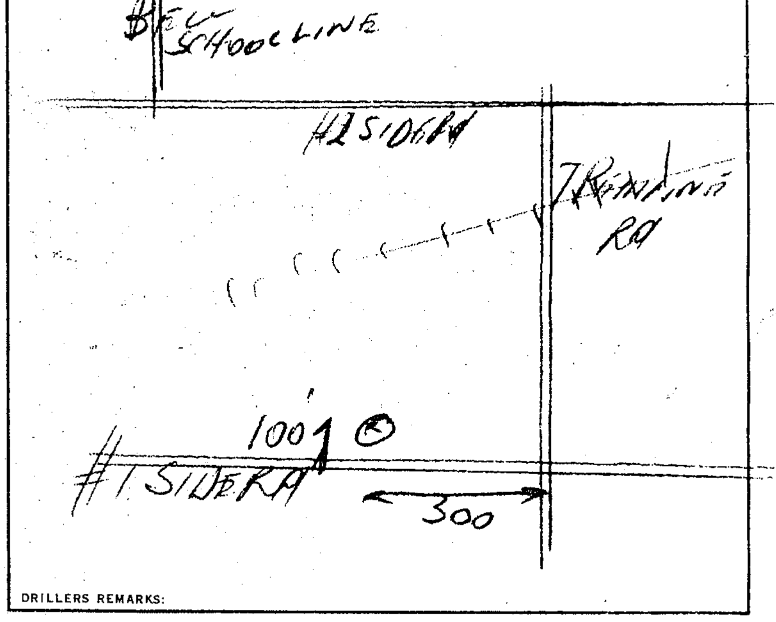
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

METHOD OF DRILLING

1 ☐ CABLE TOOL
2 ☐ ROTARY (CONVENTIONAL)
3 ☐ ROTARY (REVERSE)
4 ☐ ROTARY (AIR)
5 ☐ AIR PERCUSSION
6 ☒ BORING
7 ☐ DIAMOND
8 ☐ JETTING
9 ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING
LICENCE NUMBER: 3637
ADDRESS: 6751 WALKERS LINE RR2 MILTON
NAME OF DRILLER OR BORER: MARCEL PELTIER
LICENCE NUMBER: 3637
SIGNATURE OF CONTRACTOR:
SUBMISSION DATE: DAY 13 MO. DEC YR. 74

OFFICE USE ONLY

DATA SOURCE
CONTRACTOR
DATE RECEIVED
DATE OF INSPECTION
INSPECTOR
REMARKS:
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FORM 7 07-091

Well 5 (Simms)

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

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MUNICIP. CON.

COUNTY OR ~~DISTRICT~~: HALTON	~~TOWNSHIP, BOROUGH, CITY,~~ TOWN, ~~VILLAGE~~: BURLINGTON	CON., ~~BLOCK, TRACT, SURVEY, ETC.~~: II NDS	LOT 25-27: I PART 4	
OWNER (SURNAME FIRST) 28-47: ASHVILLE FARMS	ADDRESS: RR 6 MILTON		DATE COMPLETED 48-53: DAY 8 MO. NOV YR. 74	

21 UTM ZONE, EASTING, NORTHING, RC., ELEVATION, RC., BASIN CODE, II, III, IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOPSOIL			0	1
"	CLAY		HARD PACKED	1	22
GREY	"	BLUE CLAY, SAND LAYERS	PACKED	22	63
BROWN	SAND	STONES	HARD PACKED	63	72
RED	SHALE	GREEN SHALE	HARD	72	90

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13: 63	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL 14
15-18: 85	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL 19
20-23	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL 24
25-28	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL 29
30-33	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL 34 80

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
10-11: 30	1 ☐ STEEL 12 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2½	0	13-16: 67½
17-18: 21	1 ☐ STEEL 19 2 ☒ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	16ga	66	20-23: 90
24-25	1 ☐ STEEL 26 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE: GRAVEL PAK	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD 10: 1 ☐ PUMP 2 ☒ BAILER	PUMPING RATE 11-14: GPM.	DURATION OF PUMPING 15-16 HOURS 17-18 MINS	
STATIC LEVEL 19-21 FEET	WATER LEVEL END OF PUMPING 22-24 FEET	25 WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY: 15 MINUTES 26-28 FEET; 30 MINUTES 29-31 FEET; 45 MINUTES 32-34 FEET; 60 MINUTES 35-37 FEET	
IF FLOWING, GIVE RATE 38-41: 1 GPM.	PUMP INTAKE SET AT: 86 FEET	WATER AT END OF TEST 42: CLEARING 1 ☐ CLEAR 2 ☐ CLOUDY	
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 43-45: 86 FEET	RECOMMENDED PUMPING RATE 46-49: 2 GPM.	
50-53 ___ GPM./FT. SPECIFIC CAPACITY			

200 GALLONS DAY

FINAL STATUS OF WELL 54

1 ☒ WATER SUPPLY
2 ☐ OBSERVATION WELL
3 ☐ TEST HOLE
4 ☐ RECHARGE WELL
5 ☐ ABANDONED, INSUFFICIENT SUPPLY
6 ☐ ABANDONED, POOR QUALITY
7 ☐ UNFINISHED

WATER USE 55-56

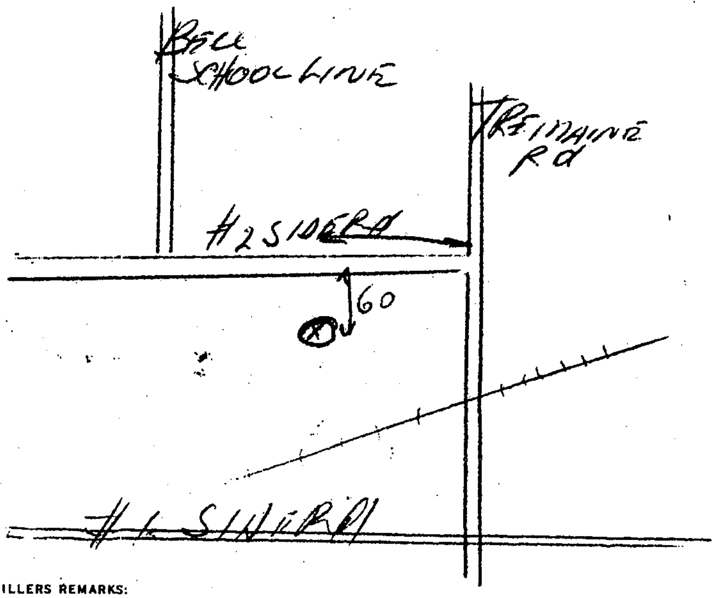
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

METHOD OF DRILLING 57

1 ☐ CABLE TOOL
2 ☐ ROTARY (CONVENTIONAL)
3 ☐ ROTARY (REVERSE)
4 ☐ ROTARY (AIR)
5 ☐ AIR PERCUSSION
6 ☒ BORING
7 ☐ DIAMOND
8 ☐ JETTING
9 ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: MILTON WELL BORING
LICENCE NUMBER: 3637
ADDRESS: 6751 WALKERS LINE RR2 MILTON
NAME OF DRILLER OR BORER: MARCEL PELTIER
LICENCE NUMBER: 3637
SIGNATURE OF CONTRACTOR:
SUBMISSION DATE: DAY 13 MO. NOV YR. 74

OFFICE USE ONLY

DATA SOURCE 58
CONTRACTOR 59-62
DATE RECEIVED 63-68 80
DATE OF INSPECTION
INSPECTOR
REMARKS:
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

APPENDIX C

Groundwater Level Hydrographs

Figure C.1: Monitoring Well MW-01 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

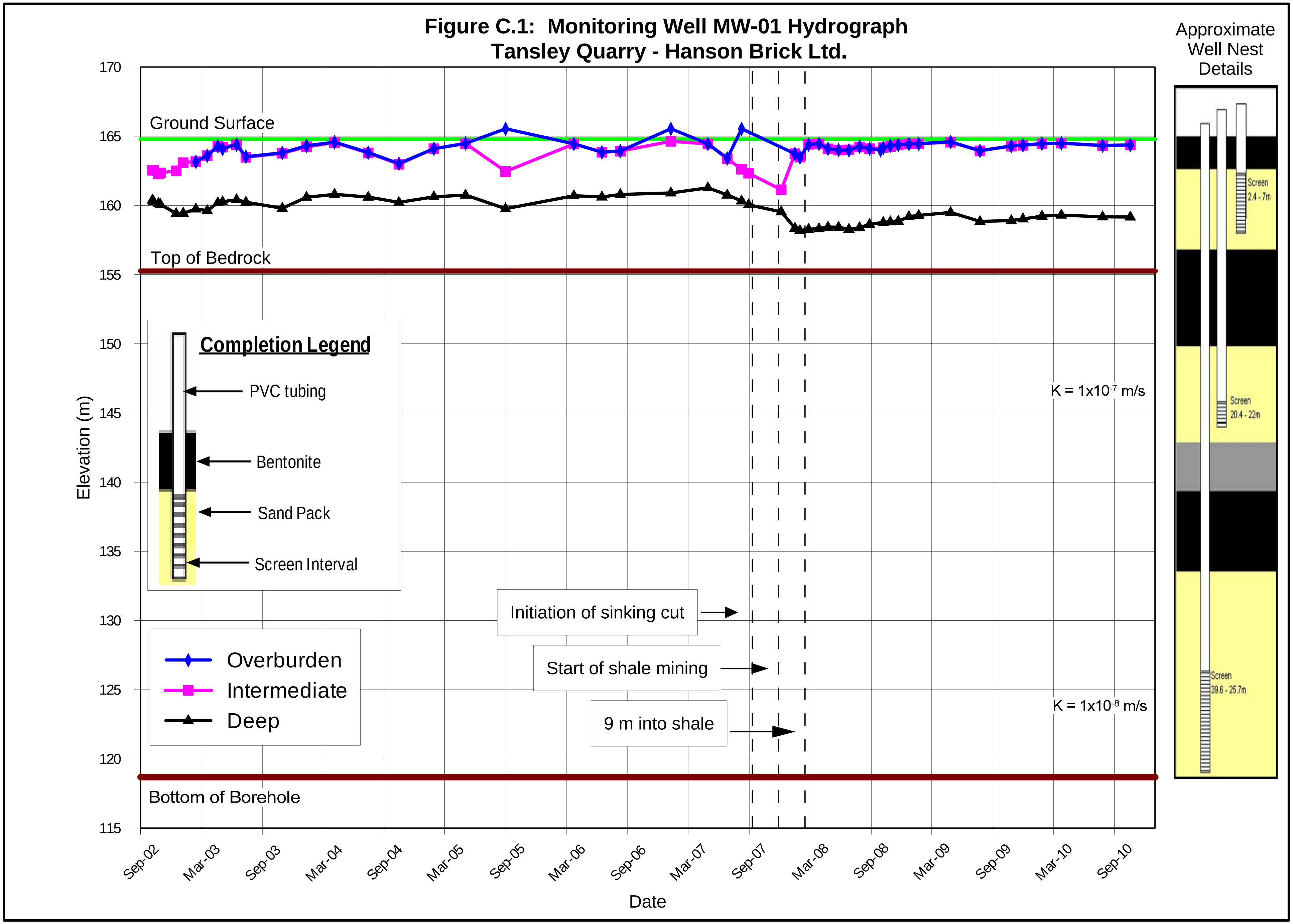


Figure C.2: Monitoring Well MW-02 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

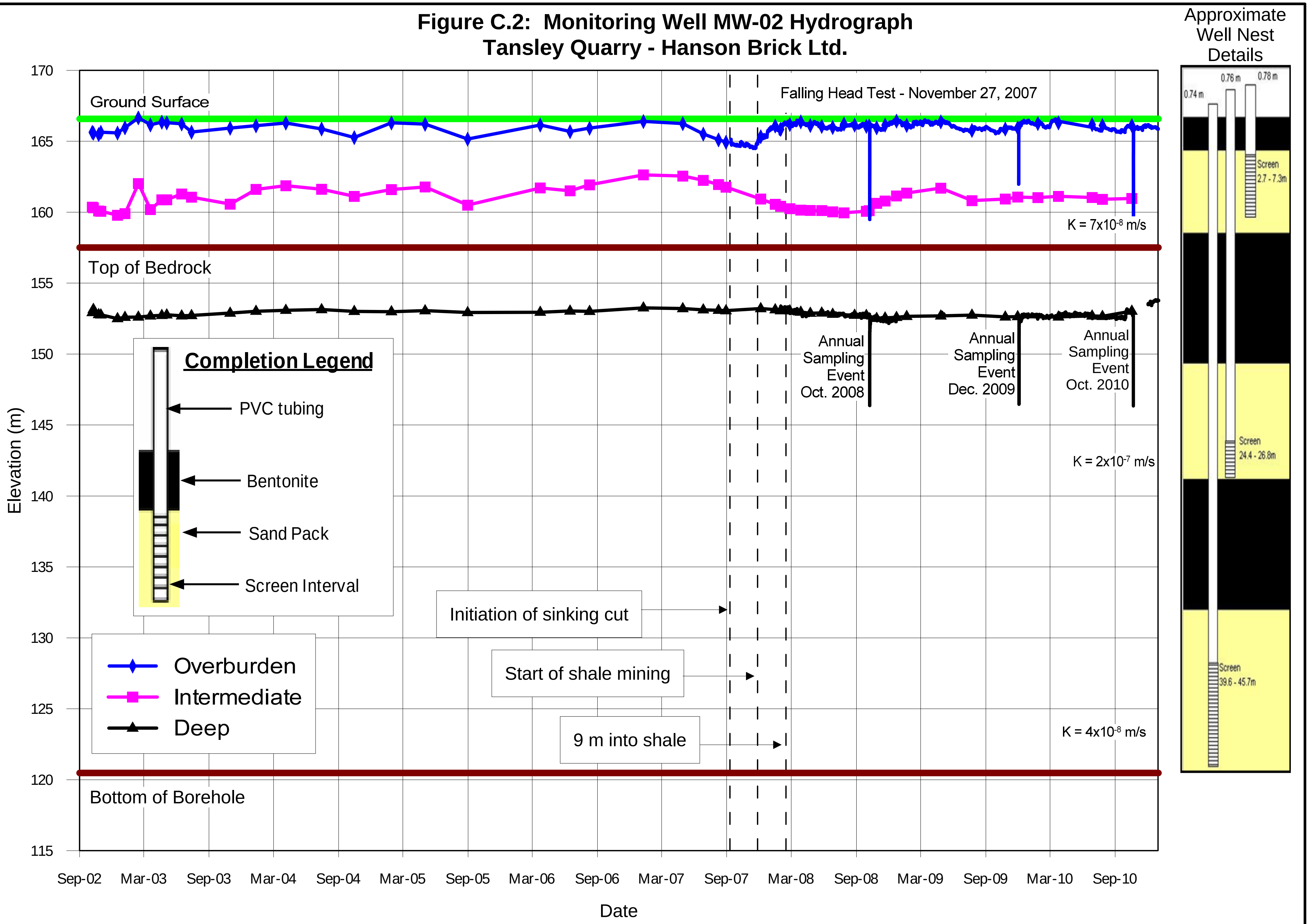
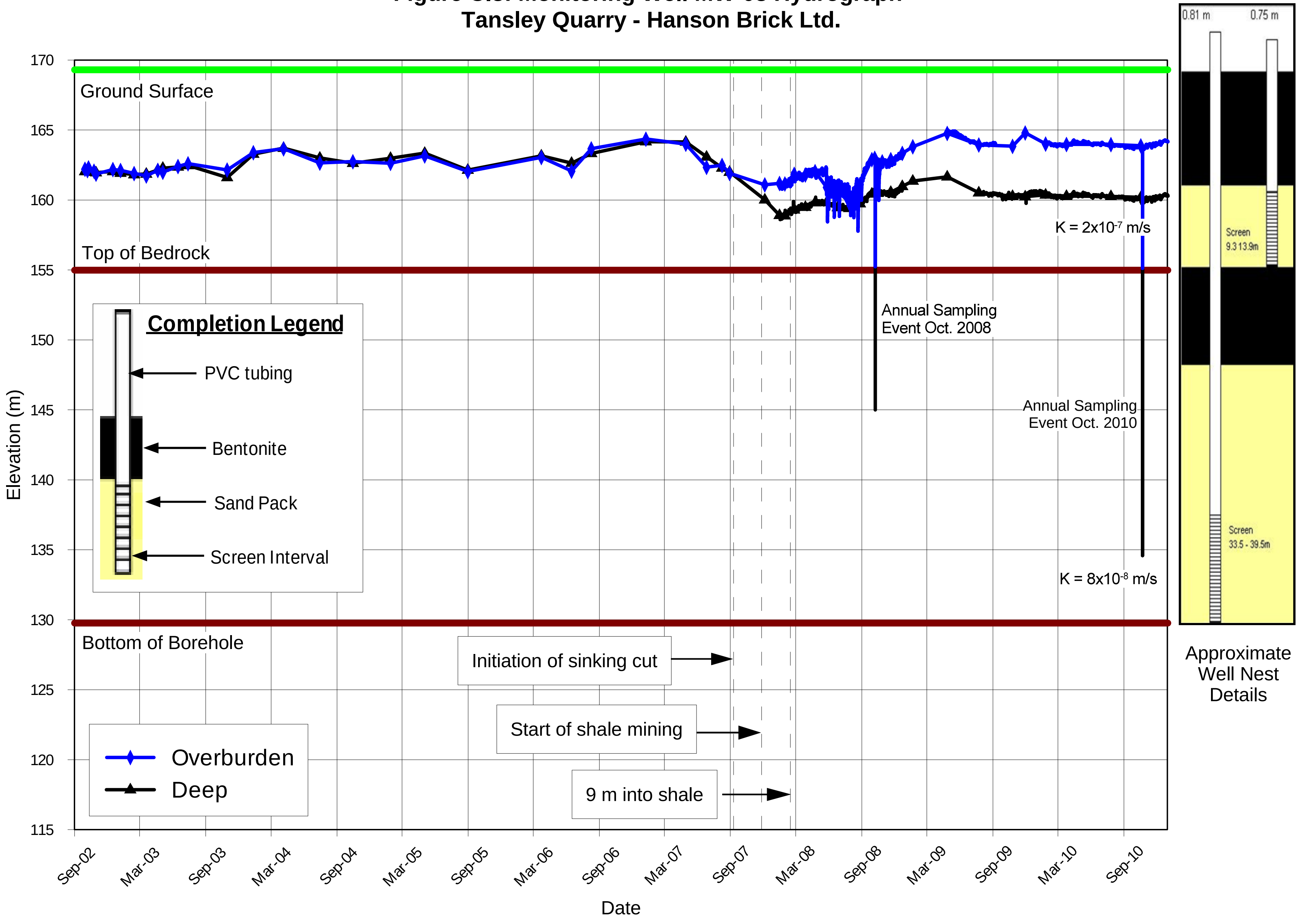
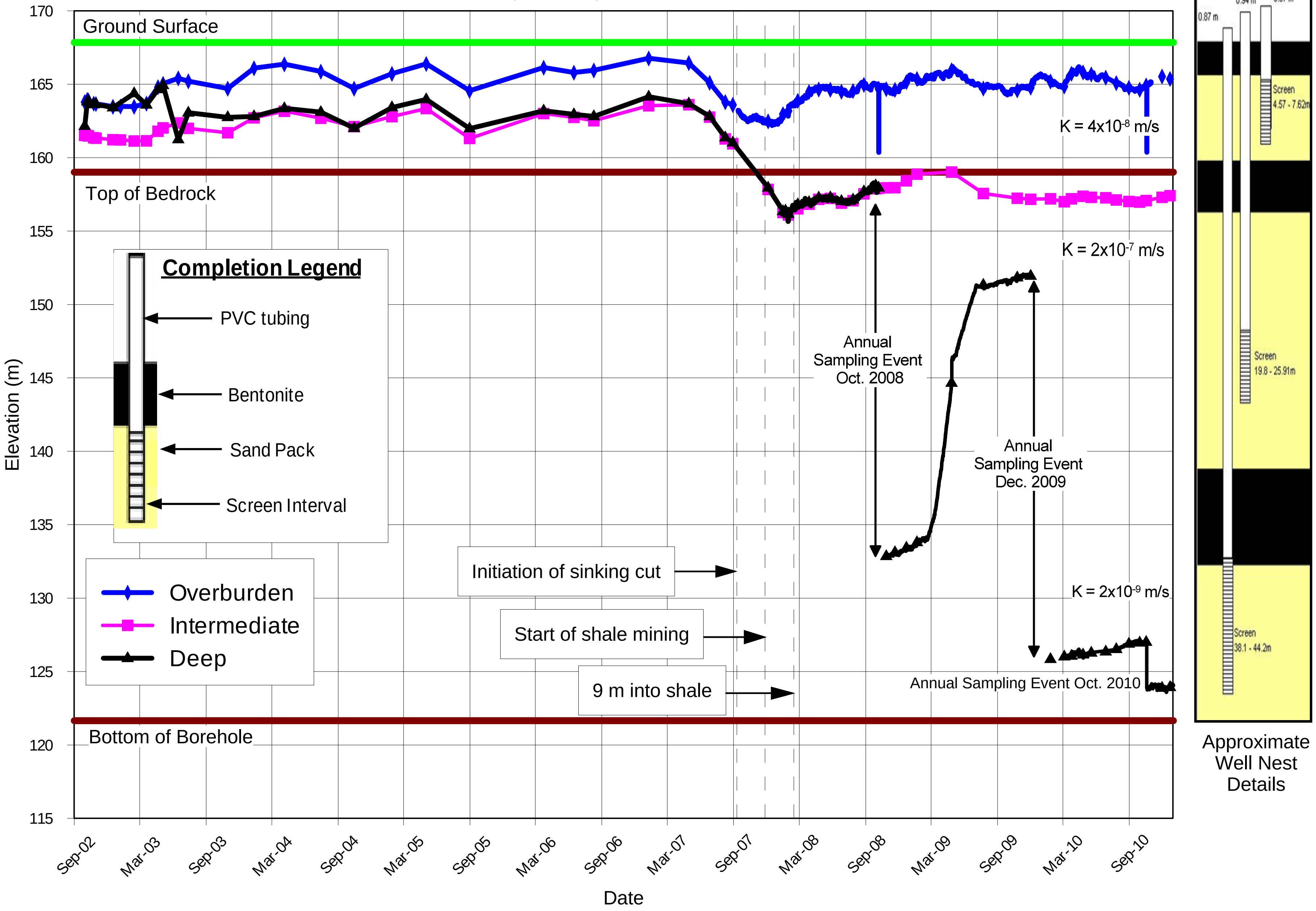


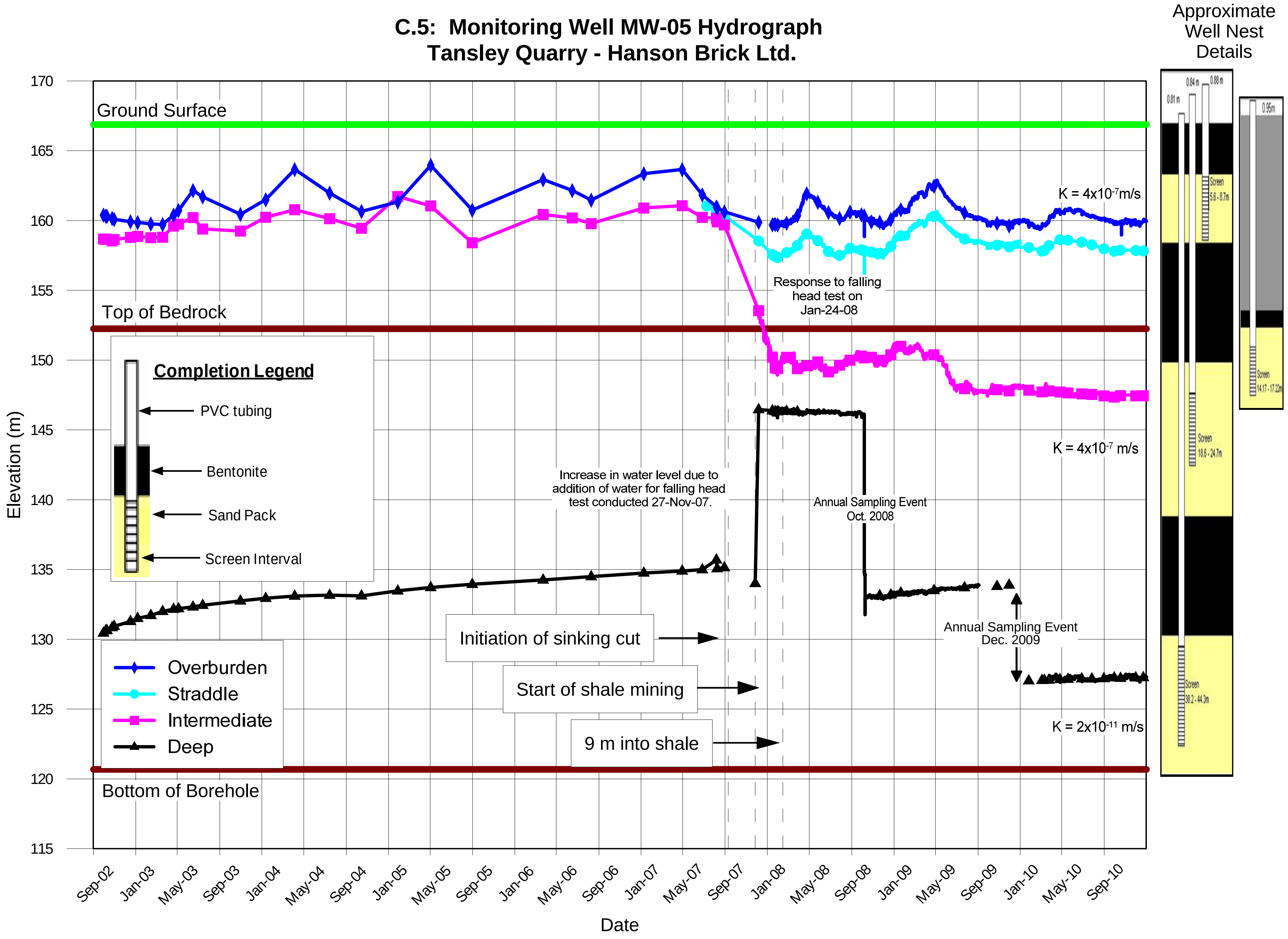
Figure C.3: Monitoring Well MW-03 Hydrograph
Tansley Quarry - Hanson Brick Ltd.



C.4: Monitoring Well MW-04 Hydrograph
Tansley Quarry - Hanson Brick Ltd.



C.5: Monitoring Well MW-05 Hydrograph
Tansley Quarry - Hanson Brick Ltd.



C.6: Monitoring Well MW-06 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

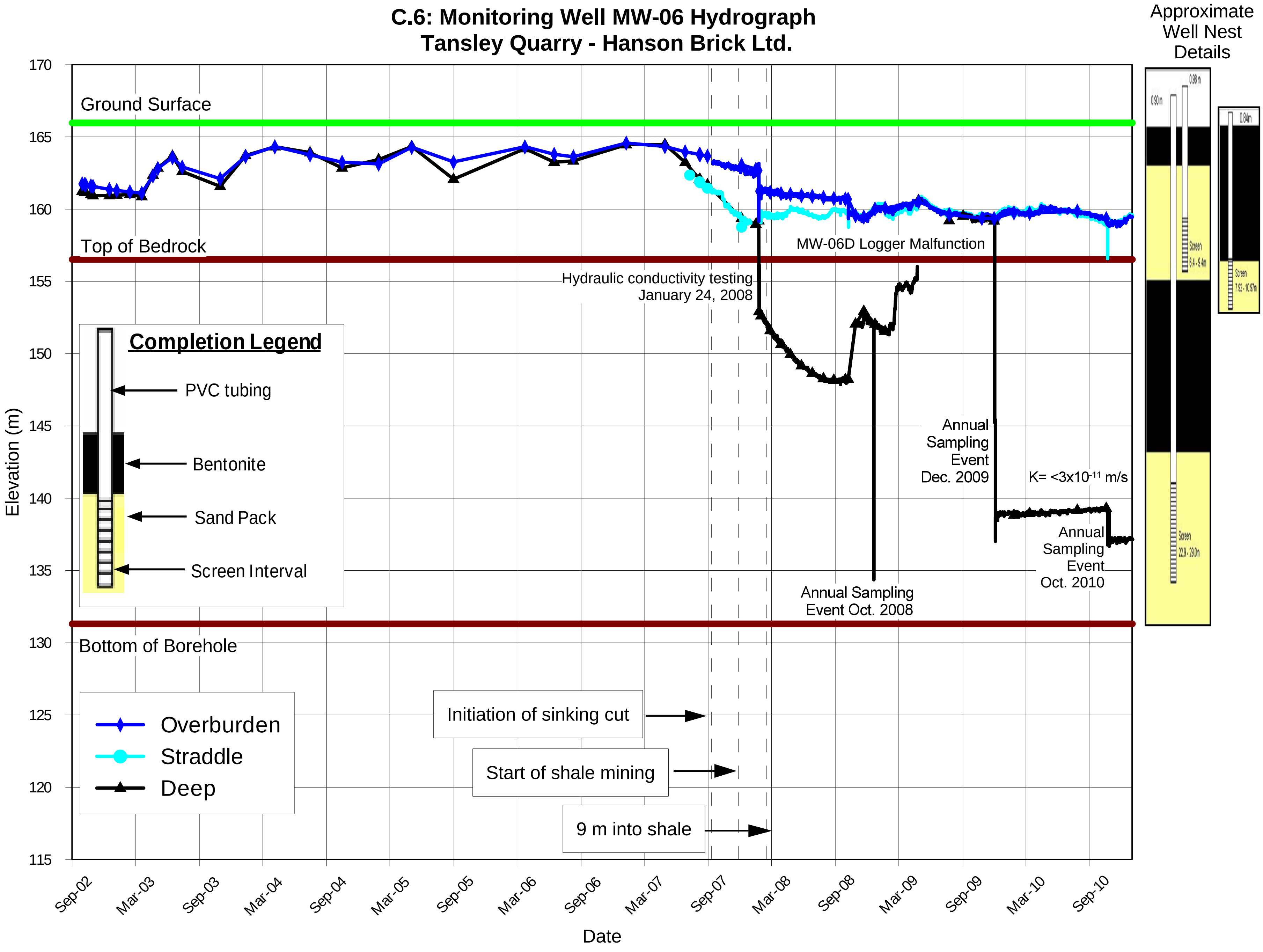
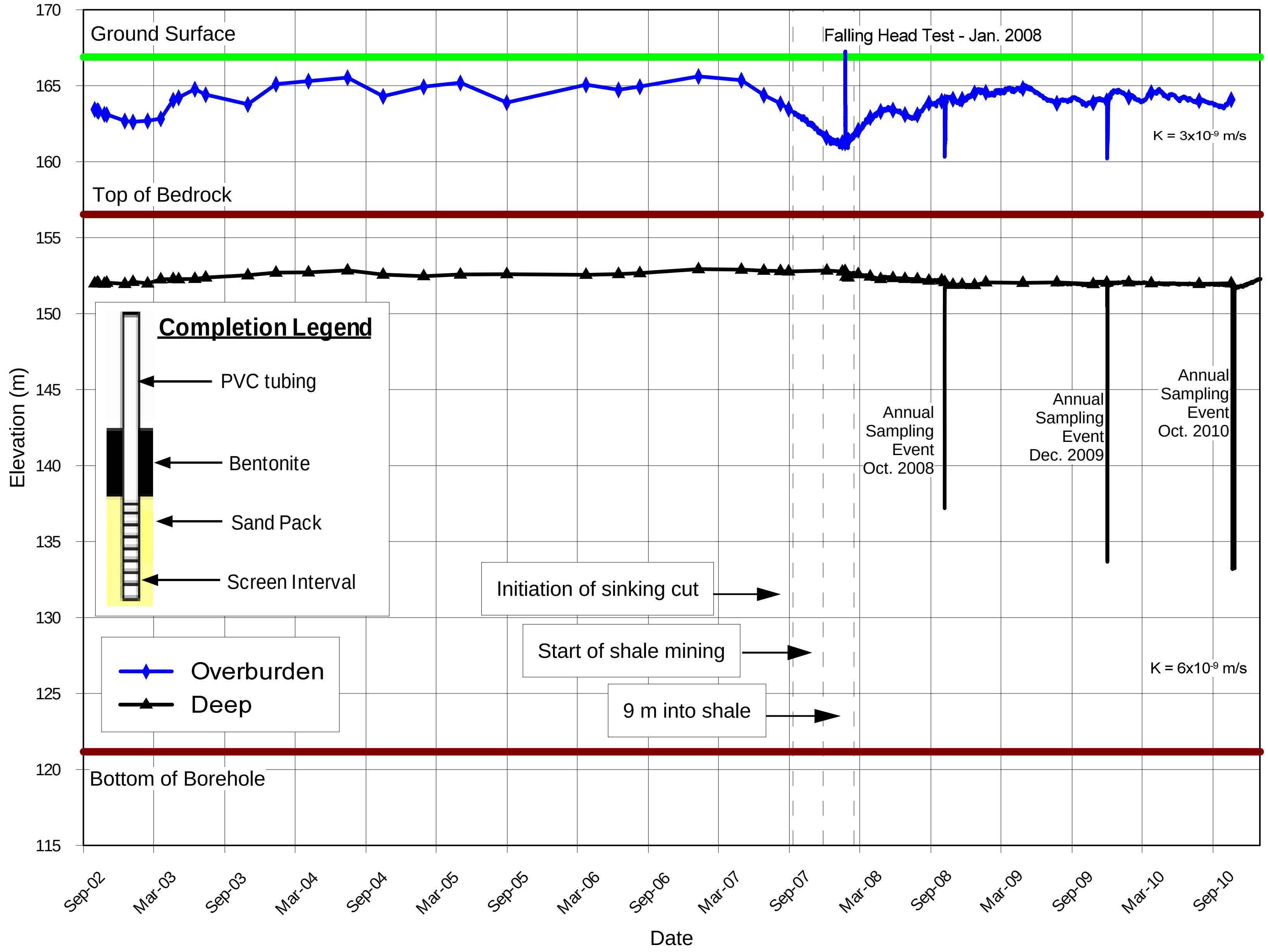


Figure C.7: Monitoring Well MW-07 Hydrograph
Tansley Quarry - Hanson Brick Ltd.



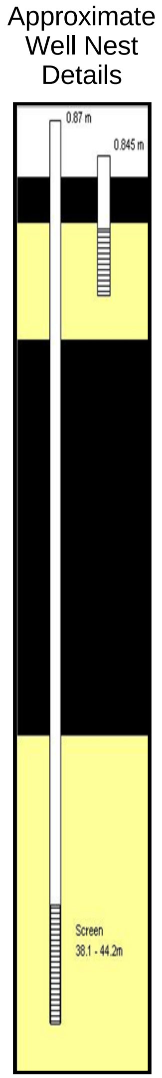
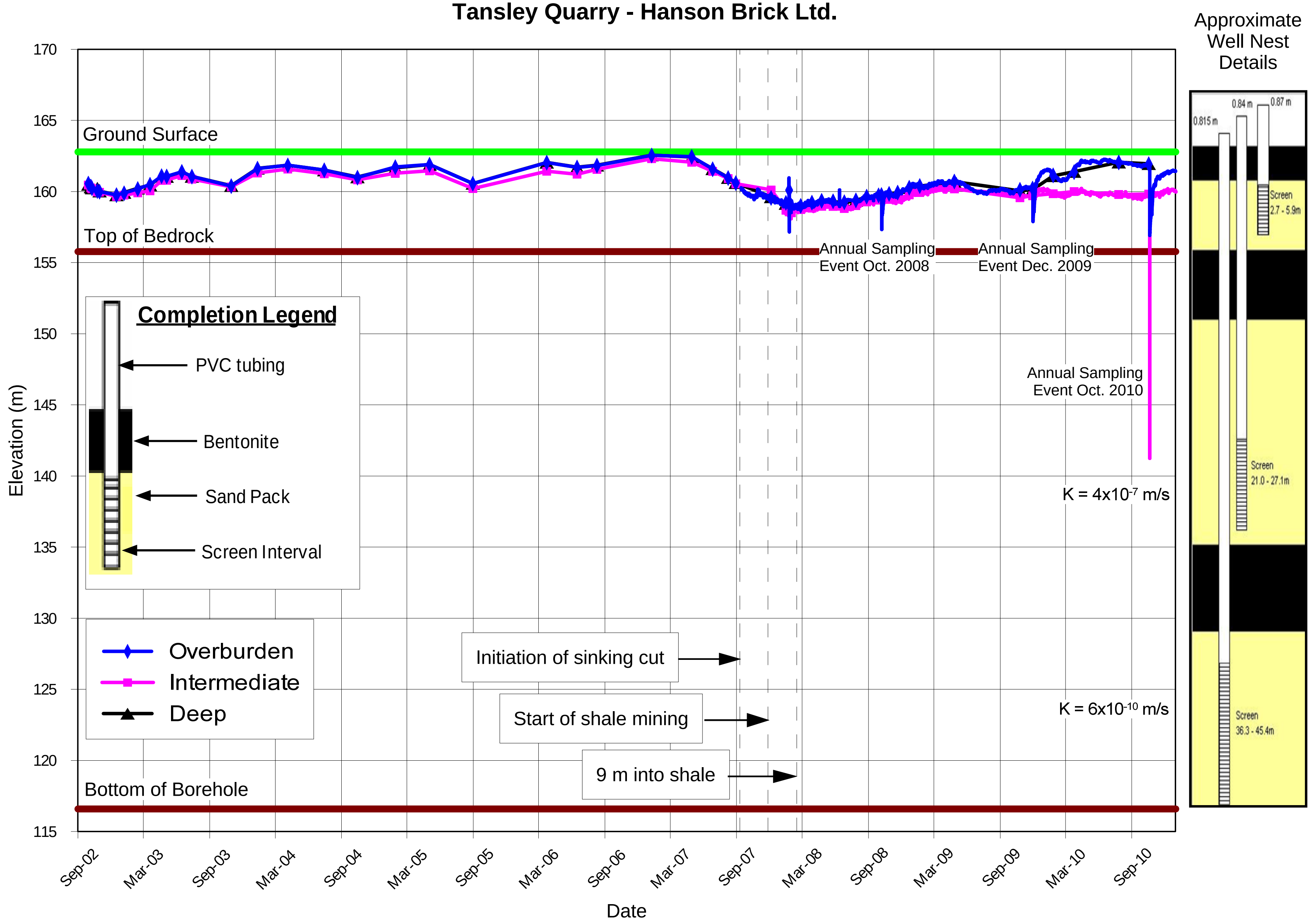


Figure C.8: Monitoring Well MW-08 Hydrograph
Tansley Quarry - Hanson Brick Ltd.



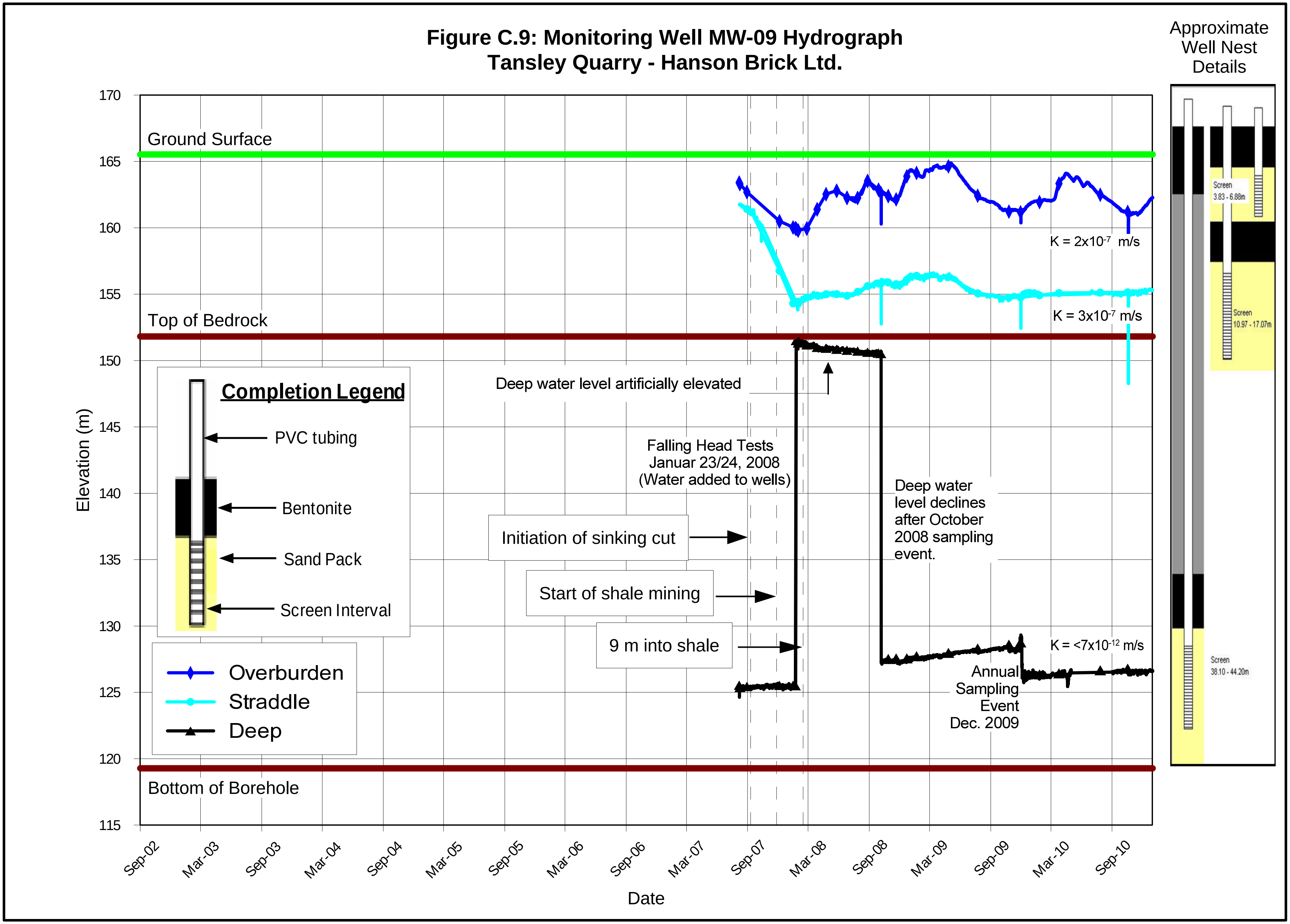


Figure C.9: Monitoring Well MW-09 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

Figure C.10: Monitoring Well MW-10 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

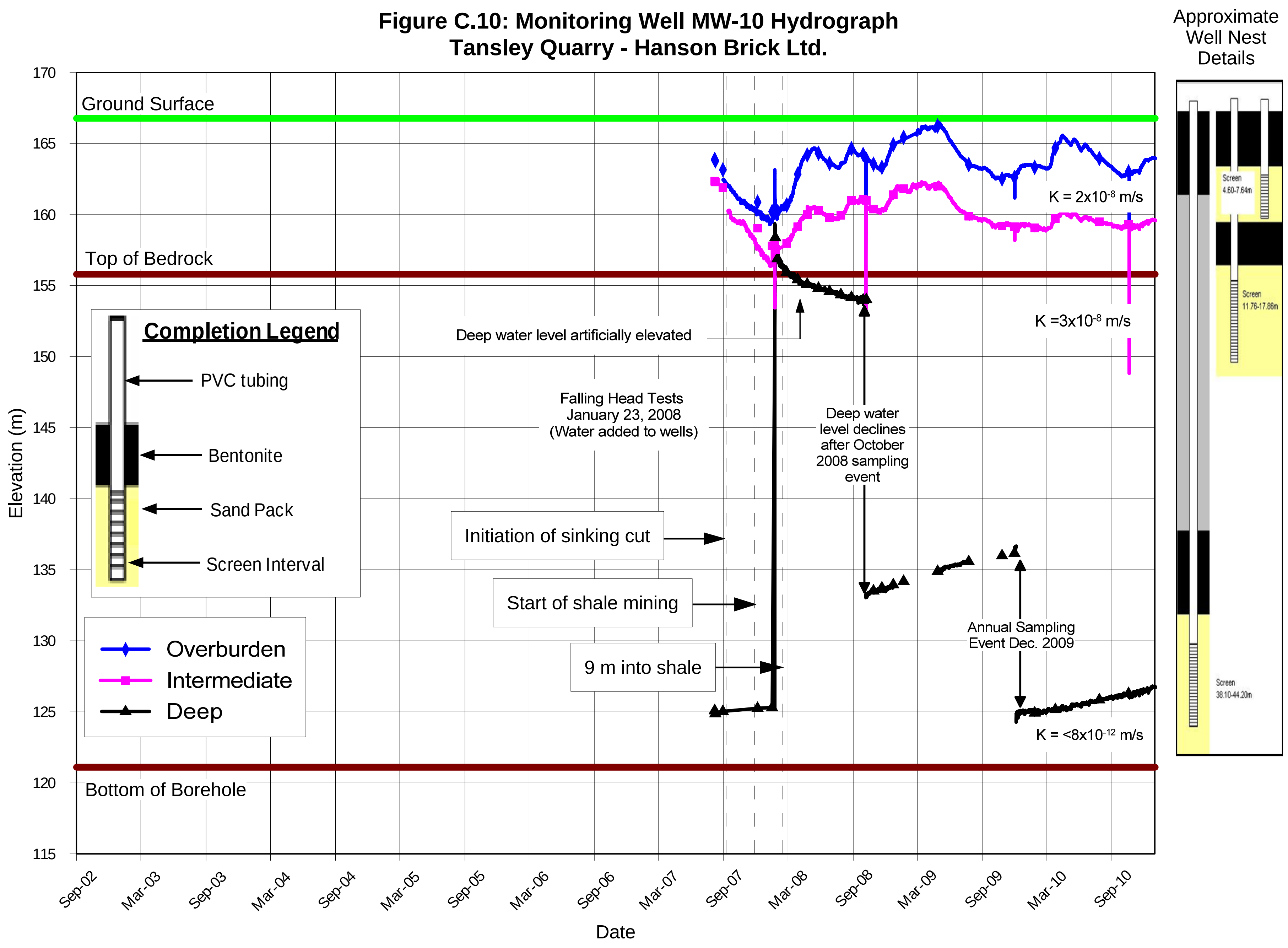


Figure C.11: Monitoring Well MW-11 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

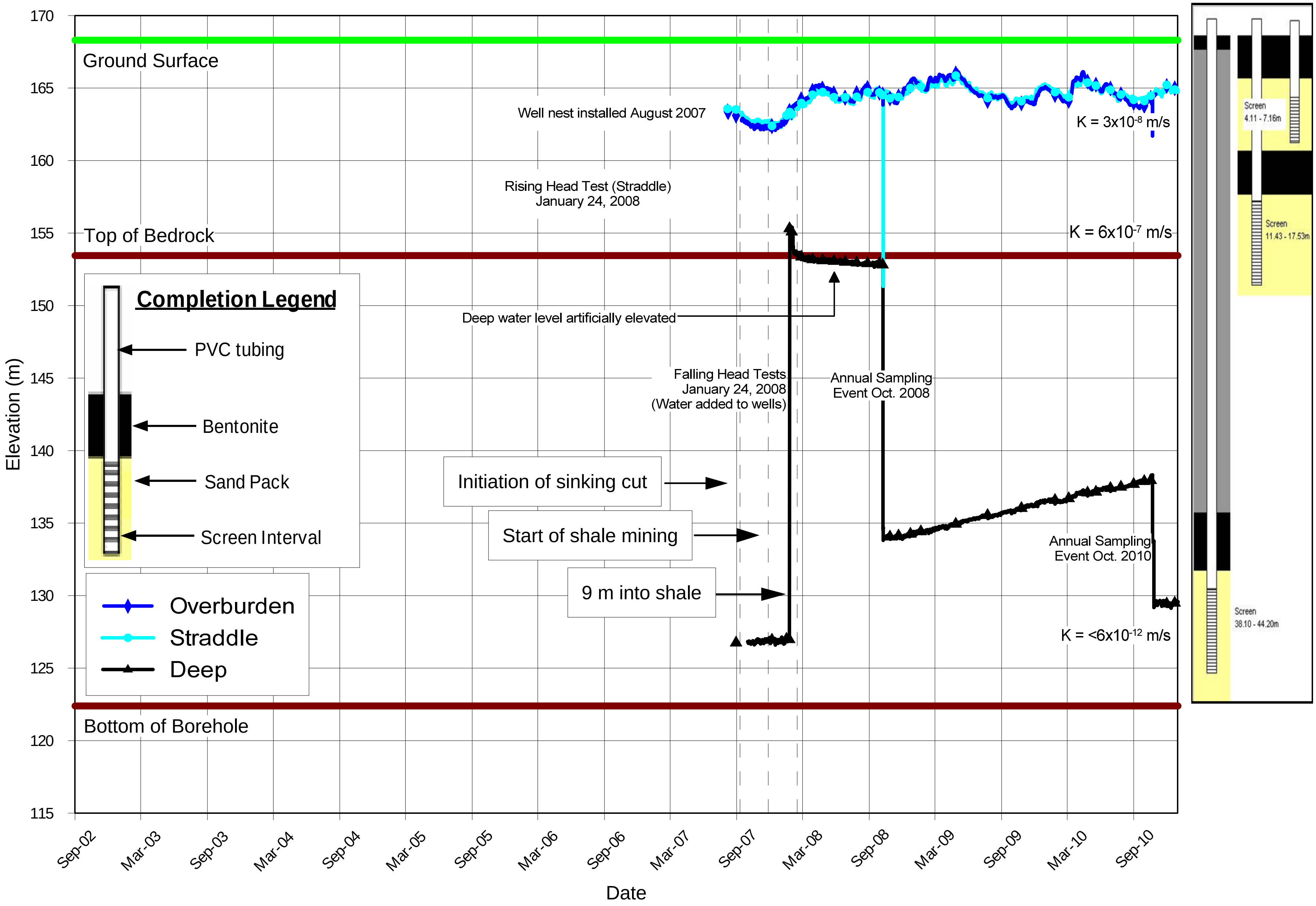


Figure C.12: Monitoring Well TW-1 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

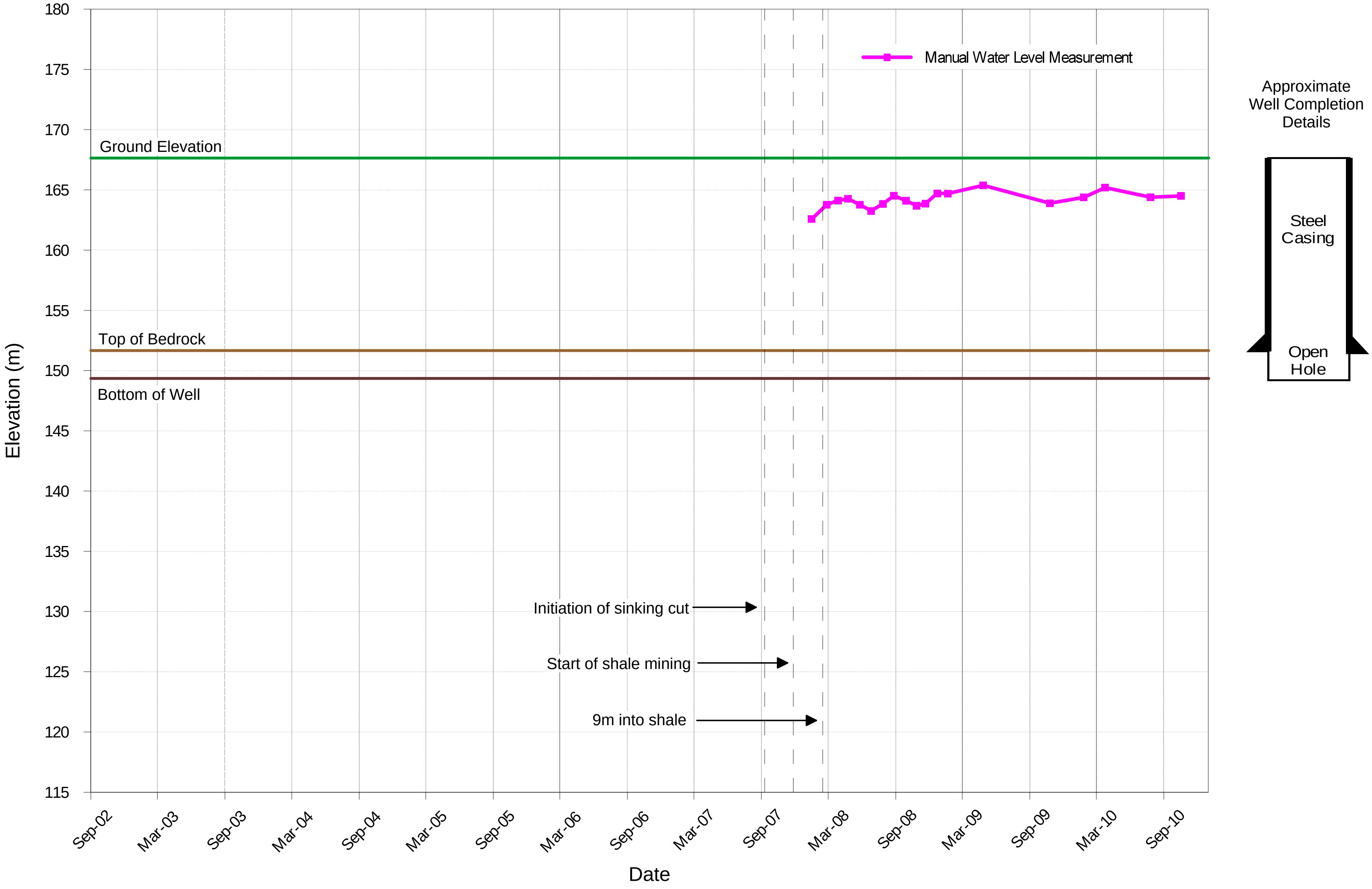


Figure C.13: Monitoring Well TW-2 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

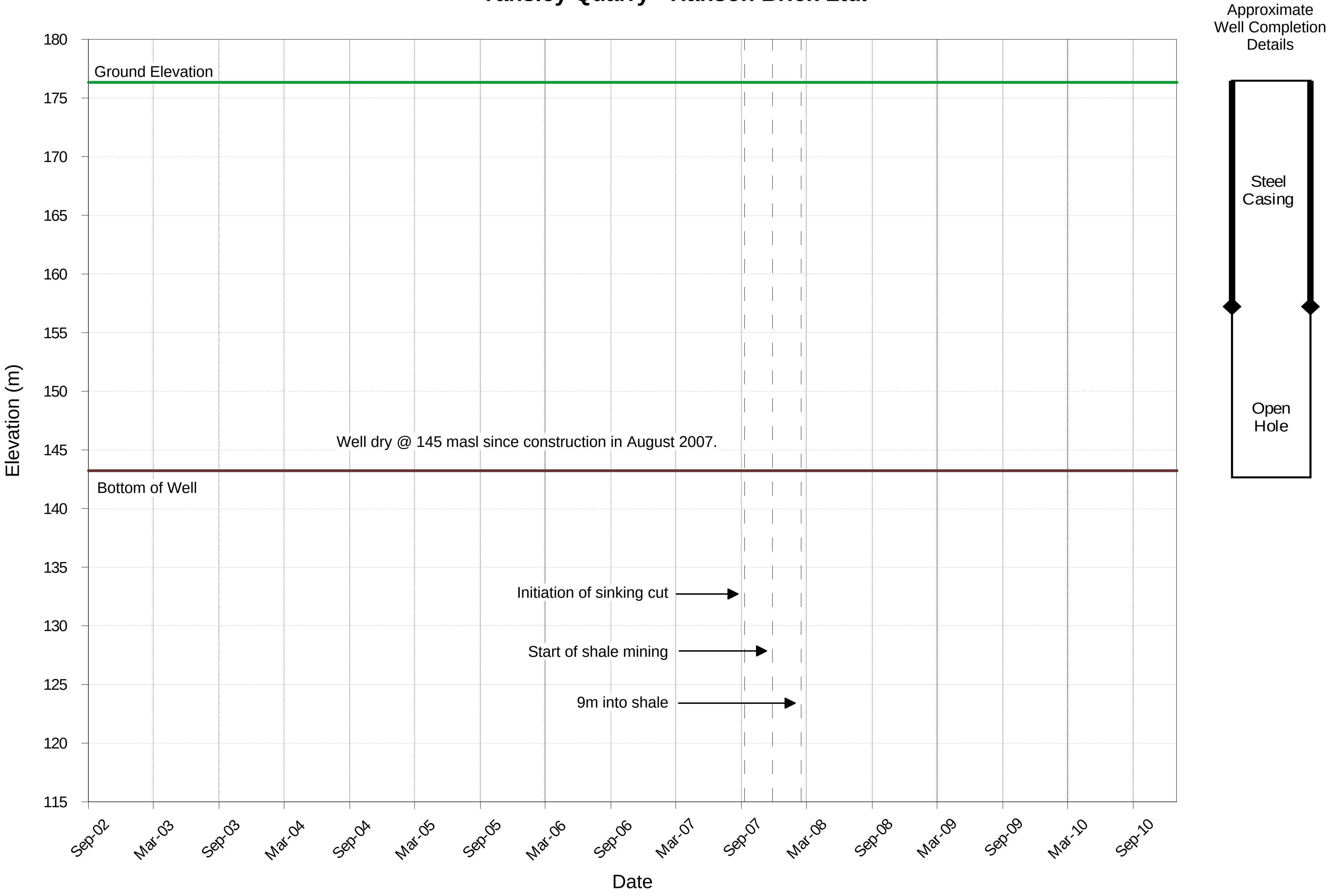


Figure C.14: Monitoring Well TW-3 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

Figure C.15: Featherstone Well
Tansley Quarry - Hanson Brick Ltd.

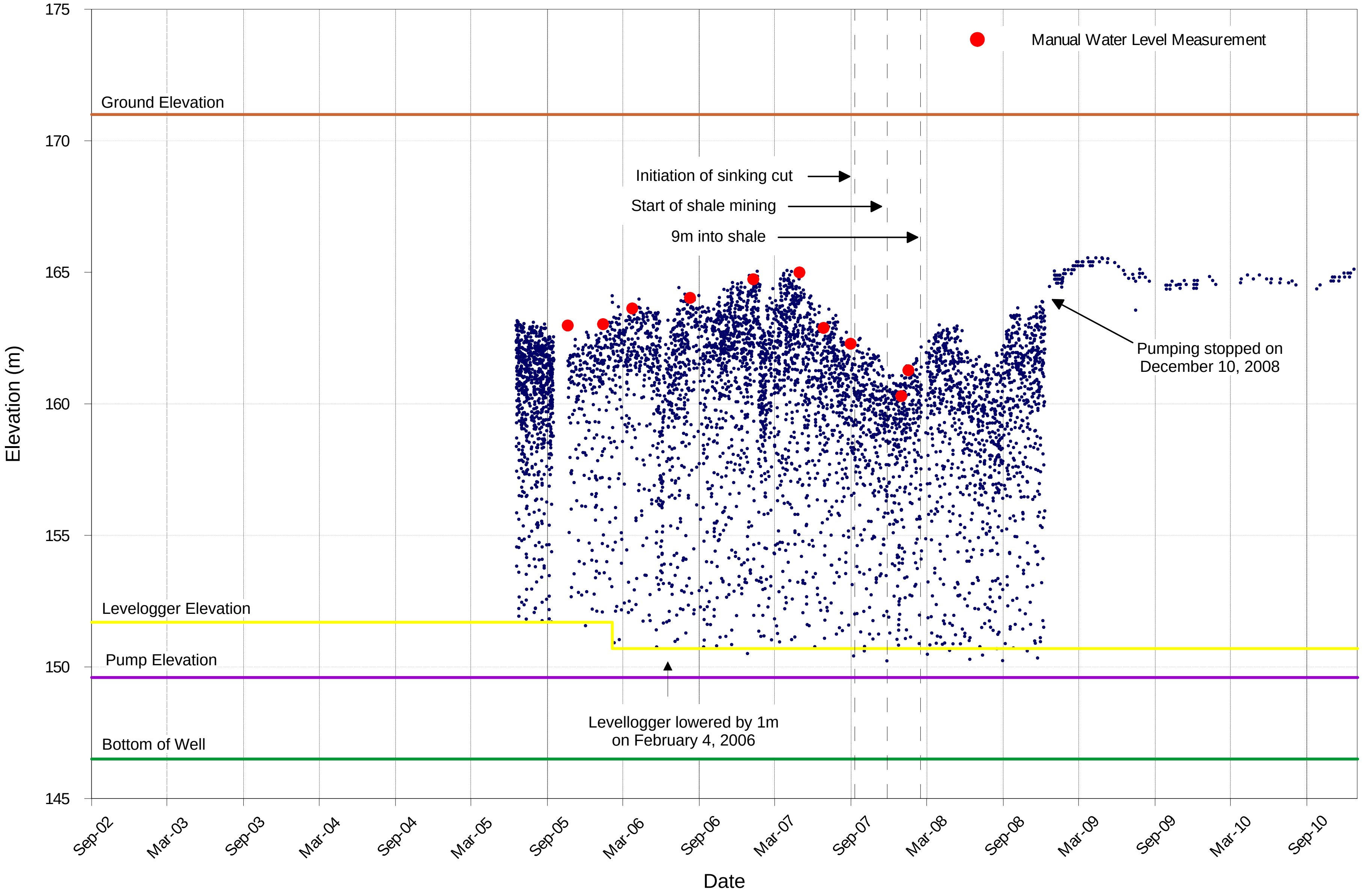


Figure C.16: Finucci Well
Tansley Quarry - Hanson Brick Ltd.

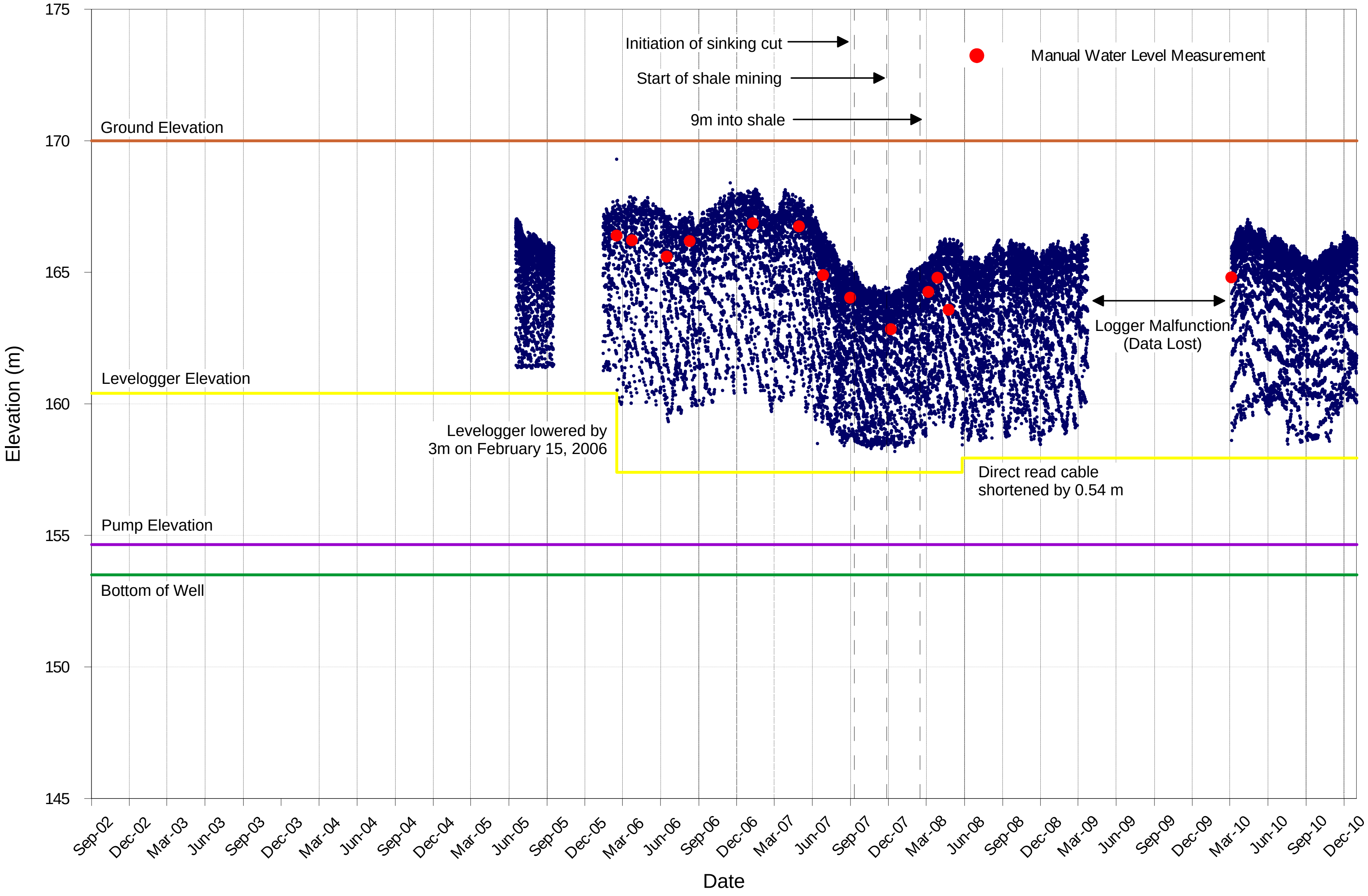


Figure C.17: Hendervale Main Barn Well
Tansley Quarry - Hanson Brick Ltd.

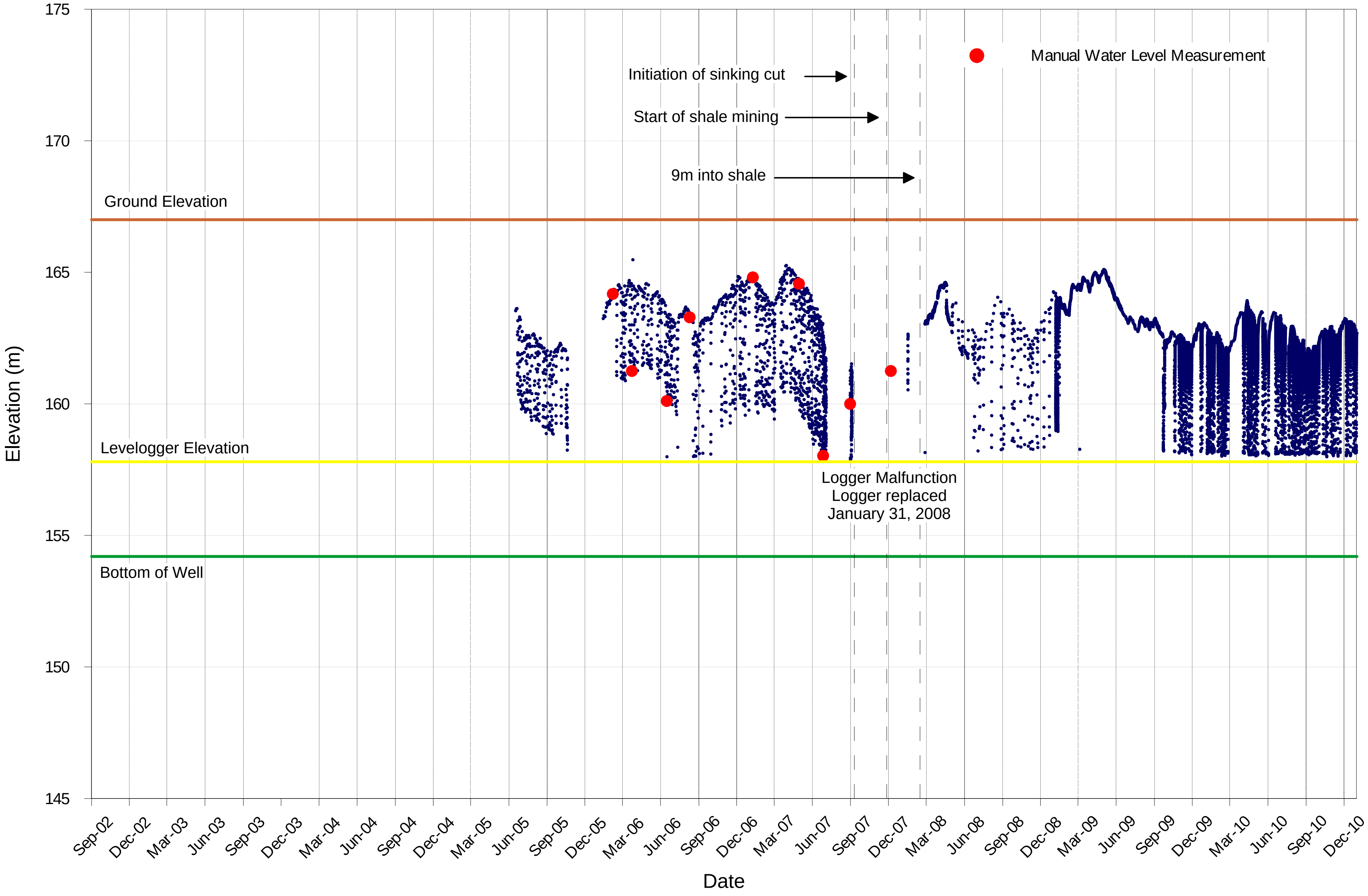


Figure C.18: Hendervale Cottage Well
Tansley Quarry - Hanson Brick Ltd.

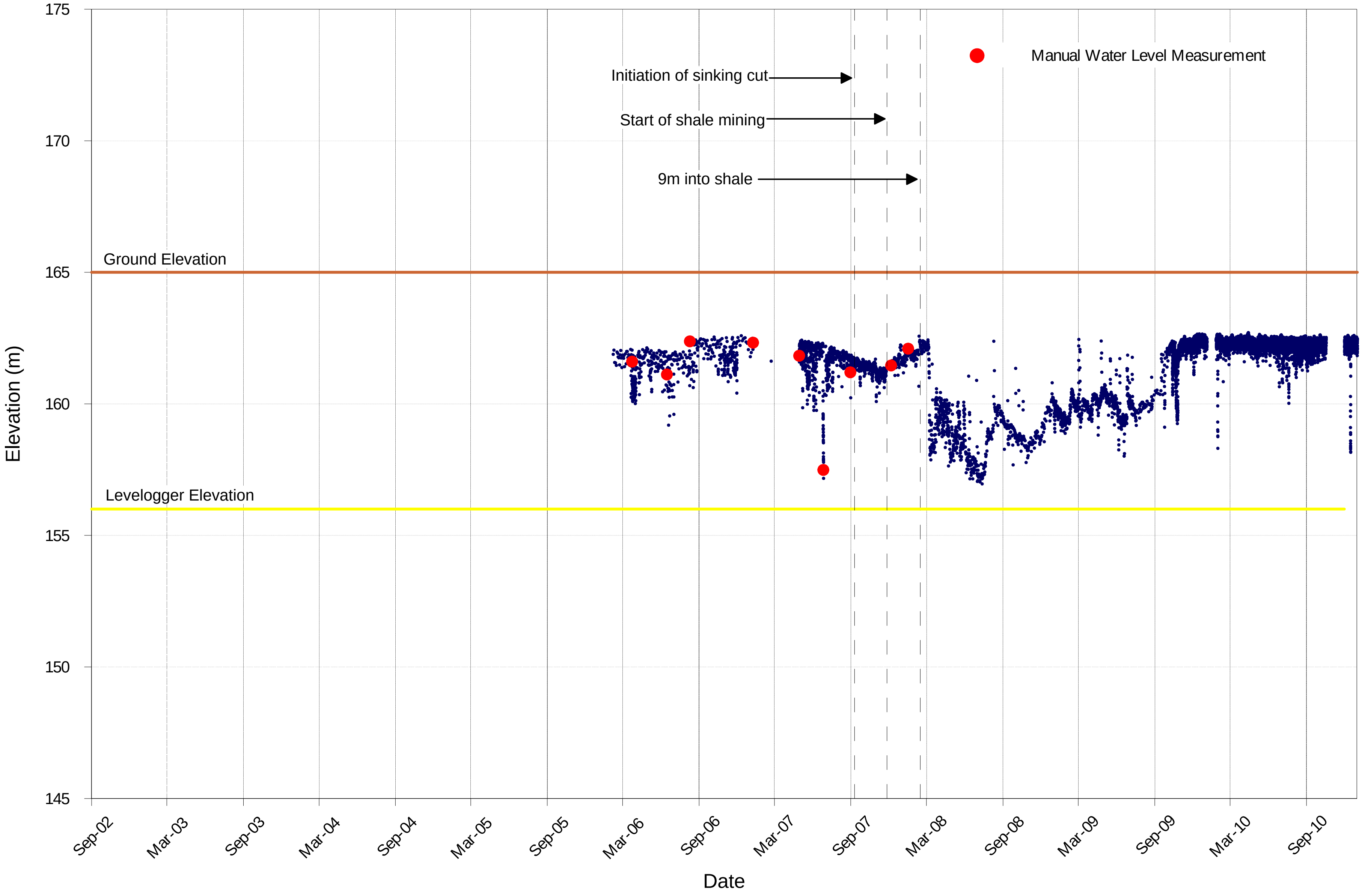


Figure C.19: Hendervale ABC Barn Well
Tansley Quarry - Hanson Brick Ltd.

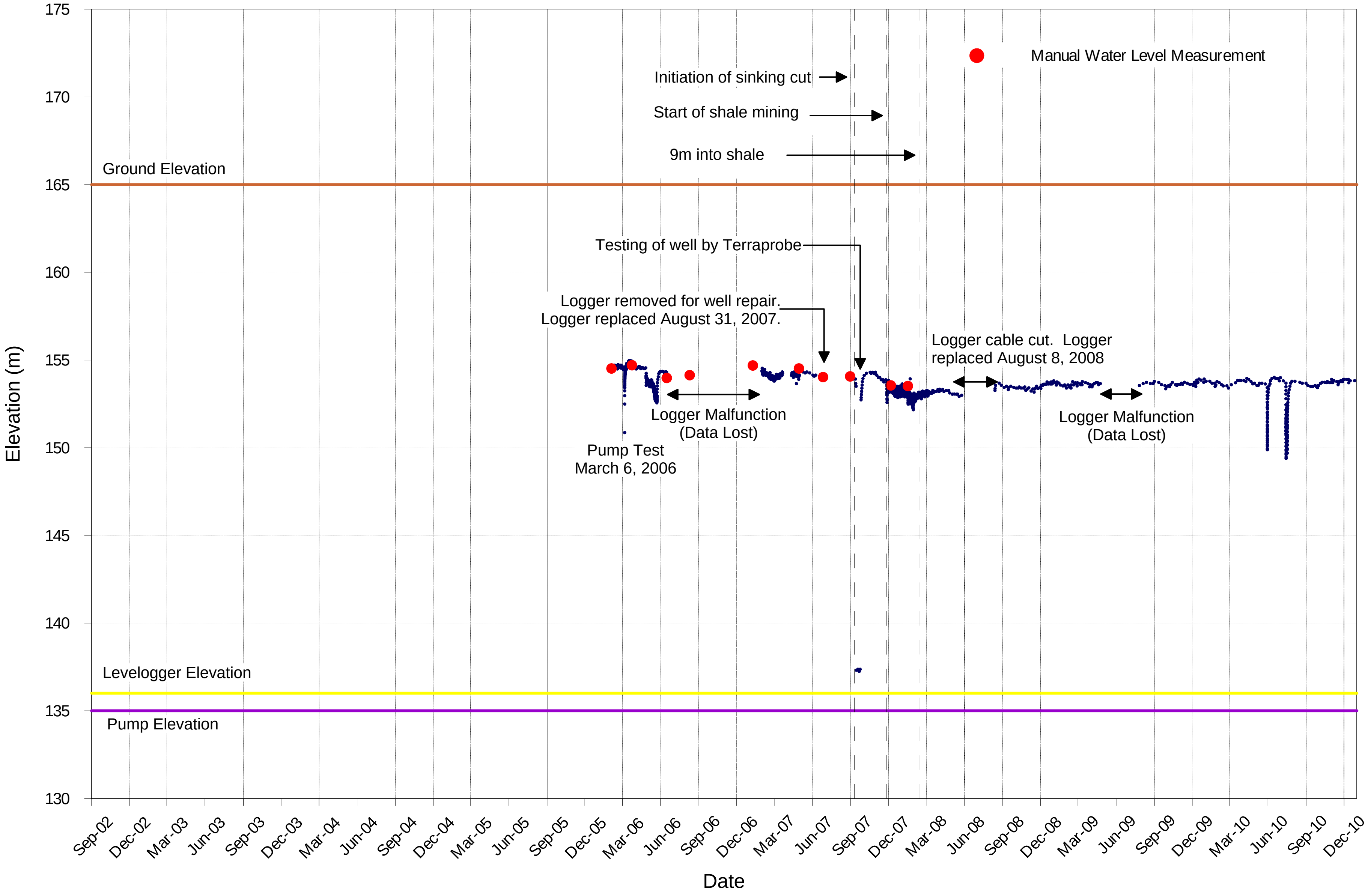


Figure C.20: Hendervale XYZ Barn Well
Tansley Quarry - Hanson Brick Ltd.

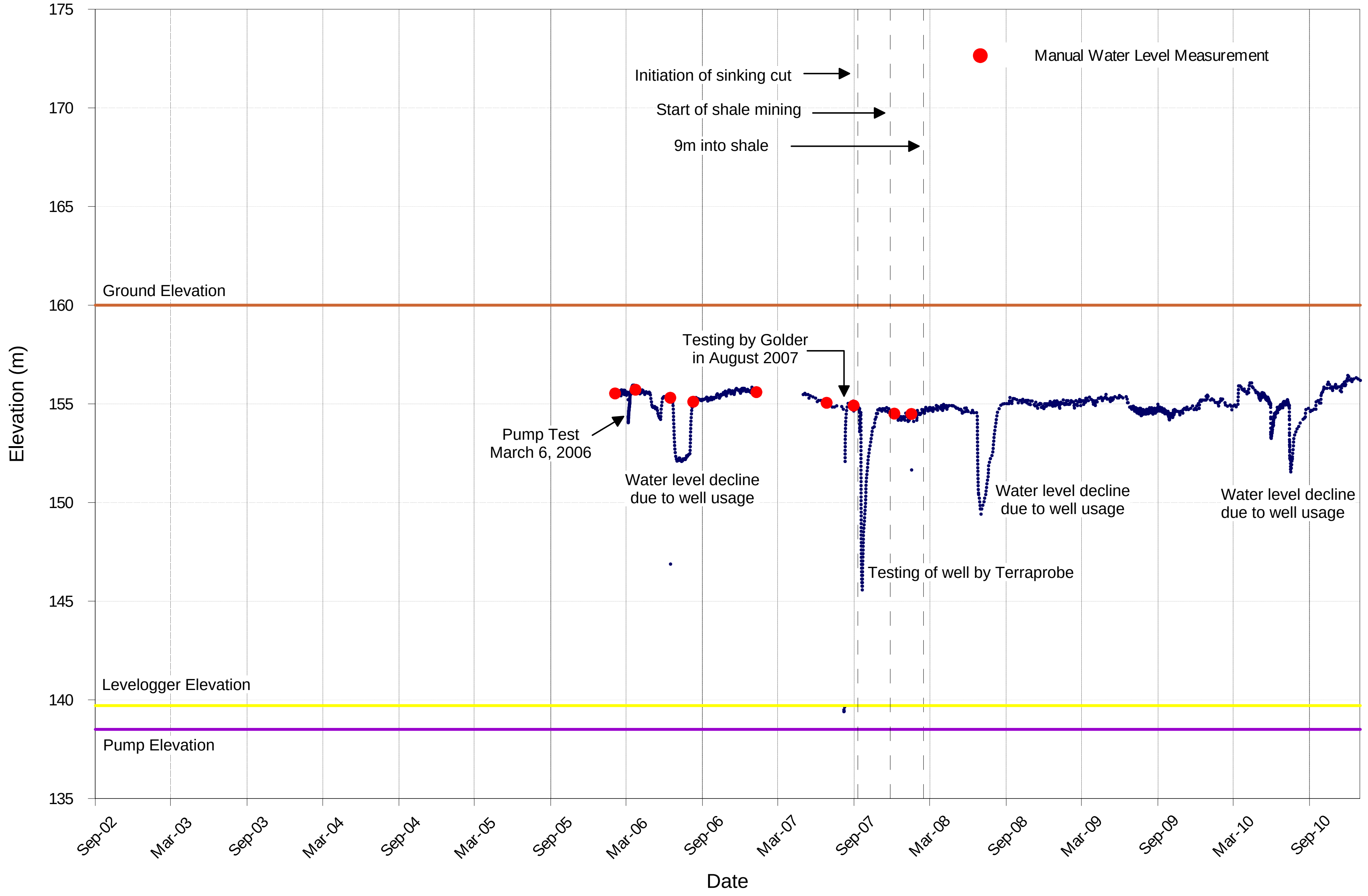


Figure C.21: Hendervale House Well
Tansley Quarry - Hanson Brick Ltd.

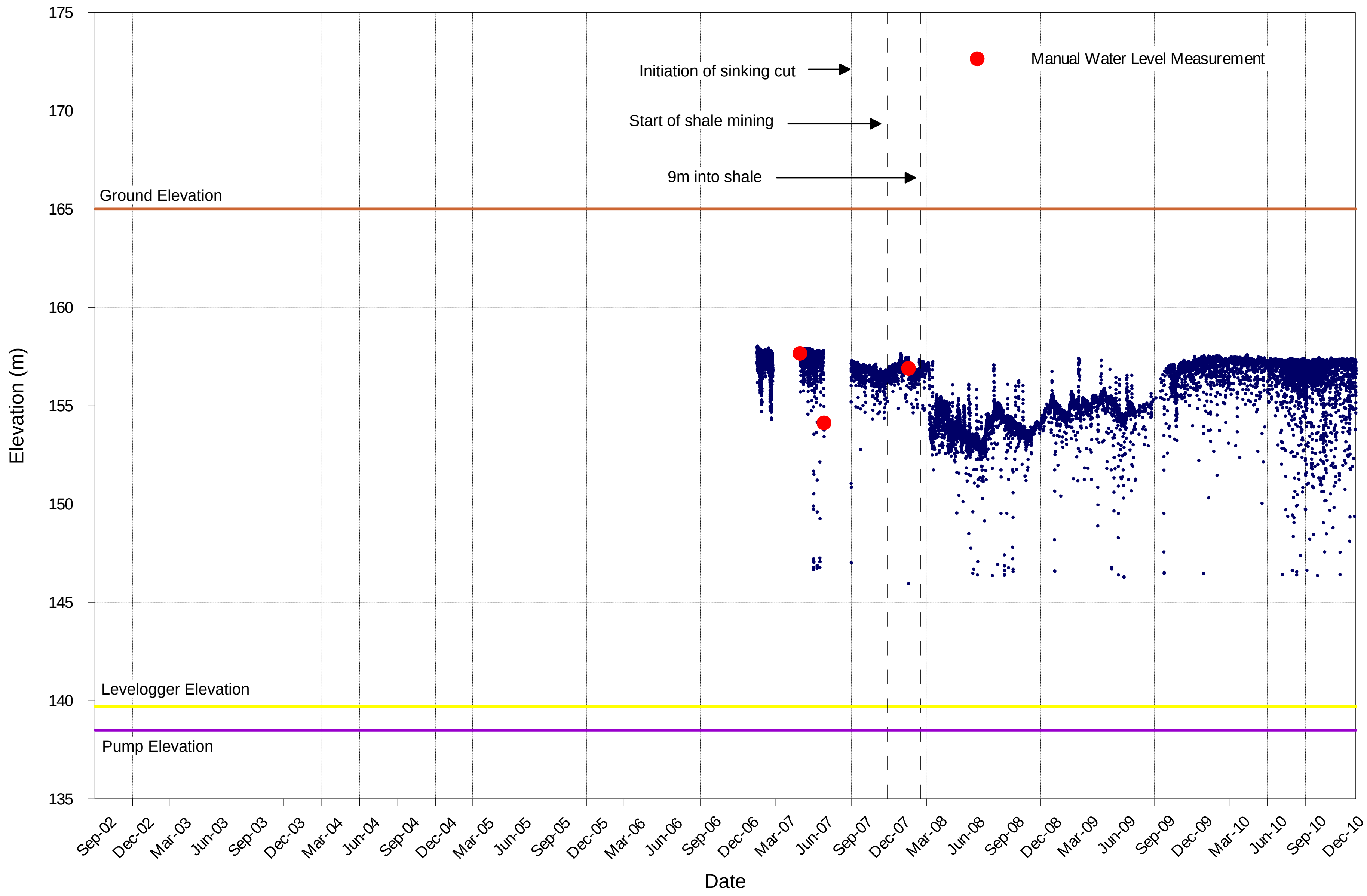


Figure C.22: Simms Well
Tansley Quarry - Hanson Brick Ltd.

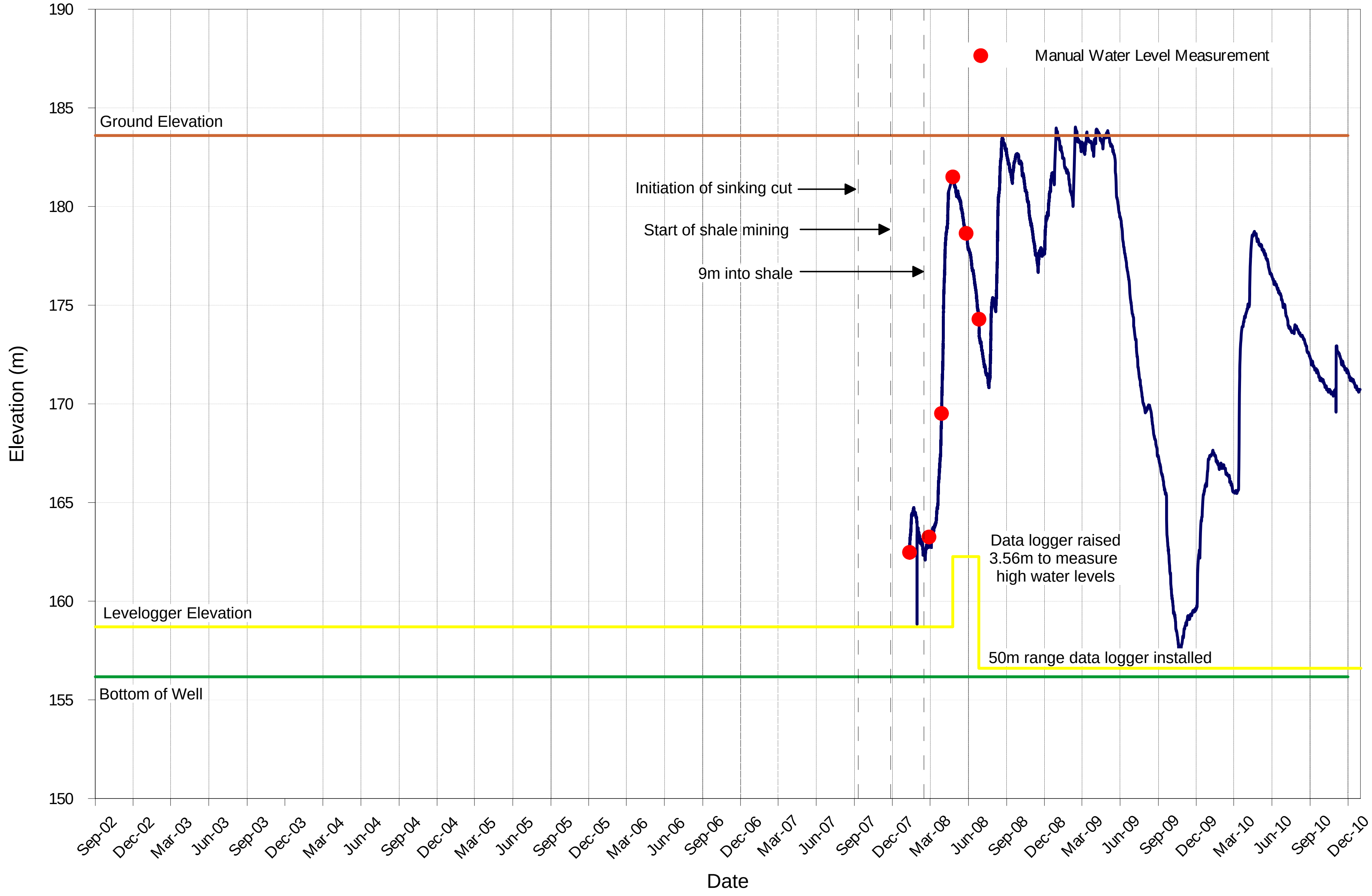


Figure C.23: Wettlaufer Well
Tansley Quarry - Hanson Brick Ltd.

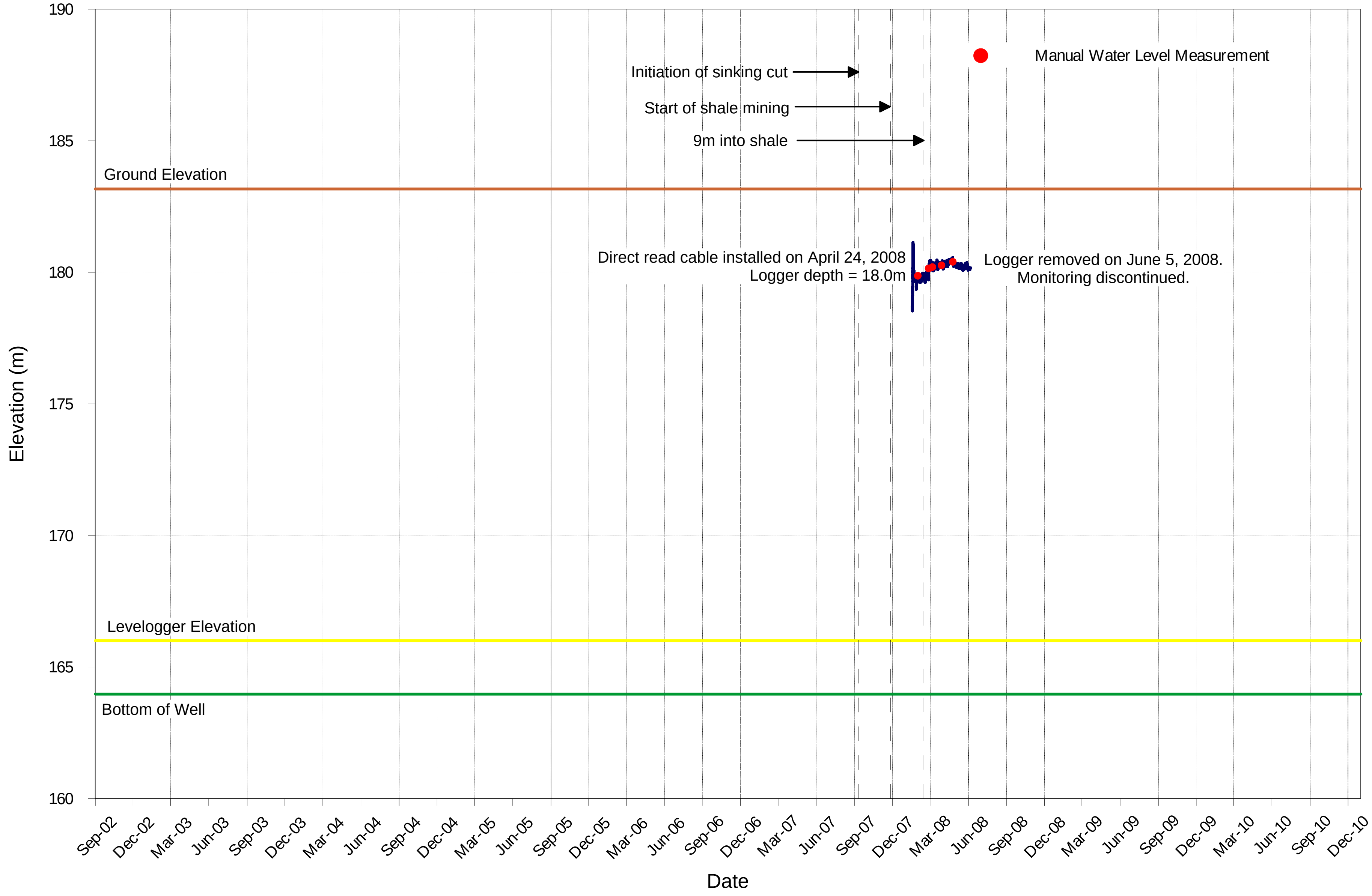


Figure C.24: Wiggins Well
Tansley Quarry - Hanson Brick Ltd.

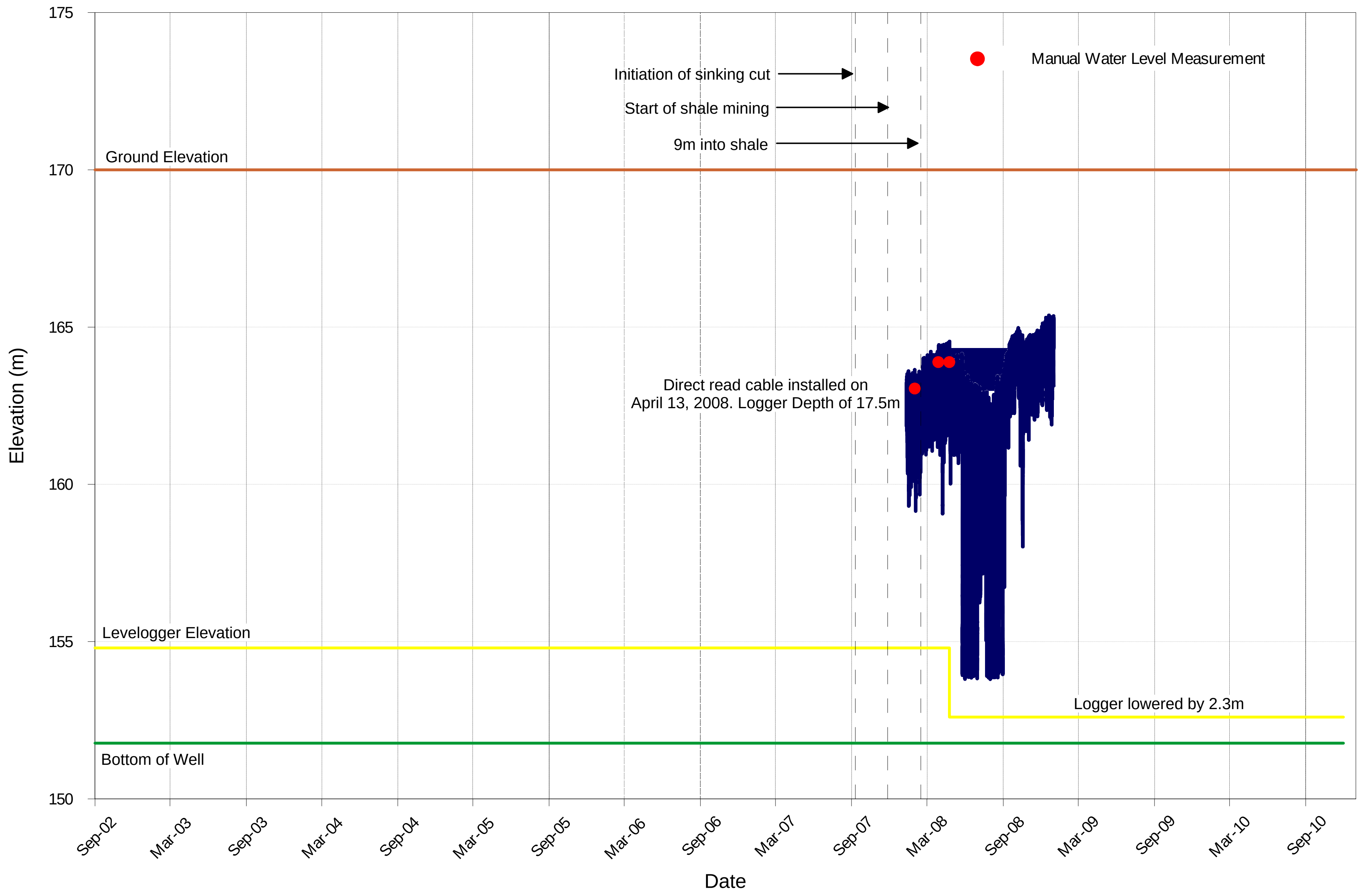


Figure C.25: Bekkers Well
Tansley Quarry - Hanson Brick Ltd.

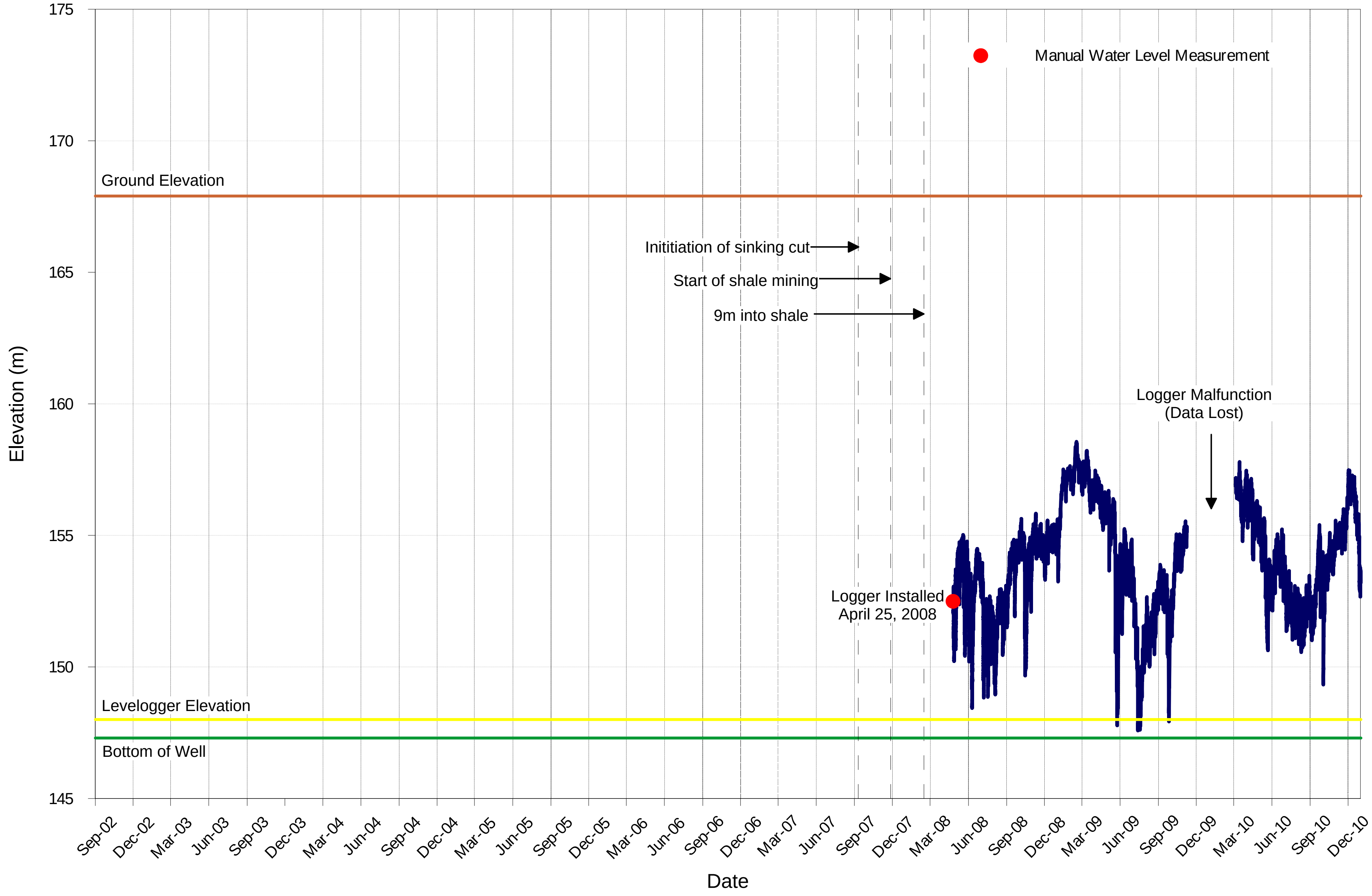
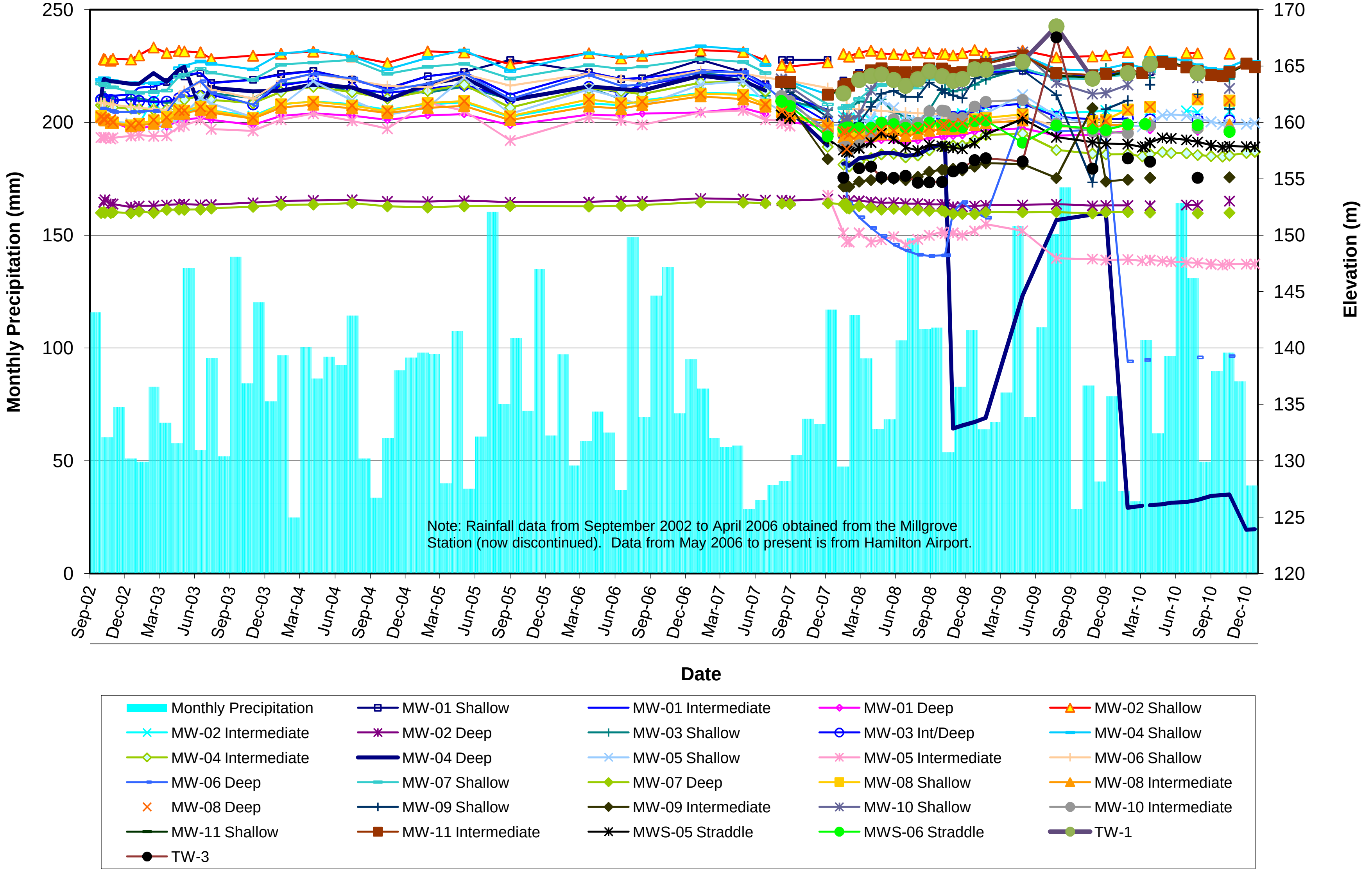


Figure C.26: Combined Static Water Levels and Precipitation with Time
Tansley Quarry - Hanson Brick Ltd.



Note: Rainfall data from September 2002 to April 2006 obtained from the Millgrove Station (now discontinued). Data from May 2006 to present is from Hamilton Airport.

APPENDIX D

Groundwater Quality Results

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-01 shallow	MW-01 intermediate						MW-01 deep							MW-02 shallow					
				Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Oct- 10 DUP 2	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L	0.1	[0.075] a		0.039	0.075	**0.11**		0.063	0.074	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	**0.1**	< 0.1	0.019	**0.123**	**0.23**	0.053	**0.079**	**0.17**
alkalinity	mg CaCO$_3$/L	30-500	-		376	487	508		459	452	125	49	34	33	36	34	33	387	630	738	666	695	700
ammonia as N	mg/L	-	-		0.36	0.14	0.23		0.16	0.05	7.5	14.2	23	21	22	20	20	0.38	0.15	0.38	0.38	0.27	< 0.05
antimony	mg/L	-	[0.02]		< 0.0005	0.0011	< 0.001		0.0005	< 0.0005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01	0.0008	0.0007	< 0.001	0.0008	< 0.0005	< 0.0005
arsenic	mg/L	0.025	[0.005]		0.003	0.003	< 0.001		0.001	< 0.001	< 0.02	< 0.02	< 0.05	< 0.1	< 0.02	**0.031**	**0.027**	0.005	**0.007**	**0.006**	0.005	0.005	0.002
barium	mg/L	1	-		0.026	0.020	0.017		0.014	0.015	0.066	< 0.05	< 0.3	< 0.5	< 0.1	< 0.1	< 0.1	0.043	0.034	0.027	0.02	0.018	0.016
beryllium	mg/L	-	1.1		< 0.001	< 0.001	< 0.0005		< 0.0005	< 0.0005	< 0.01	< 0.01	< 0.03	< 0.05	< 0.01	< 0.01	< 0.01	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005
bismuth	mg/L	-	-		< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	< 0.02	< 0.02	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
boron	mg/L	5	0.2		**0.223**	0.127	0.15		0.16	0.14	**3.26**	**5.16**	**4.2**	**6.8**	**5.7**	**6.1**	**5.8**	**0.302**	**0.269**	**0.3**	**0.3**	**0.32**	**0.3**
bromide	mg/L	-	-		< 0.5	< 0.5	< 1.0		< 1	< 1	47	124	202	214	192	160	169	< 0.5	< 0.5	< 1	< 1	< 1	< 1
cadmium	mg/L	0.005	0.0005		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.005	< 0.01	< 0.002	< 0.002	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
calcium	mg/L	-	-		137	110	110		120	110	789	1720	2400	2600	2400	2500	2700	136	154	210	200	220	210
chloride	mg/L	250	-		35	61.1	111		157	214	4690	11600	19400	19800	16700	16300	17200	39.4	23.9	25	11	10	11
chromium	mg/L	0.05	-		< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	< 0.1	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
cobalt	mg/L	-	0.0009		0.0009	0.0007	**0.018**		**0.013**	**0.0046**	**0.0018**	< 0.001	< 0.03	< 0.05	< 0.01	< 0.01	< 0.01	0.0008	**0.0010**	**0.015**	**0.023**	**0.0072**	**0.0016**
copper	mg/L	1	[0.005] b		< 0.0005	0.0005	< 0.001		< 0.001	< 0.001	< 0.005	< 0.005	< 0.05	< 0.1	< 0.02	< 0.02	< 0.02	0.0005	< 0.0005	< 0.001	< 0.001	< 0.005	< 0.001
fluoride	mg/L	1.5	-	**NOT SAMPLED**	0.3	0.2	0.2	**NOT SAMPLED**	0.3	0.2	0.4	0.3	0.2	0.3	0.3	0.2	< 1 (1)	0.3	0.4	0.3	0.3	0.3	0.2
free cyanide	mg/L	0.2	0.005		< 0.001	< 0.001	< 0.002		< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002
hardness	mg CaCO$_3$/L	80-100	-		786	1128	1000		1100	1100	2650	6124	8400	9300	8400	8800	9600	654	1287	1900	1900	2200	1900
iron	mg/L	0.3	0.3		**0.56**	**1.29**	0.068		0.2	0.13	**0.59**	**6.94**	**9.6**	< 10	**8**	**6.5**	**8.6**	**4.03**	**8.09**	**6.9**	**2.9**	**1.6**	**0.96**
lead	mg/L	0.01	[0.005] c		< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.005	< 0.005	< 0.03	< 0.05	< 0.01	< 0.01	< 0.01	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
magnesium	mg/L	-	-		107	206	190		200	200	165	442	550	670	580	610	660	75.9	219	330	340	400	340
manganese	mg/L	0.05	-		0.63	0.123	0.09		0.058	0.031	0.516	1.16	1.3	1.6	1	1	2	0.838	0.658	0.4	0.34	0.26	0.22
mercury	mg/L	0.001	0.0002		< 0.00005	< 0.00005	< 0.0001		0.0002	< 0.0001	< 0.00005	0.00006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04		**0.044**	0.004	0.002		0.002	0.002	0.036	0.021	< 0.05	< 0.1	**0.05**	< 0.02	< 0.02	**0.059**	0.022	0.008	0.005	0.003	0.003
nickel	mg/L	-	0.025		0.003	< 0.001	0.003		0.004	0.002	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	< 0.02	< 0.02	0.004	0.001	0.003	0.004	0.008	0.005
nitrate as N	mg/L	10	-		< 0.2	< 0.2	0.1		0.6	0.7	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
nitrite as N	mg/L	1	-		< 0.2	< 0.2	0.07		< 0.01	0.01	< 20	< 20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.2	< 0.2	0.02	< 0.01	< 0.01	< 0.01
pH	pH Units	6.5-8.5	6.5-8.5		7.93	7.86	7.90		7.6	7.88	8	7.27	7.0	7.4	6.9	6.97	7.02	7.4	7.58	7.9	8.1	7.8	7.57
phenol	mg/L	-	0.005		< 0.001	< 0.002	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	**0.020**	< 0.001	0.001	< 0.001	0.002	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
phosphate	mg/L	-	-		< 1	< 1	< 0.01		< 0.01	0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01
phosphorous	mg/L	-	-		-	-	< 0.05		< 0.1	< 0.1	-	-	< 3	< 10	< 2	< 2.00	< 2.00	< 0.05	-	< 0.05	< 0.1	< 0.1	< 0.1
total phosphorous	mg/L	-	0.01		**8.33**	**11.9**	**5.7**		**14.0**	**3.2**	**0.607**	**0.418**	**0.27**	**0.27**	**0.34**	< 0.1	< 5	**0.217**	**0.124**	**11**	**2.3**	**10.0**	**1.1**
potassium	mg/L	-	-		8.9	5.5	6.1		6.1	5.5	63.6	108	130	150	140	150	150	9.1	7.6	10	10	10	9.3
selenium	mg/L	0.01	0.1		< 0.002	< 0.002	< 0.002		0.002	0.003	0.023	0.036	< 0.1	< 0.2	< 0.040	0.093	0.058	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
silicon	mg/L	-	-		5.87	6.53	8.4		8.0	7.4	2.18	3.18	< 3	< 5	3	3	3	7.12	8.53	11	10	11	9.1
silver	mg/L	-	0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.005	< 0.01	< 0.002	< 0.002	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
sodium	mg/L	200 d	-		76	51.9	54		56	52	2320	5530	6100	8000	6600	7200	7500	115	117	75	76	85	68
strontium	mg/L	-	-		2.45	2.17	2		2.3	2.1	16.2	35.8	47	55	51	54	59	2.89	3.37	4.2	4.4	4.1	4.4
sulphide	mg/L	0.05	-		0.07	0.02	0.02		0.03	< 0.02	0.01	< 0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.43	0.07	0.14	< 0.02	< 0.02	< 0.02
sulphate	mg/L	500	-		501	702	389		496	445	1080	1780	1730	2130	1890	1820	1830	530	797	1070	1160	1410	1410
thallium	mg/L	-	0.0003		< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.0005	< 0.0005	< 0.003	< 0.005	< 0.001	< 0.001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
tin	mg/L	-	-	**Note:**	< 0.001	< 0.001	< 0.001	**Note:**	< 0.001	< 0.001	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	< 0.02	< 0.02	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
titanium	mg/L	-	-	Well has never	< 0.005	0.008	0.007	Insufficent	< 0.005	< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	< 0.1	< 0.1	< 0.005	0.008	0.012	< 0.005	< 0.005	0.018
TSS	mg/L	-	-	been sampled.	6970	20400	15000	water.	20000	4500	1010	375	810	770	610	600	660	100000	49900	24000	47000	14000	1700
turbidity	NTU	1	-	Blocked	17.3	7.2	11900		16000	2900	16.8	12.5	350	360	280	300	400	44	5.2	20100	18000	31000	3600
uranium	mg/L	0.1	[0.005]	since 2002.	**0.0202**	**0.0138**	**0.011**		**0.012**	**0.011**	**0.0152**	**0.0053**	< 0.005	< 0.01	< 0.002	< 0.002	< 0.002	**0.0145**	**0.0196**	**0.019**	**0.018**	**0.016**	**0.018**
vanadium	mg/L	-	[0.006]		0.0038	0.002	< 0.001		< 0.001	0.002	< 0.005	< 0.05	**0.057**	< 0.1	< 0.02	**0.076**	**0.066**	0.0024	0.0018	< 0.001	0.001	0.004	0.002
zinc	mg/L	5	[0.02]		< 0.005	< 0.005	0.007		< 0.005	< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	< 0.1	< 0.1	0.006	0.008	0.008	0.009	< 0.03	< 0.005

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information
may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-02 intermediate						MW-02 deep					MW-03 shallow						MW-03 Deep		
				Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07
aluminum	mg/L	0.1	[0.075] a	**0.1**	0.026	**0.28**	**0.19**	**0.27**	**0.15**	0.056	< 0.05	< 0.3	< 0.3	< 0.5	0.019	**0.456**	**0.15**	**0.11**	**0.14**	0.032	**0.128**	< 0.050	< 0.05
alkalinity	mg CaCO$_3$/L	30-500	-	225	118	133	139	141	129	111	36	36	32	51	133	104	140	114	110	109	40	29	56
ammonia as N	mg/L	-	-	1.86	2.82	2.09	1.5	1.6	1.5	7.28	13	16	17	18	0.61	0.55	1.36	1.20	1.8	1.2	9.2	11.3	13.5
antimony	mg/L	-	[0.02]	0.0008	< 0.0005	< 0.001	< 0.0005	< 0.0005	0.0009	< 0.01	< 0.01	< 0.05	< 0.03	< 0.05	< 0.0005	< 0.0005	< 0.001	0.0026	< 0.0005	0.0006	< 0.005	< 0.005	< 0.01
arsenic	mg/L	0.025	[0.005]	< 0.002	< 0.002	0.003	0.003	0.003	0.003	< 0.02	< 0.02	< 0.05	< 0.05	< 0.1	0.004	0.004	0.003	**0.015**	0.004	0.003	< 0.02	< 0.02	< 0.01
barium	mg/L	1	-	0.042	0.021	0.009	0.008	0.009	0.007	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	0.038	0.031	0.012	0.011	0.010	0.014	< 0.05	< 0.05	< 0.05
beryllium	mg/L	-	1.1	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.01	< 0.01	< 0.03	< 0.03	< 0.05	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.01	< 0.01	< 0.005
bismuth	mg/L	-	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01
boron	mg/L	5	0.2	**2.04**	**2.9**	**1.9**	**1.8**	**1.8**	**2**	**3.34**	**5.23**	**5.6**	**7.1**	**6**	**0.778**	**0.911**	**1.2**	**1.2**	**1.2**	**1.3**	**5.17**	**5.68**	**3.8**
bromide	mg/L	-	-	2.2	4.9	3	< 1	1	2	56	124	134	153	148	< 0.5	< 0.5	6	3	6	7	70	94	142
cadmium	mg/L	0.005	0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.001
calcium	mg/L	-	-	110	272	230	190	200	180	824	1620	2000	2000	2000	125	142	210	180	190	220	1220	1590	1400
chloride	mg/L	250	-	244	438	182	113	87	147	4920	11200	13000	12900	12400	30.5	30.8	492	281	518	574	6720	9780	11500
chromium	mg/L	0.05	-	0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.05
cobalt	mg/L	-	0.0009	**0.0029**	< 0.0001	**0.0093**	**0.022**	**0.01**	< 0.0005	< 0.001	< 0.001	< 0.03	< 0.03	< 0.05	0.0004	0.0002	**0.015**	**0.021**	**0.011**	**0.0051**	< 0.001	< 0.001	**0.005**
copper	mg/L	1	[0.005] b	**0.0065**	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.05	< 0.05	< 0.1	< 0.0005	0.0009	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
fluoride	mg/L	1.5	-	0.4	0.5	0.3	0.2	0.2	0.2	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.2
free cyanide	mg/L	0.2	0.005	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002
hardness	mg CaCO$_3$/L	80-100	-	424	1122	1100	990	1000	940	2780	5831	6700	7200	7100	577	760.5	1100	950	1000	1000	4370	5871	5200
iron	mg/L	0.3	0.3	0.15	**1.68**	**0.85**	**0.8**	**1.1**	**0.8**	**2.16**	**6.59**	**6.9**	**6.8**	< 10	**0.67**	**1.96**	**0.54**	< 0.1	**0.7**	**1.1**	**3.65**	**4.46**	**4.7**
lead	mg/L	0.01	[0.005] c	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.005	< 0.03	< 0.03	< 0.05	< 0.0005	0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.005	< 0.005
magnesium	mg/L	-	-	36	106	130	130	130	120	176	427	430	510	520	63.8	98.2	150	120	130	120	317	460	380
manganese	mg/L	0.05	-	0.228	0.199	0.18	0.17	0.16	0.13	0.575	1.03	1	1.2	1.2	0.189	0.156	0.15	0.13	0.14	0.14	0.575	0.735	0.62
mercury	mg/L	0.001	0.0002	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.00005	0.00008	< 0.0001	< 0.0001	< 0.0001	< 0.00005	0.00006	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001
molybdenum	mg/L	-	0.04	**0.048**	0.021	0.012	0.009	0.009	0.009	0.024	0.015	< 0.05	< 0.05	< 0.1	**0.048**	0.02	0.008	0.013	0.007	0.012	0.013	0.012	< 0.01
nickel	mg/L	-	0.025	0.003	< 0.001	0.003	0.002	0.004	< 0.001	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	0.002	< 0.001	0.003	0.002	0.003	< 0.001	< 0.01	< 0.01	< 0.01
nitrate as N	mg/L	10	-	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	0.3	< 0.1	< 0.2	< 0.2	< 0.1
nitrite as N	mg/L	1	-	< 2	< 0.2	< 0.01	< 0.01	0.03	< 0.01	< 20	< 20	0.02	< 0.01	< 0.01	< 0.2	< 0.2	< 0.01	0.01	0.14	0.02	< 20	< 20	0.02
pH	pH Units	6.5-8.5	6.5-8.5	8.14	7.93	8	8.1	7.9	7.74	7.77	7.23	7.2	7.4	7.2	7.76	7.93	7.90	8.00	7.7	7.76	7.44	7.28	7.30
phenol	mg/L	-	0.005	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.011**	< 0.001	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.023**
phosphate	mg/L	-	-	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01
phosphorous	mg/L	-	-	-	-	< 0.05	< 0.1	< 0.1	< 0.1	-	-	< 3	< 5	< 10	< 0.05	-	< 0.05	< 0.1	< 0.1	< 0.1	-	-	< 0.5
total phosphorous	mg/L	-	0.01	**2.95**	**2.04**	**2.7**	**1.5**	**5.7**	**0.1**	**0.142**	**0.089**	**0.077**	**0.15**	**0.82**	**0.176**	**10.2**	**8.4**	**6.4**	**30.0**	**5.0**	**0.278**	**0.076**	**0.21**
potassium	mg/L	-	-	17.3	26.2	21	19	18	17	60.4	101	120	130	120	15.5	12.9	14	13	12	16	78.1	94.4	80
selenium	mg/L	0.01	0.1	< 0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.024	0.032	< 0.1	< 0.1	< 0.2	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002	0.033	0.03	< 0.02
silicon	mg/L	-	-	3.51	4.3	5.6	5.5	6.0	5.1	2.18	3.19	< 3	3	< 5	5.40	5.99	6.4	6	6.9	6.5	3.19	3.27	2.3
silver	mg/L	-	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.001
sodium	mg/L	200 d	-	318	546	270	200	180	200	2380	5590	5800	6700	6200	98.4	111	280	210	170	320	2920	4330	3400
strontium	mg/L	-	-	2.52	7.22	10	12	11	11	16.8	33.800	36	42	41	6.86	8.98	11	12	11	13	25.6	32.7	29
sulphide	mg/L	0.05	-	0.18	0.01	0.05	< 0.02	< 0.02	< 0.02	0.01	< 0.01	< 0.02	< 0.02	0.25	0.37	0.31	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.02
sulphate	mg/L	500	-	542	1330	1200	1090	1080	1120	1230	1920	1950	1890	2010	651	836	884	813	953	933	1360	1610	1540
thallium	mg/L	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0005	< 0.0005	< 0.003	< 0.003	< 0.005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0005	< 0.0005	< 0.0005
tin	mg/L	-	-	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01
titanium	mg/L	-	-	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.3	< 0.3	0.5	< 0.005	0.016	0.007	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.05
TSS	mg/L	-	-	5300	3570	32000	2200	6500	360	214	203	240	81	800	58400	28300	24000	6500	12000	21000	456	118	140
turbidity	NTU	1	-	19.1	2.5	17800	2200	7800	320	4.0	6.8	179	71	720	1.3	5.0	10700	3600	14000	19000	11.1	5.2	105
uranium	mg/L	0.1	[0.005]	**0.0153**	0.0028	0.0005	0.0002	0.0004	0.0002	**0.0099**	0.0024	< 0.005	< 0.005	< 0.01	**0.0059**	0.0015	0.0007	0.0023	0.0005	0.0003	0.0021	< 0.0010	< 0.001
vanadium	mg/L	-	[0.006]	0.0024	< 0.0005	< 0.001	< 0.001	0.003	< 0.001	< 0.005	< 0.05	**0.064**	< 0.05	< 0.1	0.0014	0.0015	< 0.001	**0.007**	0.003	0.003	< 0.05	< 0.05	< 0.01
zinc	mg/L	5	[0.02]	< 0.05	**0.023**	0.005	< 0.005	< 0.005	< 0.01	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	< 0.05	< 0.005	0.018	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	**0.23**

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information
may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-03 Deep			MW-04 shallow						MW-04 intermediate						MW-04 deep				
				Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	May-03	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L	0.1	[0.075] a	< 0.3	0.074	**0.11**	< 0.005	0.068	**0.28**	**0.2**	**0.32**	0.038	0.006	**0.289**	**0.1**	**0.14**	**0.14**	0.031	< 0.05	< 0.05	< 0.5	**0.5**	NOT SAMPLED
alkalinity	mg $CaCO_3$/L	30-500	-	74	88	72	385	419	391	413	390	387	55	56	56	51	50	50	172	126	34	66	
ammonia as N	mg/L	-	-	4.7	5.7	7.9	0.32	0.25	0.16	< 0.05	0.53	< 0.05	4.86	4.97	8.2	5.9	6.3	6	8.7	23.4	25	34	
antimony	mg/L	-	[0.02]	< 0.03	< 0.0005	< 0.005	< 0.0005	< 0.0005	< 0.001	0.0007	< 0.0005	< 0.0005	< 0.0005	0.0005	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.005	< 0.01	< 0.05	< 0.03	
arsenic	mg/L	0.025	[0.005]	< 0.05	< 0.005	< 0.01	0.004	**0.006**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.002	< 0.005	< 0.01	< 0.005	< 0.005 (1)	< 0.02	< 0.01	< 0.1	< 0.3	
barium	mg/L	1	-	< 0.3	0.017	< 0.05	0.083	0.082	0.06	0.065	0.058	0.056	0.013	0.010	< 0.03	< 0.05	0.007	0.007	0.087	0.075	< 0.5	< 0.3	
beryllium	mg/L	-	1.1	< 0.03	< 0.0005	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.003	< 0.005	< 0.0005	< 0.0005	< 0.01	< 0.005	< 0.05	< 0.03	
bismuth	mg/L	-	-	< 0.05	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.005	< 0.01	< 0.001	0.002	< 0.01	< 0.01	< 0.1	< 0.05	
boron	mg/L	5	0.2	**3.6**	**4.7**	**4.6**	**0.353**	**0.286**	0.071	0.12	0.11	0.078	**6.46**	**6.99**	**6**	**6.9**	**6.5**	**6.4**	**2.38**	**3.3**	**6.2**	**5.4**	
bromide	mg/L	-	-	37	31	62	< 0.5	< 0.5	< 1.0	< 1.0	< 1	< 1	11.3	10.3	14	17	21	16	103	183	398	401	
cadmium	mg/L	0.005	0.0005	< 0.005	< 0.0001	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0006**	< 0.0005	< 0.001	< 0.0001	< 0.0001	**0.0017**	< 0.001	< 0.01	< 0.005	
calcium	mg/L	-	-	540	470	870	65.2	64.1	88	84	78	77	433	380	450	530	510	460	1440	3700	6600	5300	
chloride	mg/L	250	-	3220	2440	4980	12.2	5.8	8.0	4.0	4	5	1120	984	1320	1540	1800	1500	9180	16800	34700	32700	
chromium	mg/L	0.05	-	< 0.3	< 0.005	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.05	< 0.005	< 0.005	< 0.05	< 0.05	< 0.5	< 0.3	
cobalt	mg/L	-	0.0009	< 0.03	**0.0037**	< 0.005	**0.0011**	0.0009	**0.019**	**0.022**	**0.015**	**0.001**	0.0008	0.0002	**0.019**	**0.021**	**0.0086**	< 0.0005	< 0.001	< 0.005	< 0.05	< 0.03	
copper	mg/L	1	[0.005] b	< 0.05	< 0.001	< 0.01	0.0008	< 0.0005	0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005 (1)	**0.0124**	< 0.01	< 0.1	< 0.05	
fluoride	mg/L	1.5	-	0.3	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.2	0.6	0.7	0.5	0.6	0.5	0.5	0.3	0.2	0.1	0.1	
free cyanide	mg/L	0.2	0.005	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.002	< 0.002	< 0.002	
hardness	mg $CaCO_3$/L	80-100	-	2200	1800	3300	353	407.7	490	500	460	450	1600	1405	1600	1900	1900	1700	4915	13000	23000	18000	
iron	mg/L	0.3	0.3	< 5	**1.2**	**2.8**	< 0.03	**0.52**	0.18	0.11	**0.50**	< 0.1	0.23	**0.56**	**0.71**	< 1	**0.9**	**0.75**	< 0.3	**17**	**29**	**24**	
lead	mg/L	0.01	[0.005] c	< 0.03	< 0.0005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.005	< 0.0005	< 0.0005	< 0.005	< 0.005	< 0.05	< 0.03	
magnesium	mg/L	-	-	200	160	280	46.1	60.1	66	71	65	62	125	110	130	150	140	130	316	820	1500	1200	
manganese	mg/L	0.05	-	0.27	0.2	0.39	1.01	0.769	0.28	0.38	0.310	0.180	0.205	0.17	0.21	0.26	0.22	0.19	1.13	2.4	3.7	2.8	
mercury	mg/L	0.001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.00005	0.0001	< 0.0001	< 0.0001	
molybdenum	mg/L	-	0.04	< 0.05	0.006	< 0.01	0.024	0.012	0.005	0.007	0.005	0.006	0.011	0.008	0.007	< 0.01	0.008	0.009	0.03	0.012	< 0.1	< 0.05	
nickel	mg/L	-	0.025	< 0.05	< 0.005	< 0.01	0.004	0.001	0.003	0.003	0.004	0.001	0.007	< 0.001	< 0.005	< 0.01	< 0.005	< 0.005 (1)	< 0.01	< 0.01	< 0.1	< 0.05	
nitrate as N	mg/L	10	-	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	11	0.3	2.5	4.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.6	1.4	< 0.1	< 0.1	
nitrite as N	mg/L	1	-	< 0.01	0.01	< 0.01	< 0.2	< 0.2	0.1	0.01	0.25	0.11	< 2.0	< 0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 20	0.02	< 0.01	0.02	
pH	pH Units	6.5-8.5	6.5-8.5	7.80	7.7	7.45	7.79	7.8	8.2	8.4	8.0	7.8	7.67	7.64	7.7	7.8	7.6	7.5	7.42	7.4	7.2	6.8	
phenol	mg/L	-	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.025**	0.002	0.003	
phosphate	mg/L	-	-	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	< 1	< 0.01	< 0.01	< 0.01	
phosphorous	mg/L	-	-	< 5	< 0.1	< 1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.3	< 1	< 0.1	< 0.1	< 0.5	< 0.5	< 10	< 5	
total phosphorous	mg/L	-	0.01	**0.12**	**0.04**	**0.10**	**0.092**	**12**	**1.6**	**1.7**	**17.0**	**0.9**	**5.45**	**0.96**	**1.4**	**0.47**	< 0.1	**0.05**	**0.089**	**0.34**	**0.37**	**2.7**	
potassium	mg/L	-	-	46	40	61	6.6	6.2	5	5.7	5.1	4.9	39.7	38.5	42	48	43	43	76.2	160	260	210	
selenium	mg/L	0.01	0.1	< 0.1	0.01	< 0.02	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.009	< 0.002	< 0.01	< 0.02	0.012	< 0.01 (1)	< 0.02	< 0.02	< 0.2	**0.2**	
silicon	mg/L	-	-	3.5	3.7	4	6.69	7.66	7.5	6.9	6.7	5.8	3.27	3.64	3	3.7	3.4	3.2	3.41	2.3	< 5	4	
silver	mg/L	-	0.0001	< 0.005	< 0.0001	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.001	< 0.0001	**0.0002**	< 0.001	< 0.001	< 0.01	< 0.005	
sodium	mg/L	200 d	-	1700	1300	2400	49.5	35.9	24	34	28	28	682	609	780	1100	1000	960	3600	8000	15000	12000	
strontium	mg/L	-	-	13	12	20	3.25	3.23	1.4	2	1.8	1.5	14.2	11.8	11	13	13	12	29.9	77	130	110	
sulphide	mg/L	0.05	-	< 0.02	< 0.02	< 0.02	0.27	0.03	< 0.02	< 0.02	0.06	< 0.02	0.05	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	
sulphate	mg/L	500	-	1230	1260	1450	106	70.2	80	122	116	103	1630	1600	1730	1670	1870	1750	762	1070	1250	1340	
thallium	mg/L	-	0.0003	< 0.003	< 0.00005	< 0.0005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0003	< 0.0005	< 0.00005	< 0.00005	< 0.0005	< 0.0005	< 0.005	< 0.003	
tin	mg/L	-	-	< 0.05	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.01	< 0.001	< 0.001	< 0.01	< 0.01	< 0.1	< 0.05	
titanium	mg/L	-	-	< 0.3	< 0.005	< 0.05	< 0.005	< 0.005	0.012	0.009	0.008	< 0.005	< 0.005	-	< 0.03	< 0.05	< 0.005	0.008	< 0.05	< 0.05	< 0.5	< 0.3	
TSS	mg/L	-	-	36	100	190	74300	30500	2500	2800	21000	750	8680	1740	5400	1100	1100	91	501	1000	540	3600	
turbidity	NTU	1	-	27	66	100	13	50	1710	2600	31000	4300	11.2	24	2440	1100	1100	57	188	518	380	4600	
uranium	mg/L	0.1	[0.005]	< 0.005	< 0.0001	< 0.001	**0.0074**	0.0041	**0.0058**	**0.0093**	**0.0081**	**0.0078**	0.0011	0.0002	< 0.0005	< 0.001	< 0.0001	< 0.0001	**0.0075**	0.001	< 0.01	< 0.005	
vanadium	mg/L	-	[0.006]	< 0.05	< 0.005	< 0.01	0.002	0.0014	0.002	0.003	0.001	< 0.001	< 0.0050	< 0.0050	< 0.005	< 0.01	< 0.005	< 0.005 (1)	< 0.05	< 0.01	< 0.1	< 0.3	
zinc	mg/L	5	[0.02]	< 0.3	**0.034**	< 0.05	< 0.005	< 0.005	0.008	< 0.005	0.005	< 0.005	< 0.050	0.007	< 0.03	< 0.05	< 0.03	< 0.005	< 0.05	**0.073**	< 0.5	< 0.3	

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.

Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.

[ ] indicate interim PWQO concentration

a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.

b = interim PWQO if hardness greater than 20 mg/L.

c = interim PWQO if hardness greater than 80 mg/L

d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.

(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-05 shallow						MW-05 straddle			MW-05 intermediate						MW-05 deep			MW-06 shallow	MW-06 straddle		
				Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Oct-08	Dec-09	Oct-10
aluminum	mg/L	0.1	[0.075] a	0.006	0.059	NOT SAMPLED	0.069	0.067	0.052	**0.34**	**0.32**	0.04	0.029	**0.194**	NOT SAMPLED	**0.1**	**0.130**	0.016	NOT SAMPLED	< 0.5	NOT SAMPLED	NOT SAMPLED	**0.16**	**0.71**	**0.46**
alkalinity	mg CaCO$_3$/L	30-500	-	310	344		326	275	302	271	296	294	179	180		178	264	252		32			324	312	315
ammonia as N	mg/L	-	-	0.21	0.05		0.1	0.05	< 0.05	0.51	0.65	0.54	1.99	1.87		1.7	1.8	2.1		43			0.47	0.66	0.48
antimony	mg/L	-	[0.02]	< 0.0005	< 0.0005		0.001	< 0.0005	< 0.0005	0.001	< 0.0005	0.0011	< 0.0005	< 0.0005		0.0005	< 0.0005	< 0.0005		**0.07**			0.0007	< 0.0005	0.0006
arsenic	mg/L	0.025	[0.005]	< 0.002	< 0.002		< 0.001	< 0.001	< 0.001	**0.012**	**0.013**	**0.006**	0.002	< 0.002		0.002	0.002	0.002		< 0.1			0.005	0.003	0.005
barium	mg/L	1	-	0.07	0.081		0.078	0.061	0.06	0.068	0.077	0.066	0.016	0.022		0.016	0.021	0.019		< 0.5			0.05	0.054	0.062
beryllium	mg/L	-	1.1	< 0.001	< 0.001		< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.001		< 0.0005	< 0.0005	< 0.0005		< 0.05			< 0.0005	< 0.0005	< 0.0005
bismuth	mg/L	-	-	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		< 0.1			< 0.001	< 0.001	< 0.001
boron	mg/L	5	0.2	0.134	0.014		0.025	< 0.01	0.02	**1.1**	**1.0**	**1.0**	**3.58**	**3.38**		**4.1**	**3.1**	**2.7**		**5**			**0.28**	**0.23**	0.18
bromide	mg/L	-	-	< 0.5	0.5		< 1.000	< 1	< 1	< 1	< 1	< 1	1.3	4.4		1	< 1	2		587			< 1	< 1	< 1
cadmium	mg/L	0.005	0.0005	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		**0.01**			< 0.0001	0.0001	< 0.0001
calcium	mg/L	-	-	98.7	114		120	120	120	63	70	67	88.7	181		67	67	99		8800			71	73	76
chloride	mg/L	250	-	14.6	5.7		13	20	26	8	5	8	150	406		105	74	176		50200			4	6	9
chromium	mg/L	0.05	-	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005		< 0.5			< 0.005	< 0.005	< 0.005
cobalt	mg/L	-	0.0009	0.0006	< 0.0001		**0.022**	**0.013**	**0.001**	**0.023**	**0.013**	**0.004**	< 0.0001	0.0003		**0.021**	**0.0054**	< 0.0005		< 0.05			**0.019**	**0.015**	**0.005**
copper	mg/L	1	[0.005] b	0.0015	0.0009		< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.0006	0.0005		< 0.001	< 0.001	< 0.001		< 0.1			< 0.001	< 0.001	0.001
fluoride	mg/L	1.5	-	0.2	0.1		0.1	0.1	0.1	0.3	0.3	0.2	0.7	0.7		0.7	0.5	0.4		< 0.1			0.2	0.2	0.2
free cyanide	mg/L	0.2	0.005	< 0.001	< 0.001		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001		< 0.002	< 0.002	< 0.002		< 0.002			< 0.002	< 0.002	< 0.002
hardness	mg CaCO$_3$/L	80-100	-	352	406.4		430	430	430	300	320	300	332	692.2		260	270	390		31000			330	350	340
iron	mg/L	0.3	0.3	< 0.03	0.06		< 0.1	0.1	< 0.1	0.25	**0.60**	< 0.10	0.13	**0.47**		0.26	0.2	0.27		**29**			**0.39**	**0.6**	**0.7**
lead	mg/L	0.01	[0.005] c	< 0.0005	0.0010		< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.0005		< 0.05			< 0.0005	< 0.0005	0.0006
magnesium	mg/L	-	-	25.6	29.1		32	31	31	34	34	33	26.7	57.6		23	25	35		2100			37	39	38
manganese	mg/L	0.05	-	1.29	0.051		0.038	0.032	0.004	0.063	0.078	0.033	0.044	0.072		0.06	0.033	0.036		4.7			0.075	0.067	0.056
mercury	mg/L	0.001	0.0002	< 0.00005	< 0.00005		< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.00005	< 0.00005		< 0.0001	< 0.0001	< 0.0001		< 0.0001			< 0.0015 (1)	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04	0.016	< 0.001		< 0.001	< 0.001	< 0.001	0.005	0.004	0.004	0.013	0.011		0.009	0.005	0.004		< 0.1			0.008	0.004	0.003
nickel	mg/L	-	0.025	0.002	< 0.001		0.002	0.003	< 0.001	0.003	0.003	< 0.001	< 0.001	< 0.001		0.002	0.001	< 0.001		< 0.1			0.002	0.003	0.002
nitrate as N	mg/L	10	-	< 0.2	< 0.2		0.1	< 0.1	< 0.1	0.1	0.3	< 0.1	< 0.2	< 0.2		< 0.1	0.2	< 0.1		< 0.1			< 0.1	0.4	0.3
nitrite as N	mg/L	1	-	< 0.2	< 0.2		< 0.01	0.02	< 0.01	0.03	0.16	0.03	< 1.0	< 0.2		< 0.01	0.22	< 0.01		< 0.01			< 0.01	0.07	0.03
pH	pH Units	6.5-8.5	6.5-8.5	7.74	7.62		8.1	7.5	7.8	8.3	7.9	7.93	7.85	7.71		8.1	7.9	7.77		6.5			8.3	7.8	7.95
phenol	mg/L	-	0.005	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001		**0.006**			< 0.001	< 0.001	< 0.001
phosphate	mg/L	-	-	< 1	< 1		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 1	< 1		< 0.01	< 0.01	< 0.01		< 0.01			< 0.01	< 0.01	0.01
phosphorous	mg/L	-	-	< 0.05	< 0.05		< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.05	< 0.05		< 0.1	< 0.1	< 0.1		< 10			< 0.1	< 0.1	< 0.1
total phosphorous	mg/L	-	0.01	**0.09**	**6.05**		**6**	**5**	**3**	**5.2**	**24.0**	**4.0**	**1.02**	**1.58**		**0.18**	**0.1**	**0.02**		**1.1**			**8.2**	**16**	**7.7**
potassium	mg/L	-	-	5.4	0.7		0.69	0.7	0.7	5.9	5.8	5.7	16.0	19.9		18	17	20		290			7.2	7.1	5.8
selenium	mg/L	0.01	0.1	< 0.002	< 0.002		< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002		< 0.2			< 0.002	< 0.002	< 0.002
silicon	mg/L	-	-	5.37	5.29		5.7	5.6	5.1	11	11	9.7	4.03	4.21		5.4	6.0	5.6		< 5			8.5	10	9.4
silver	mg/L	-	0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.01			< 0.0001	< 0.0001	< 0.0001
sodium	mg/L	200 d	-	18.2	5.9		6.1	6.3	6.2	24	22	22	171	362		180	110	110		18000			21	18	16
strontium	mg/L	-	-	1.6	0.244		0.21	0.19	0.19	6	5.5	6	7.02	9.57		6.8	7.8	14		180			5.5	5.1	4.3
sulphide	mg/L	0.05	-	0.25	0.04		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01	< 0.01		< 0.02	< 0.02	< 0.02		0.06			< 0.02	0.05	0.08
sulphate	mg/L	500	-	103	69.6		80	90	96	38	46	52	270	276		244	136	179		1260			49	54	60
thallium	mg/L	-	0.0003	< 0.00005	< 0.00005		< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005		< 0.005			< 0.00005	< 0.00005	0.00007
tin	mg/L	-	-	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	**Note:**	< 0.1	**Note:**	**Note:**	< 0.001	< 0.001	< 0.001
titanium	mg/L	-	-	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	0.011	0.006	< 0.005	< 0.005	0.006		< 0.005	< 0.005	< 0.005	Insufficient	< 0.5	Insufficient	Insufficient	< 0.005	0.018	0.006
TSS	mg/L	-	-	91100	20800		1900	3300	4000	15000	28000	3600	1230	1750		350	86	< 10	water	1500	water	water	19000	24000	17000
turbidity	NTU	1	-	6.8	48		340	3900	24	7000	13000	3400	2.4	19.7		130	96	15		530			11000	23000	18000
uranium	mg/L	0.1	[0.005]	0.0049	0.0019		0.002	0.0019	0.0019	0.0004	0.0003	0.0003	0.0010	0.0005		0.0002	0.0002	0.0001		< 0.01			0.0022	0.0016	0.0011
vanadium	mg/L	-	[0.006]	0.0013	0.001		0.001	< 0.001	< 0.001	0.002	0.001	0.002	0.0008	< 0.005		0.002	< 0.001	< 0.001		< 0.1			0.001	0.003	0.002
zinc	mg/L	5	[0.02]	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005		< 0.5			< 0.005	0.006	0.005

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
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c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-06 deep		MW-07 shallow			MW-07 deep			MW-08 shallow			MW-08 intermediate				MW-08 deep			MW-09 shallow		
				Oct-08	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Nov-09	Oct-10	Oct-10 DUP 1	Oct-08	Dec-09	Oct-10	Oct-08	Nov-09	Oct-10
aluminum	mg/L	0.1	[0.075] a			**0.1**	**0.38**	**0.94**	< 0.3	< 0.1	< 0.1	**0.31**	**0.24**	0.042	< 0.05	0.013	0.065	< 0.05	0.005	< 0.005	< 0.3	**0.16**	0.070	0.020
alkalinity	mg $CaCO_3$/L	30-500	-			502	559	569	33	35	32	525	549	545	102	146	139	145	414	412	59	401	438	412
ammonia as N	mg/L	-	-			0.65	0.56	0.47	19	18	19	0.87	0.55	0.38	4.5	5.5	5.6	5	1.9	2.3	39	0.38	0.10	0.17
antimony	mg/L	-	[0.02]			0.0009	< 0.0005	0.0008	< 0.03	< 0.01	< 0.01	0.0015	0.0005	0.0007	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.03	0.0006	< 0.0005	0.0012
arsenic	mg/L	0.025	[0.005]			0.005	0.003	0.003	< 0.05	< 0.02	< 0.02	0.004	0.002	0.002	< 0.01	< 0.005	< 0.01	< 0.01	**0.006**	< 0.005	< 0.05	0.004	0.001	0.002
barium	mg/L	1	-			0.059	0.055	0.066	< 0.3	< 0.1	< 0.1	0.025	0.019	0.019	< 0.05	0.011	< 0.05	< 0.05	0.012	0.013	< 0.3	0.058	0.061	0.061
beryllium	mg/L	-	1.1			< 0.0005	< 0.0005	< 0.0005	< 0.03	< 0.01	< 0.01	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.03	< 0.0005	< 0.0005	< 0.0005
bismuth	mg/L	-	-			< 0.001	< 0.001	< 0.001	< 0.05	< 0.02	< 0.02	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.01	< 0.01	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001
boron	mg/L	5	0.2			**3.3**	**4.3**	**4.5**	**7.6**	**6.6**	**6.3**	**2.4**	**1.5**	**1.7**	**6.8**	**6.1**	**6.1**	**6.3**	**3.7**	**4.5**	**4.7**	**0.46**	**0.48**	**0.54**
bromide	mg/L	-	-			< 1	< 1	< 1	205	203	182	< 1	< 1	< 1	23	23	23	29	< 1	3	< 500	< 1	< 1	< 1
cadmium	mg/L	0.005	0.0005			< 0.0001	< 0.0001	< 0.0001	< 0.005	< 0.002	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.0001	< 0.001	< 0.001	< 0.0001	< 0.0001	< 0.005	< 0.0001	< 0.0001	< 0.0001
calcium	mg/L	-	-			70	66	72	3200	3000	2900	150	110	120	460	450	530	530	110	290	5300	56	60	59
chloride	mg/L	250	-			20	23	22	17500	17800	16000	13	13	13	2110	2100	2240	2150	49	213	48500	6	10	10
chromium	mg/L	0.05	-			< 0.005	< 0.005	< 0.005	< 0.3	< 0.1	< 0.1	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	< 0.05	< 0.05	< 0.005	< 0.005	< 0.3	< 0.005	< 0.005	< 0.005
cobalt	mg/L	-	0.0009			**0.026**	**0.013**	**0.005**	< 0.03	< 0.01	< 0.01	**0.048**	**0.016**	**0.0087**	**0.015**	**0.0077**	< 0.005	< 0.005	**0.0057**	**0.0016**	< 0.03	**0.011**	**0.0098**	**0.0014**
copper	mg/L	1	[0.005] b			< 0.001	0.001	0.002	< 0.05	< 0.02	< 0.02	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.01	< 0.01	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001
fluoride	mg/L	1.5	-	NOT SAMPLED	NOT SAMPLED	0.4	0.5	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.5	0.4	0.4	0.4	0.3	0.3	< 0.1	0.3	0.2	0.2
free cyanide	mg/L	0.2	0.005			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
hardness	mg $CaCO_3$/L	80-100	-			690	630	590	11000	10000	10000	1100	940	990	1700	1700	2000	2000	620	1300	18000	400	420	410
iron	mg/L	0.3	0.3			**1**	**0.8**	**1.6**	**6.5**	**6**	**5.1**	**0.87**	**0.4**	**0.54**	< 1	**1**	< 1	< 1	**0.74**	**0.7**	**8**	0.12	< 0.1	< 0.1
lead	mg/L	0.01	[0.005] c			< 0.0005	0.0006	0.0014	< 0.03	< 0.01	< 0.01	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.03	< 0.0005	< 0.0005	< 0.0005
magnesium	mg/L	-	-			120	110	99	830	750	750	190	160	170	140	140	160	160	86	130	1200	62	67	63
manganese	mg/L	0.05	-			0.22	0.18	0.3	1.6	1.5	1.4	0.29	0.16	0.17	0.2	0.19	0.21	0.22	0.1	0.15	2.6	0.066	0.042	0.035
mercury	mg/L	0.001	0.0002			**0.0017 (1)**	**0.0022**	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0001	**0.0036 (1)**	**0.002**	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0015 (1)	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04			0.011	0.007	0.007	< 0.05	< 0.02	< 0.02	0.005	0.005	0.005	< 0.01	0.007	< 0.01	< 0.01	0.004	0.006	< 0.05	0.013	0.006	0.007
nickel	mg/L	-	0.025			0.004	0.003	0.003	< 0.05	< 0.02	< 0.02	0.006	0.004	0.002	< 0.01	< 0.005	< 0.01	< 0.01	0.003	< 0.001	< 0.05	0.002	0.002	< 0.001
nitrate as N	mg/L	10	-			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	0.2	2.1	0.4
nitrite as N	mg/L	1	-			< 0.01	0.06	0.09	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	0.05	0.05	< 0.01	0.04
pH	pH Units	6.5-8.5	6.5-8.5			**8.6**	7.6	7.79	7.4	7.0	7.0	8.3	7.7	7.69	7.9	7.8	7.55	7.59	8.1	7.9	6.76	8.2	7.9	7.87
phenol	mg/L	-	0.005			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
phosphate	mg/L	-	-			< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
phosphorous	mg/L	-	-			< 0.1	< 0.1	0.12	< 5	< 2	< 2	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 1	< 1	< 0.1	< 0.1	< 5	< 0.1	< 0.1	< 0.1
total phosphorous	mg/L	-	0.01			**22**	**32**	**25**	**0.28**	**0.14**	< 0.2 (1)	**76**	**110**	**6.7**	**0.051**	**0.04**	**0.03**	< 0.02	**0.062**	**0.04**	**8**	**1.2**	**1.3**	**0.2**
potassium	mg/L	-	-			8.1	7.4	7	160	140	140	20	16	16	45	44	46	47	24	31	190	18	13	12
selenium	mg/L	0.01	0.1			< 0.002	< 0.002	< 0.002	< 0.1	< 0.04	< 0.04	< 0.002	< 0.002	< 0.002	< 0.02	< 0.01	< 0.02	< 0.02	< 0.002	< 0.01	**0.14**	< 0.002	< 0.002	< 0.002
silicon	mg/L	-	-			9.5	9.5	10	4.6	5	5.5	9.7	8.0	7.7	4.2	3.8	3.9	4	6.1	5.6	< 3	8.9	8.6	8.4
silver	mg/L	-	0.0001			< 0.0001	< 0.0001	< 0.0001	< 0.005	< 0.002	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.0001	< 0.001	< 0.001	< 0.0001	< 0.0001	< 0.005	< 0.0001	< 0.0001	< 0.0001
sodium	mg/L	200 d	-			83	70	95	8000	6700	6600	95	92	90	1200	1200	1300	1400	120	620	10000	35	36	35
strontium	mg/L	-	-			3.8	3.5	3.6	63	63	60	15	10	12	12	12	13	13	16	12	110	7.3	5.2	6.4
sulphide	mg/L	0.05	-			< 0.02	0.08	0.1	< 0.02	0.02	< 0.02	0.12	0.31	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.13	< 0.02	< 0.02	< 0.02
sulphate	mg/L	500	-			202	193	181	1470	1550	1620	706	631	576	1040	1040	1010	1010	413	522	1180	70	70	68
thallium	mg/L	-	0.0003			< 0.00005	< 0.00005	0.00005	< 0.003	< 0.001	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.0005	< 0.00005	< 0.0005	< 0.0005	< 0.00005	< 0.00005	< 0.003	< 0.00005	< 0.00005	< 0.00005
tin	mg/L	-	-	Note: Insufficient water	Note: Insufficient water	< 0.001	< 0.001	< 0.001	< 0.05	< 0.02	< 0.02	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.01	< 0.01	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001
titanium	mg/L	-	-			< 0.005	0.010	0.024	< 0.3	< 0.1	< 0.1	0.011	0.008	< 0.005	< 0.05	< 0.005	< 0.05	< 0.05	< 0.005	< 0.005	< 0.3	0.006	< 0.005	< 0.005
TSS	mg/L	-	-			46000	84000	91000	400	460	150	130000	130000	9000	92	60	27	26	32	22	44000	1200	560	180
turbidity	NTU	1	-			36000	100000	63000	310	210	91	75000	140000	14000	64	48	14	22	12	25	96000	3100	2400	330
uranium	mg/L	0.1	[0.005]			**0.0079**	**0.0059**	**0.01**	< 0.005	< 0.002	< 0.002	**0.0056**	**0.01**	**0.008**	< 0.001	0.0001	< 0.001	< 0.001	0.0025	0.0034	< 0.005	**0.0052**	0.0035	0.0032
vanadium	mg/L	-	[0.006]			0.001	0.002	0.004	< 0.05	< 0.02	< 0.02	0.002	< 0.001	< 0.001	< 0.01	< 0.005	< 0.01	< 0.01	< 0.001	< 0.005	**0.14**	0.001	0.001	< 0.001
zinc	mg/L	5	[0.02]			< 0.005	< 0.005	0.005	< 0.3	< 0.1	< 0.1	< 0.03	< 0.005	< 0.005	< 0.05	0.006	< 0.05	< 0.05	0.006	< 0.005	< 0.3	0.006	0.006	< 0.005

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.1
Summary of Groundwater Quality in On-Site Monitoring Wells
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-09 intermediate			MW-09 deep		MW-10 shallow			MW-10 intermediate			MW-10 deep		MW-11 shallow			MW-11 intermediate			MW-11 deep	
				Oct-08	Nov-09	Oct-10	Oct-08	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Oct-10
aluminum	mg/L	0.1	[0.075] a	0.066	**0.61**	0.056			**1.2**	**0.66**	**0.17**	**4.8**	**0.41**	0.027			**0.7**	**0.36**	**4.8**	**0.13**	**0.13**	**0.078**		< 0.3
alkalinity	mg $CaCO_3$/L	30-500	-	175	305	261			396	475	472	381	394	400			308	321	322	458	431	453		44
ammonia as N	mg/L	-	-	2	2.5	2.2			1.4	0.47	0.43	1.9	1.6	0.92			0.29	0.18	0.21	1.4	1.3	1.3		31
antimony	mg/L	-	[0.02]	< 0.0005	< 0.0005	< 0.0005			0.0014	0.0007	0.0009	0.001	< 0.0005	< 0.0005			< 0.0005	0.0006	0.0011	< 0.0005	< 0.0005	0.0006		< 0.03
arsenic	mg/L	0.025	[0.005]	0.002	0.004	0.003			0.004	0.003	0.004	0.005	0.004	0.004			0.002	0.005	0.005	**0.012**	**0.01**	**0.012**		< 0.05
barium	mg/L	1	-	0.058	0.067	0.04			0.088	0.093	0.09	0.073	0.063	0.078			0.074	0.054	0.2	0.021	0.020	0.023		< 0.300
beryllium	mg/L	-	1.1	< 0.0005	< 0.0005	< 0.0005			< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005			< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.03
bismuth	mg/L	-	-	< 0.001	< 0.001	< 0.001			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.05
boron	mg/L	5	0.2	**2.8**	**2.5**	**3.4**			**0.39**	0.17	0.17	**3.1**	**1.8**	**1.3**			0.17	0.13	0.089	**1.3**	**1.7**	**1.2**		**4.8**
bromide	mg/L	-	-	2	1	2			< 1	< 1	< 1	< 1	< 1	< 1			< 1	< 1	1	< 1	< 1	< 1		500
cadmium	mg/L	0.005	0.0005	< 0.0001	< 0.0001	< 0.0001			< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001			< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		**0.019**
calcium	mg/L	-	-	110	85	140			67	74	67	58	53	58			110	73	130	72	69	70		6300
chloride	mg/L	250	-	142	115	196			3	3	4	6	7	7			7	14	3	9	11	9		35800
chromium	mg/L	0.05	-	< 0.005	< 0.005	< 0.005			< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005	< 0.005	0.014	< 0.005	< 0.005	< 0.005		< 0.3
cobalt	mg/L	-	0.0009	**0.022**	**0.014**	**0.0049**			**0.025**	**0.027**	**0.0022**	**0.0065**	**0.011**	**0.0033**			**0.023**	**0.015**	**0.013**	**0.017**	**0.0013**	**0.0039**		< 0.03
copper	mg/L	1	[0.005] b	< 0.001	< 0.001	< 0.001			0.001	0.002	0.001	0.001	< 0.001	< 0.001			0.003	< 0.001	**0.013**	< 0.001	< 0.001	< 0.001		< 0.05
fluoride	mg/L	1.5	-	0.4	0.5	0.3	**NOT SAMPLED**	**NOT SAMPLED**	0.3	0.3	0.2	0.3	0.3	0.2	**NOT SAMPLED**	**NOT SAMPLED**	0.3	0.3	0.2	0.2	0.3	0.3	**NOT SAMPLED**	0.1
free cyanide	mg/L	0.2	0.005	< 0.002	< 0.002	< 0.002			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002
hardness	mg $CaCO_3$/L	80-100	-	450	390	600			450	510	480	330	310	370			500	450	550	470	430	450		21000
iron	mg/L	0.3	0.3	**0.38**	**1**	**0.58**			**0.97**	**1**	**0.73**	**3.2**	**0.6**	0.3			**1.4**	**0.7**	**7.6**	**0.86**	**0.8**	**0.83**		**21**
lead	mg/L	0.01	[0.005] c	< 0.0005	< 0.0005	< 0.0005			< 0.0005	0.0008	< 0.0005	0.0011	< 0.0005	< 0.0005			0.0011	< 0.0005	**0.0051**	< 0.0005	< 0.0005	< 0.0005		< 0.03
magnesium	mg/L	-	-	45	42	57			68	79	77	46	43	56			57	65	58	71	62	66		1400
manganese	mg/L	0.05	-	0.088	0.07	0.067			0.15	0.23	0.14	0.071	0.058	0.033			0.32	0.14	0.68	0.056	0.028	0.033		3.1
mercury	mg/L	0.001	0.0002	< 0.0015 (1)	< 0.0001	< 0.0001			< 0.0015 (1)	< 0.0015	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001			< 0.0015 (1)	**0.0003**	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001		< 0.0001
molybdenum	mg/L	-	0.04	0.008	0.005	0.007			0.014	0.004	0.004	0.006	0.004	0.003			0.022	0.009	0.002	0.003	0.003	0.003		< 0.05
nickel	mg/L	-	0.025	0.003	0.004	< 0.001			0.004	0.006	0.001	0.003	0.002	< 0.001			0.005	0.005	0.009		< 0.001	< 0.001		< 0.05
nitrate as N	mg/L	10	-	< 0.1	< 0.1	< 0.1			0.5	0.4	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1
nitrite as N	mg/L	1	-	< 0.01	< 0.01	0.02			0.02	0.03	0.05	< 0.01	0.06	0.08			< 0.01	0.03	0.02	< 0.01	< 0.01	< 0.01		< 0.01
pH	pH Units	6.5-8.5	6.5-8.5	8.2	7.8	7.81			8.5	7.8	7.7	8.5	7.7	7.8			8.2	7.8	7.88	8.2	8.2	7.88		6.62
phenol	mg/L	-	0.005	< 0.001	< 0.001	< 0.001			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001
phosphate	mg/L	-	-	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01
phosphorous	mg/L	-	-	< 0.1	< 0.1	< 0.1			< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1			0.12	< 0.1	0.45	< 0.1	< 0.1	< 0.1		< 5
total phosphorous	mg/L	-	0.01	**5.3**	**9**	**1.7**			**64**	**98**	**29**	**13**	**10**	**0.4**			**50**	**100**	**19**	**3.3**	**0.6**	**0.22**		< 1 (1)
potassium	mg/L	-	-	23	19	23			18	8.6	9.9	19	15	14			14	8.6	7.1	17	17	16		250
selenium	mg/L	0.01	0.1	< 0.002	< 0.002	< 0.002			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002			< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		**0.17**
silicon	mg/L	-	-	6.4	7.4	5.3			13	10	9.1	17	7.2	7.4			8.3	11	17	9.3	8.4	8.6		< 3
silver	mg/L	-	0.0001	< 0.0001	< 0.0001	< 0.0001			< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001			< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.005
sodium	mg/L	200 d	-	150	110	210			65	26	27	69	49	41			53	26	13	62	64	55		13000
strontium	mg/L	-	-	14	14	17			5.1	2.6	3.1	12	11	12			1.2	0.98	1.2	11	10	11		130
sulphide	mg/L	0.05	-	< 0.02	0.06	< 0.02			0.11	0.19	0.23	< 0.02	0.03	< 0.02			< 0.02	0.16	0.17	< 0.02	< 0.02	< 0.02		0.04
sulphate	mg/L	500	-	299	254	385			83	58	58	50	60	57			184	92	77	141	148	140		1390
thallium	mg/L	-	0.0003	< 0.00005	< 0.00005	< 0.00005			< 0.00005	< 0.00005	0.00005	< 0.00005	< 0.00005	< 0.00005			< 0.00005	< 0.00005	0.00006	< 0.00005	< 0.00005	< 0.00005		< 0.003
tin	mg/L	-	-	< 0.001	< 0.001	< 0.001	**Note:** Insufficent water.	**Note:** Insufficent water.	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**Note:** Insufficent water.	**Note:** Insufficent water.	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**Note:** Insufficent water.	< 0.05
titanium	mg/L	-	-	< 0.005	0.012	< 0.005			0.041	0.011	< 0.005	0.22	0.010	< 0.005			0.006	0.010	0.160	< 0.005	< 0.005	< 0.005		< 0.3
TSS	mg/L	-	-	8900	16000	3300			150000	94000	91000	25000	6500	440			98000	190000	88000	990	780	240		680
turbidity	NTU	1	-	11000	20000	3400			50000	87000	94000	9000	7500	340			44000	130000	62000	510	520	210		760
uranium	mg/L	0.1	[0.005]	0.0008	0.0003	0.0004			**0.011**	0.0044	0.0037	0.0022	0.0011	0.0008			**0.011**	0.0046	0.0042	0.0004	0.0003	0.0003		**0.024**
vanadium	mg/L	-	[0.006]	0.002	0.001	< 0.001			0.003	0.002	0.005	**0.009**	0.001	< 0.001			0.002	0.005	**0.01**	< 0.001	< 0.001	< 0.001		**0.11**
zinc	mg/L	5	[0.02]	< 0.005	< 0.005	< 0.005			< 0.005	0.007	< 0.005	0.006	< 0.005	< 0.005			0.007	< 0.005	**0.021**	< 0.005	< 0.005	< 0.005		< 0.3

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.

Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.

[ ] indicate interim PWQO concentration

a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.

b = interim PWQO if hardness greater than 20 mg/L.

c = interim PWQO if hardness greater than 80 mg/L

d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.

(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.2
Groundwater Quality in On-Site Monitoring Wells - Total Metals Analyses
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-01 shallow	MW-01 intermediate				MW-01 deep				MW-02 shallow					MW-02 intermediate				MW-02 deep		
					Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Oct-10 DUP 3	Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a		**180**		**360**	**60**	**5.9**	**5.9**	**6**	**6.2**	**540**	**750**	**85**	**22**	**25**	**240**	**30**	**57**	**3**	**2.800**	**0.920**	**12**
alkalinity	mg $CaCO_3$/L	30-500	-		-		459	-	-	-	36	-	-	-	695	700	700	-	-	141	129	-	-	51
ammonia as N	mg/L	-	-		-		-	-	-	-	-	-	-	-	-	< 0.05	0.06	-	-	-	1.5	-	-	-
antimony	mg/L	-	[0.02]		< 0.01		< 0.005	< 0.0005	< 0.05	< 0.005	< 0.01	0.005	< 0.01	**0.088**	< 0.005	< 0.0005	< 0.0005	< 0.01	< 0.005	< 0.005	< 0.0005	< 0.01	< 0.005	< 0.01
arsenic	mg/L	0.025	[0.005]		**0.093**		**0.140**	**0.028**	< 0.05	**0.014**	< 0.03	< 0.05	**0.22**	**0.24**	**0.03**	**0.01**	**0.01**	**0.13**	**0.014**	**0.03**	0.004	< 0.05	< 0.05	< 0.02
barium	mg/L	1	-		1.6		2.8	0.43	< 0.3	0.081	< 0.1	0.095	6	6.9	0.76	0.18	0.21	3.9	0.35	0.93	0.04	0.052	< 0.05	0.3
beryllium	mg/L	-	1.1		0.012		0.021	0.0031	< 0.03	< 0.005	< 0.01	< 0.005	0.038	0.064	< 0.005	0.0013	0.0013	0.017	< 0.005	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.01
bismuth	mg/L	-	-		< 0.01		< 0.01	< 0.001	< 0.05	< 0.01	< 0.03	< 0.01	< 0.01	0.15	< 0.01	0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.02
boron	mg/L	5	0.2		**0.37**		**0.6**	0.19	**5.7**	**6.1**	**5.4**	**6.4**	**0.77**	**1.6**	**0.4**	**0.3**	**0.3**	**2**	**1.9**	**1.7**	**2.3**	**5.9**	**5.8**	**6.1**
bromide	mg/L	-	-		-		< 1	-	-	-	192	-	-	-	< 1	-	-	-	-	1	-	-	-	148
cadmium	mg/L	0.005	0.0005		**0.002**		**0.004**	**0.0006**	< 0.005	0.003	< 0.003	< 0.001	**0.007**	**0.011**	< 0.001	0.0002	0.0003	**0.003**	< 0.001	< 0.001	< 0.0001	**0.002**	< 0.001	< 0.002
calcium	mg/L	-	-		1100		2700	520	3500	2600	2400	2800	4600	5800	880	340	370	2200	380	610	230	2100	1900	1900
chloride	mg/L	250	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
chromium	mg/L	0.05	-		0.36		0.6	0.11	< 0.3	< 0.05	< 0.1	< 0.5	1.2	1.3	0.2	0.04	0.04	0.54	0.054	0.110	0.006	< 0.05	< 0.05	< 0.1
cobalt	mg/L	-	0.0009		**0.16**		**0.29**	**0.052**	< 0.03	< 0.01	< 0.01	< 0.005	**0.59**	**0.69**	**0.08**	**0.02**	**0.02**	**0.26**	**0.0280**	**0.0610**	**0.0028**	< 0.01	< 0.01	**0.0100**
copper	mg/L	1	[0.005] b	**NOT SAMPLED**	**0.32**	**NOT SAMPLED**	**0.58**	**0.095**	**0.066**	**0.044**	**0.050**	**0.048**	**1.2**	**1.4**	**0.2**	**0.04**	**0.04**	**0.55**	**0.059**	**0.110**	0.004	**0.1**	**0.019**	**0.040**
fluoride	mg/L	1.5 - 2.4	-		-		-	-	-	-	-	-	-	-	-	0.2	0.2	-	-	-	0.2	-	-	-
free cyanide	mg/L	0.2	0.005		-		-	-	-	-	-	-	-	-	-	< 0.002	< 0.002	-	-	-	< 0.002	-	-	-
hardness	mg $CaCO_3$/L	80-100	-		-		-	-	-	-	-	-	-	-	-	1900	2000	-	-	-	940	-	-	-
iron	mg/L	0.3	0.3		**360**		**660**	**120**	**27**	**17**	**18**	**20**	**1300**	**1400**	**180**	**40**	**46**	**540**	**55**	**120**	**6**	**13**	**6.4**	**29.0**
lead	mg/L	0.01	[0.005] c		**0.16**		**0.29**	**0.054**	< 0.03	0.005	< 0.01	**0.009**	**0.43**	**0.55**	**0.07**	**0.02**	**0.02**	**0.2**	**0.024**	**0.050**	0.003	< 0.005	< 0.005	**0.010**
magnesium	mg/L	-	-		310		620	270	800	660	580	720	790	1300	440	360	360	360	150	180	130	490	490	480
manganese	mg/L	0.05	-		6.7		16	2.7	2.2	1.7	1.6	1.8	37	39	5	1	1	18	2	4	0.34	1.3	1.1	1.8
mercury	mg/L	0.001	0.0002		< 0.0001		0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04		0.024		0.02	0.005	< 0.05	0.011	< 0.03	0.011	**0.049**	< 0.1	< 0.01	0.004	0.004	0.038	0.013	0.01	0.01	0.014	< 0.01	< 0.02
nickel	mg/L	-	0.025		**0.37**		**0.7**	**0.11**	< 0.05	< 0.01	< 0.03	< 0.05	**1.4**	**1.5**	**0.2**	**0.042**	**0.1**	**0.6**	**0.058**	**0.130**	0.006	< 0.01	< 0.01	**0.050**
nitrate as N	mg/L	10	-		-		0.6	-	-	-	< 0.1	-	-	-	< 0.1	< 0.1	< 0.1	-	-	< 0.1	< 0.1	-	-	< 0.1
nitrite as N	mg/L	1	-		-		< 0.01	-	-	-	< 0.01	-	-	-	< 0.01	< 0.01	< 0.01	-	-	0.03	< 0.01	-	-	< 0.01
pH	pH Units	6.5-8.5	6.5-8.5		-		-	-	-	-	-	-	-	-	-	7.57	7.56	-	-	-	7.74	-	-	-
phenol	mg/L	-	-		-		-	-	-	-	-	-	-	-	-	< 0.001	< 0.001	-	-	-	< 0.001	-	-	-
phosphate	mg/L	-	-		-		< 0.01	-	-	-	< 0.01	-	-	-	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	-	-	< 0.01
total phosphorous	mg/L	-	0.01		-		-	**3**	-	-	-	**0.15**	-	-	-	**1.1**	**1.1**	-	-	-	**0.17**	-	-	-
potassium	mg/L	-	-		66		100	18	170	150	140	160	160	200	26	15	15	97	26	28	21	130	120	110
selenium	mg/L	0.01	0.1		< 0.02		< 0.02	0.006	< 0.1	< 0.02	< 0.05	< 0.1	0.022	< 0.2	< 0.02	< 0.002	< 0.002	< 0.02	< 0.02	< 0.02	< 0.002	< 0.1	< 0.1	0.060
silicon	mg/L	-	-		23		450	77	12	12	11	11	39	97	100	40	43	28	48	79	9.7	8.1	4.9	18
silver	mg/L	-	0.0001		**0.001**		**0.002**	**0.0004**	< 0.005	< 0.001	< 0.003	< 0.001	**0.003**	< 0.01	< 0.001	**0.0002**	**0.0002**	< 0.001	< 0.001	< 0.001	< 0.0001	< 0.001	< 0.001	< 0.002
sodium	mg/L	200 d	-		46		85	59	8600	7500	6900	7200	82	130	72	68	69	250	190	160	210	6600	6900	5600
strontium	mg/L	-	-		4.2		9.0	3.4	69	52	49	61	14	19	5.7	4.6	4.6	15	11	12	13	43	41	40
sulphide	mg/L	0.05	-		-		-	-	-	-	-	-	-	-	-	< 0.020	< 0.020	-	-	-	< 0.020	-	-	-
sulphate	mg/L	500	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
thallium	mg/L	-	0.0003		**0.0021**		**0.0041**	**0.00057**	< 0.003	< 0.0005	< 0.001	< 0.0005	**0.0066**	**0.014**	**0.0009**	0.0002	0.0003	**0.003**	**0.001**	**0.0007**	< 0.0001	< 0.0005	< 0.0005	< 0.001
tin	mg/L	-	-	**Note:** Well has never been sampled. Blocked since 2002.	< 0.01	**Note:** Insufficent water.	< 0.01	< 0.001	< 0.05	< 0.01	< 0.03	< 0.01	< 0.01	< 0.1	< 0.01	0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.02
titanium	mg/L	-	-		1.9		7.1	1.1	< 0.3	0.089	0.1	0.1	4	11	1.5	0.56	0.61	2.5	0.6	0.89	0.06	< 0.05	< 0.05	0.2
TSS	mg/L	-	-		-		-	-	-	-	-	-	-	-	-	1700	1600	-	-	-	360	-	-	-
turbidity	NTU	1	-		-		-	-	-	-	-	-	-	-	-	3600	3700	-	-	-	320	-	-	-
uranium	mg/L	0.1	0.005		**0.032**		**0.043**	**0.017**	< 0.005	< 0.001	< 0.003	0.001	**0.068**	**0.11**	**0.027**	**0.020**	**0.021**	**0.031**	0.004	**0.007**	0.001	< 0.001	< 0.001	< 0.002
vanadium	mg/L	-	0.006		**0.39**		**0.70**	**0.12**	< 0.05	**0.016**	< 0.03	< 0.05	**1.3**	**1.6**	**0.18**	**0.05**	**0.05**	**0.52**	**0.062**	**0.1**	0.006	< 0.05	< 0.05	**0.050**
zinc	mg/L	5	0.02		**1**		**2**	**0.31**	< 0.3	**0.068**	< 0.1	**0.076**	**3.7**	**4.1**	**0.49**	**0.12**	**0.13**	**1.8**	**0.17**	**0.37**	0.02	**0.086**	< 0.05	**0.100**

NOTES:
Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.2
Groundwater Quality in On-Site Monitoring Wells - Total Metals Analyses
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-03 shallow				MW-03 deep				MW-04 shallow				MW-04 intermediate				MW-04 deep			
				Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L	0.1	[0.075] a	**120**	**40**	**50**	**88**	**1.6**	**1.3**	**0.59**	**3.3**	**35**	**37**	**230**	**10**	**38**	**12**	**10**	**3**	**8**	**9**	**41**	**NOT SAMPLED**
alkalinity	mg $CaCO_3$/L	30-500	-	-	-	110	109	-	-	88	72	-	-	390	387	-	-	50	50	-	-	66	
ammonia as N	mg/L	-	-	-	-	-	1.2	-	-	-	7.9	-	-	-	0.05	-	-	-	6	-	-	-	
antimony	mg/L	-	[0.02]	< 0.01	< 0.005	0.003	< 0.005	< 0.01	< 0.005	< 0.005	< 0.0005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.0005	< 0.05	< 0.005	< 0.05	
arsenic	mg/L	0.025	[0.005]	**0.067**	**0.043**	**0.038**	**0.051**	< 0.05	< 0.01	< 0.01	**0.007**	**0.021**	0.02	**0.120**	< 0.010	**0.014**	< 0.01	< 0.01	0.002	< 0.05	**0.015**	< 0.1	
barium	mg/L	1	-	0.85	0.33	0.36	0.69	0.053	< 0.05	< 0.05	0.054	0.39	0.36	2.100	0.150	0.52	0.22	0.23	0.03	< 0.3	0.16	0.6	
beryllium	mg/L	-	1.1	0.008	< 0.005	0.003	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0005	0.002	< 0.005	0.016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0005	< 0.03	< 0.005	< 0.05	
bismuth	mg/L	-	-	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.001	< 0.05	< 0.01	< 0.1	
boron	mg/L	5	0.2	**1.2**	**1.3**	**1.2**	**1.6**	**5.4**	**3.5**	**4.8**	**4.8**	0.098	0.16	**0.5**	0.1	**7.2**	**6.7**	**6.4**	**7.1**	**5**	**5.9**	**6.0**	
bromide	mg/L	-	-	-	-	6	-	-	-	31	-	-	-	< 1	-	-	-	21	-	-	-	401	
cadmium	mg/L	0.005	0.0005	**0.002**	< 0.001	**0.001**	**0.002**	< 0.001	**0.002**	< 0.001	< 0.0001	**0.0009**	< 0.001	**0.0040**	< 0.0010	**0.002**	< 0.001	< 0.001	0.0001	< 0.005	**0.007**	< 0.01	
calcium	mg/L	-	-	1800	790	1100	1400	2100	630	510	970	260	310	1600	120	760	590	630	500	5900	3900	6800	
chloride	mg/L	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
chromium	mg/L	0.05	-	0.3	0.096	0.110	0.180	< 0.05	< 0.05	< 0.05	0.006	0.077	0.065	0.400	< 0.050	0.09	< 0.05	< 0.05	< 0.005	< 0.3	0.096	< 0.5	
cobalt	mg/L	-	0.0009	**0.13**	**0.045**	**0.049**	**0.083**	< 0.005	< 0.005	< 0.005	**0.0012**	**0.042**	**0.037**	**0.240**	**0.011**	**0.037**	**0.01**	**0.01**	< 0.0005	< 0.03	< 0.03	< 0.05	
copper	mg/L	1	[0.005] b	**0.34**	**0.12**	**0.14**	**0.23**	**0.033**	< 0.01	< 0.01	0.002	**0.074**	**0.066**	**0.420**	**0.019**	**0.1**	**0.034**	**0.030**	< 0.001	**0.24**	**0.13**	**0.80**	
fluoride	mg/L	1.5 - 2.4	-	-	-	0.2	0.2	-	-	0.4	0.3	-	-	0.3	0.2	-	-	0.5	0.5	-	-	0.1	
free cyanide	mg/L	0.2	0.005	-	-	-	< 0.002	-	-	-	< 0.002	-	-	-	< 0.002	-	-	-	0.002	-	-	-	
hardness	mg $CaCO_3$/L	80-100	-	-	-	-	1000	-	-	-	3300	-	-	-	450	-	-	-	1700	-	-	-	
iron	mg/L	0.3	0.3	**270**	**89**	**110**	**160**	**9.8**	**3.3**	**2.0**	**5.4**	**83**	**70**	**470**	**17**	**71**	**21**	**20**	**3**	**42**	**25**	**110**	
lead	mg/L	0.01	[0.005] c	**0.12**	**0.047**	**0.054**	**0.087**	< 0.005	< 0.005	< 0.005	0.0016	**0.046**	**0.061**	**0.280**	**0.014**	**0.03**	**0.012**	**0.014**	0.002	< 0.03	**0.013**	**0.060**	
magnesium	mg/L	-	-	290	180	210	260	550	230	180	270	84	100	290	69	180	160	170	140	1200	920	1600	
manganese	mg/L	0.05	-	14	5.4	7.8	9.5	1.1	0.38	0.26	0.51	2.2	2.4	13.0	0.7	2.5	1.1	1.0	0.3	4.2	2.30	6.50	
mercury	mg/L	0.001	0.0002	< 0.0001	< 0.0015 (1)	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	0.0001	< 0.0001	< 0.0001	< 0.0015	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	
molybdenum	mg/L	-	0.04	0.015	0.015	0.007	0.016	< 0.01	0.012	< 0.01	0.007	0.007	< 0.01	0.02	< 0.01	0.015	0.012	0.01	0.009	< 0.05	0.026	< 0.1	
nickel	mg/L	-	0.025	**0.28**	**0.087**	**0.100**	**0.160**	< 0.01	< 0.01	< 0.01	< 0.005	**0.082**	**0.077**	**0.480**	0.020	**0.081**	0.021	0.02	< 0.001	< 0.05	< 0.1	< 0.1	
nitrate as N	mg/L	10	-	-	-	0.3	< 0.1	-	-	< 0.1	< 0.1	-	-	2.5	4.2	-	-	< 0.1	0.1	-	-	< 0.1	
nitrite as N	mg/L	1	-	-	-	0.14	0.02	-	-	0.01	< 0.01	-	-	0.25	0.11	-	-	< 0.01	0.01	-	-	0.02	
pH	pH Units	6.5-8.5	6.5-8.5	-	-	-	7.76	-	-	-	7.45	-	-	8.0	7.8	-	-	-	7.5	-	-	-	
phenol	mg/L	-	-	-	-	-	< 0.001	-	-	-	< 0.001	-	-	-	< 0.001	-	-	-	0.001	-	-	-	
phosphate	mg/L	-	-	-	-	0.01	< 0.01	-	-	< 0.01	< 0.01	-	-	< 0.01	< 0.01	-	-	< 0.01	0.01	-	-	< 0.01	
total phosphorous	mg/L	-	0.01	-	-	-	**9.1**	-	-	-	< 0.1	-	-	-	< **1**	-	-	-	< 0.1	-	-	-	
potassium	mg/L	-	-	49	20	20	43	110	48	45	65	13	14	71	7.3	57	49	49	47	230	170	240	
selenium	mg/L	0.01	0.1	< 0.02	< 0.02	0.01	< 0.02	< 0.1	< 0.02	< 0.02	< 0.02	0.002	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.002	< 0.1	< 0.02	< 0.2	
silicon	mg/L	-	-	20	55	62	120	6.4	6.9	4.9	10	53	56	350	20	57	23	19	9.9	16	23	58	
silver	mg/L	-	0.0001	< 0.001	< 0.001	0.0005	< 0.001	< 0.001	**0.001**	< 0.001	**0.0002**	< 0.0003	< 0.001	**0.00100**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0001	< 0.005	< 0.001	< 0.01	
sodium	mg/L	200 d	-	250	190	160	290	5000	1700	1500	2500	23	34	49	28	930	1000	1100	1000	13000	8900	14000	
strontium	mg/L	-	-	13	12	13	15	46	17	13	23	2	2.5	6.0	1.7	16	12	14	13	120	84	130	
sulphide	mg/L	0.05	-	-	-	-	< 0.020	-	-	-	< 0.020	-	-	-	< 0.020	-	-	-	0.020	-	-	-	
sulphate	mg/L	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	
thallium	mg/L	-	0.0003	**0.0013**	< 0.0005	**0.0004**	**0.0011**	< 0.0005	< 0.0005	< 0.0005	< 0.00005	**0.00044**	< 0.0005	**0.0029**	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.00005	< 0.003	< 0.0005	< 0.005	
tin	mg/L	-	-	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.001	< 0.05	< 0.01	< 0.1	**Note:** Insufficient water
titanium	mg/L	-	-	1.8	0.9	0.86	2.6	< 0.05	< 0.05	< 0.05	0.15	0.78	0.7	5.3	0.23	0.64	0.22	0.25	0.089	< 0.3	0.36	0.6	
TSS	mg/L	-	-	-	-	-	21000	-	-	-	190	-	-	-	750	-	-	-	91	-	-	-	
turbidity	NTU	1	-	-	-	-	19000	-	-	-	100	-	-	-	4300	-	-	-	57	-	-	-	
uranium	mg/L	0.1	0.005	**0.012**	**0.007**	0.0040	**0.01**	< 0.001	0.001	< 0.001	0.0002	**0.009**	**0.012**	**0.032**	**0.010**	**0.006**	0.001	0.003	0.0007	< 0.005	0.005	< 0.01	
vanadium	mg/L	-	0.006	**0.27**	**0.1**	**0.1**	**0.2**	< 0.05	< 0.01	< 0.01	< 0.005	**0.091**	**0.089**	**0.480**	**0.019**	**0.086**	**0.04**	**0.02**	< 0.005 (1)	< 0.05	< 0.05	< 0.1	
zinc	mg/L	5	0.02	**0.96**	**0.31**	**0.35**	**0.48**	**0.99**	**0.23**	< 0.05	**0.083**	**0.24**	**0.22**	**1.40**	**0.05**	**0.26**	**0.072**	**0.100**	< 0.005	< 0.3	**0.2**	**0.6**	

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.

Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.

[ ] indicate interim PWQO concentration

a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.

b = interim PWQO if hardness greater than 20 mg/L.

c = interim PWQO if hardness greater than 80 mg/L

d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.

(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.2
Groundwater Quality in On-Site Monitoring Wells - Total Metals Analyses
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-05 shallow				MW-05 straddle			MW-05 intermediate				MW-05 deep			MW-06 shallow	MW-06 straddle			MW-06 deep	
				Jan-07	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Jan-07	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Oct-08	Dec-09	Oct-10	Oct-08	Oct-10
aluminum	mg/L	0.1	[0.075] a	NOT SAMPLED	**82**	**53**	**26**	**60**	**300**	**19**	NOT SAMPLED	**2.7**	**2**	**0.38**	NOT SAMPLED	**14**	NOT SAMPLED	NOT SAMPLED	**230**	**330**	**210**	NOT SAMPLED	NOT SAMPLED
alkalinity	mg CaCO$_3$/L	30-500	-		-	275	302	-	296	294		-	264	252		32			-	312	-		
ammonia as N	mg/L	-	-		-	-	< 0.05	-	-	0.54		-	-	2.1		-			-	0.66	-		
antimony	mg/L	-	[0.02]		< 0.005	< 0.003	0.0005	< 0.005	< 0.005	< 0.0005		< 0.001	< 0.0005	< 0.0005		**0.05**			< 0.005	< 0.005	0.01		
arsenic	mg/L	0.025	[0.005]		**0.049**	**0.032**	**0.021**	**0.045**	**0.230**	**0.023**		0.005	0.010	0.004		< 0.1			**0.069**	**0.110**	**0.051**		
barium	mg/L	1	-		1.5	1.0	0.6	0.7	3.5	0.3		0.051	0.10	0.02		< 0.5			3.2	5.5	2.3		
beryllium	mg/L	-	1.1		0.005	< 0.003	0.0016	< 0.005	0.017	0.0011		< 0.001	< 0.0005	< 0.0005		< 0.05			0.014	0.020	0.007		
bismuth	mg/L	-	-		< 0.01	< 0.005	< 0.001	< 0.01	< 0.01	< 0.001		< 0.001	< 0.001	< 0.001		< 0.1			< 0.01	< 0.01	< 0.01		
boron	mg/L	5	0.2		< 0.1	< 0.05	0.038	**1.1**	**2.1**	**1.2**		**4**	**3**	**3**		**5**			**0.52**	**0.90**	**0.49**		
bromide	mg/L	-	-		-	< 1	-	-	< 1	-		-	< 1	-		587			-	< 1	-		
cadmium	mg/L	0.005	0.0005		**0.002**	**0.002**	**0.001**	**0.002**	**0.009**	0.0004		< 0.0001	0.0001	< 0.0001		**0.010**			**0.004**	**0.005**	**0.001**		
calcium	mg/L	-	-		780	550	470	920	4600	410		80	75	100		8600			1700	2400	740		
chloride	mg/L	250	-		-	-		-	-	-		-	-	-		-			-	6	-		
chromium	mg/L	0.05	-		0.2	0.1	0.1	0.13	0.61	0.03		0.005	< 0.005	< 0.005		< 0.5			0.38	0.48	0.18		
cobalt	mg/L	-	0.0009		**0.1**	**0.1**	**0.036**	**0.063**	**0.300**	**0.020**		**0.0022**	**0.0014**	< 0.0005		< 0.05			**0.23**	**0.32**	**0.13**		
copper	mg/L	1	[0.005] b		**0.47**	**0.35**	**0.17**	**0.16**	**0.87**	**0.05**		**0.01**	**0.01**	0.001		**0.10**			**0.4**	**0.5**	**0.15**		
fluoride	mg/L	1.5 - 2.4	-		-	0.1	0.1	-	0.3	0.2		-	0.5	0.4		< 0.1			-	0.2	-		
free cyanide	mg/L	0.2	0.005		-	-	< 0.002	-	-	< 0.002		-	-	< 0.002		-			-	-	-		
hardness	mg CaCO$_3$/L	80-100	-		-	-	430	-	-	300		-	-	390		-			-	-	-		
iron	mg/L	0.3	0.3		**170**	**110**	**62**	**120**	**590**	**40**		**4.3**	**5.8**	**1.1**		**49.0**			**360**	**530**	**210**		
lead	mg/L	0.01	[0.005] c		**0.12**	**0.08**	**0.05**	**0.05**	**0.25**	**0.02**		0.003	0.0029	< 0.0005		< 0.05			**0.14**	**0.16**	**0.057**		
magnesium	mg/L	-	-		100	73	63	110	470	66		23	24	35		2000			260	350	150		
manganese	mg/L	0.05	-		14	16	7	7	37	3		0.18	0.13	0.04		5.00			16	22	7.2		
mercury	mg/L	0.001	0.0002		< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001			< 0.0015 (1)	< 0.0001	< 0.0001		
molybdenum	mg/L	-	0.04		0.012	0.006	0.004	< 0.01	0.02	0.006		0.009	0.005	0.004		< 0.1			0.016	0.02	< 0.01		
nickel	mg/L	-	0.025		0.19	0.15	**0.063 (1)**	0.12	**0.63**	**0.04**		0.004	0.003	< 0.001		< 0.1			**0.480**	**0.730**	**0.28**		
nitrate as N	mg/L	10	-		-	< 0.1	< 0.1	-	0.3	< 0.1		-	0.2	< 0.1		< 0.1			-	0.4	-		
nitrite as N	mg/L	1	-		-	0.02	< 0.01	-	0.16	0.03		-	0.22	< 0.01		< 0.01			-	0.07	-		
pH	pH Units	6.5-8.5	6.5-8.5		-	-	7.8	-	-	7.93		-	-	7.77		-			-	-	-		
phenol	mg/L	-	-		-	-	< 0.001	-	-	< 0.001		-	-	< 0.001		-			-	-	-		
phosphate	mg/L	-	-		-	< 0.01	< 0.01	-	< 0.01	< 0.01		-	< 0.01	< 0.01		< 0.01			-	< 0.01	-		
total phosphorous	mg/L	-	0.01		-	-	**2.7**	-	-	**2.8**		-	-	< 0.1		-			-	-	**6.6**		
potassium	mg/L	-	-		23	11	6.6	18	83	10		17	17	20		280			75	100	57		
selenium	mg/L	0.01	0.1		< 0.02	< 0.01	< 0.002	< 0.02	< 0.02	< 0.002		< 0.002	< 0.002	< 0.002		< 0.2			< 0.02	< 0.02	< 0.02		
silicon	mg/L	-	-		39	64	40	75	390	35		8.8	8.3	6.9		18			85	430	180		
silver	mg/L	-	0.0001		< 0.001	< 0.0005	**0.0002**	**0.001**	**0.005**	**0.0002**		< 0.0001	< 0.0001	< 0.0001		< 0.01			< 0.001	< 0.001	<0.001		
sodium	mg/L	200 d	-		6.8	6.8	6.7	25	45	24		170	110	110		17000			26	31	22		
strontium	mg/L	-	-		1.2	0.85	0.72	7.8	21	7.5		6.9	8.3	14		180			10	14	7		
sulphide	mg/L	0.05	-		-	-	< 0.020	-	-	< 0.020		-	-	< 0.020		-			-	-	-		
sulphate	mg/L	500	-		-	-	-	-	-	-		-	-	-		-			-	-	-		
thallium	mg/L	-	0.0003		**0.0013**	**0.0006**	**0.0004**	< 0.0005	**0.0033**	0.0002		< 0.00005	< 0.00005	< 0.00005		< 0.005			**0.0023**	**0.0031**	**0.0018**		
tin	mg/L	-	-		< 0.01	< 0.005	< 0.001	< 0.01	< 0.01	< 0.001		< 0.001	< 0.001	< 0.001	**Note:** Insufficient water	< 0.1	**Note:** Insufficient water	**Note:** Insufficient water	< 0.01	< 0.01	< 0.01	**Note:** Insufficient water	**Note:** Insufficient water
titanium	mg/L	-	-		1.3	0.77	0.52	0.76	5.6	0.38		0.056	0.039	0.015		< 0.5			2.3	4.7	2.1		
TSS	mg/L	-	-		-	-	4000	-	-	3600		-	-	< 10		-			-	-	-		
turbidity	NTU	1	-		-	-	24	-	-	3400		-	-	15		-			-	-	-		
uranium	mg/L	0.1	0.005		**0.007**	0.0042	0.0038	0.005	**0.020**	0.002		0.0008	0.0002	0.0001		< 0.01			**0.017**	**0.017**	**0.007**		
vanadium	mg/L	-	0.006		**0.17**	**0.10**	**0.06**	**0.12**	**0.57**	**0.04**		0.006	0.004	< 0.001		< 0.1			**0.42**	**0.57**	**0.24**		
zinc	mg/L	5	0.02		**0.66**	**0.40**	**0.19**	**0.47**	**2.10**	**0.11**		**0.03**	0.013	< 0.005		< 0.5			**1.8**	**1.7**	**0.68**		

NOTES:
Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
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d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.2
Groundwater Quality in On-Site Monitoring Wells - Total Metals Analyses
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-07 shallow			MW-07 deep			MW-08 shallow			MW-08 intermediate				MW-08 deep			MW-09 shallow		
				Oct-08	Nov-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Nov-09	Oct-10	Oct-10 DUP 1	Oct-08	Dec-09	Oct-10	Oct-08	Nov-09	Oct-10
aluminum	mg/L	0.1	[0.075] a	**610**	**1200**	**380**	**6.7**	**2.0**	**0.4**	**1900**	**1300**	**140**	**2**	**1**	**0.29**	**0.74**	**0.88**	**0.41**	**670**	**47**	**160**	**4**
alkalinity	mg CaCO$_3$/L	30-500	-	-	559	-	-	35	32	-	549	545	-	146	139	145	-	412	59	-	438	412
ammonia as N	mg/L	-	-	-	-	-	-	-	19	-	-	0.38	-	-	5.6	5	-	-	39	-	-	0.17
antimony	mg/L	-	[0.02]	< 0.05	< 0.03	< 0.005	< 0.005	< 0.01	< 0.01	< 0.05	< 0.03	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.0005	< 0.03	< 0.001	< 0.005	< 0.0005
arsenic	mg/L	0.025	[0.005]	**0.24**	**0.480**	**0.180**	< 0.01	< 0.03	**0.023**	**0.64**	**0.500**	**0.054**	< 0.01	< 0.005	< 0.005	< 0.005	**0.006**	< 0.005	**0.39**	**0.021**	**0.130**	0.004
barium	mg/L	1	-	5.3	11.0	3.8	0.094	< 0.1	< 0.1	17	13	1	< 0.05	0.018	0.015	0.016	0.018	0.016	5	0.44	2.0	0.1
beryllium	mg/L	-	1.1	< 0.05	0.06	0.019	< 0.005	< 0.01	< 0.01	**0.097**	0.08	0.008	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.0005	0.032	0.003	0.008	< 0.0005
bismuth	mg/L	-	-	< 0.1	< 0.05	< 0.01	< 0.01	< 0.03	< 0.02	< 0.1	< 0.05	< 0.01	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.01	< 0.001
boron	mg/L	5	0.2	**3.1**	**6.9**	**5.5**	**6.6**	**6.4**	**7**	**4.2**	**3.7**	**2.0**	**5.9**	**6.2**	**6.1**	**5.9**	**3.7**	**4.6**	**6.8**	**0.54**	**4.0**	**0.6**
bromide	mg/L	-	-	-	< 1	-	-	203	-	-	< 1	-	-	23	-	-	-	3	-	-	< 1	-
cadmium	mg/L	0.005	0.0005	< 0.01	**0.026**	**0.004**	< 0.001	**0.013**	< 0.002	**0.018**	**0.017**	**0.001**	< 0.001	< 0.0001	< 0.0001	< 0.0001	**0.0018**	0.0002	**0.026**	**0.0008**	**0.0050**	< 0.0001
calcium	mg/L	-	-	3600	8100	2800	2700	2900	3300	11000	8000	740	430	470	460	460	150	260	11000	280	1200	66
chloride	mg/L	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
chromium	mg/L	0.05	-	1	2	0.6	< 0.05	< 0.1	< 0.1	3.3	2.1	0.2	< 0.05	< 0.005	< 0.005	< 0.005	0.018	< 0.005	1.3	0.12	0.41	0.01
cobalt	mg/L	-	0.0009	**0.54**	**1.10**	**0.36**	**0.006**	< 0.01	< 0.01	**1.9**	**1.3**	**0.1**	< 0.005	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	**0.63**	**0.049**	**0.160**	**0.004**
copper	mg/L	1	[0.005] b	**1.1**	**2.3**	**0.74**	**0.028**	**0.060**	< 0.020	**3.6**	**2.3**	**0.2**	< 0.01	0.001	< 0.001	< 0.001	**0.037**	< 0.001	**1.1**	**0.054**	**0.170**	0.004
fluoride	mg/L	1.5 - 2.4	-	-	0.5	-	-	0.3	0.2	-	0.3	0.2	-	0.4	0.4	0.4	-	0.3	< 0.1	-	0.2	0.2
free cyanide	mg/L	0.2	0.005	-	-	-	-	-	< 0.002	-	-	< 0.002	-	-	< 0.002	< 0.002	-	-	< 0.002	-	-	< 0.002
hardness	mg CaCO$_3$/L	80-100	-	-	-	-	-	-	10000	-	-	990	-	-	2000	2000	-	-	18000	-	-	410
iron	mg/L	0.3	0.3	**1100**	**2400**	**750**	**17**	**9**	**7**	**3500**	**2500**	**240**	**3**	**2**	**1**	**2**	**2.3**	**1.3**	**1300**	**76**	**290**	**6**
lead	mg/L	0.01	[0.005] c	**0.55**	**1.10**	**0.33**	**0.009**	**0.01**	< 0.01	**1.4**	**1.00**	**0.10**	< 0.005	0.0006	< 0.0005	< 0.0005	0.003	< 0.0005	**0.33**	**0.026**	**0.090**	0.002
magnesium	mg/L	-	-	740	1400	490	740	730	810	2000	1400	270	120	140	150	150	92	120	2400	99	700	64
manganese	mg/L	0.05	-	30	67.0	22	1.6	1.5	1.6	110	82.0	6.4	0.22	0.20	0.21	0.21	0.15	0.16	31	2.4	7.1	0.2
mercury	mg/L	0.001	0.0002	**0.0017** (2)	**0.0022**	< 0.0015	< 0.0001	< 0.0001	< 0.0001	**0.0036** (1)	**0.0020**	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0015 (1)	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04	< 0.1	**0.080**	0.032	< 0.01	< 0.03	< 0.02	< 0.1	**0.070**	0.014	< 0.010	0.007	0.007	0.007	0.006	0.006	**0.14**	0.015	**0.080**	0.008
nickel	mg/L	-	0.025	**1.3**	**2.5**	**0.81**	< 0.01	< 0.03	< 0.02	**4.2**	**2.8**	**0.3**	< 0.010	< 0.005	< 0.005	< 0.005	0.019	0.003	**1.4**	**0.1**	**0.3**	0.008
nitrate as N	mg/L	10	-	-	< 0.1	-	-	< 0.1	< 0.1	-	< 0.1	< 0.1	-	< 0.1	0.1	0.1	-	< 0.1	< 0.1	-	2.1	0.4
nitrite as N	mg/L	1	-	-	0.06	-	-	< 0.01	< 0.01	-	< 0.01	0.02	-	< 0.01	0.01	< 0.01	-	0.01	0.05	-	< 0.01	0.04
pH	pH Units	6.5-8.5	6.5-8.5	-	-	-	-	-	6.97	-	-	7.69	-	-	7.55	7.59	-	-	6.76	-	-	7.87
phenol	mg/L	-	-	-	-	-	-	-	< 0.001	-	-	< 0.001	-	-	0.001	< 0.001	-	-	< 0.001	-	< -	< 0.001
phosphate	mg/L	-	-	-	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	< 0.01	-	< 0.01	0.01	0.01	-	< 0.01	< 0.01	-	< 0.01	0.01
total phosphorous	mg/L	-	0.01	-	-	**34**	-	-	< 2	-	-	**6.7**	-	-	< 0.1	< 0.1	-	-	**26**	-	-	**0.14**
potassium	mg/L	-	-	160	230	100	140	140	160	410	250	63	43	46	47	47	27	28	450	30	150	13
selenium	mg/L	0.01	0.1	< 0.2	< 0.1	< 0.02	0.021	< 0.05	0.045	< 0.2	< 0.1	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.002	< 0.01	0.1	< 0.002	< 0.02	< 0.002
silicon	mg/L	-	-	140	970	460	15	10	6.3	250	940	190	7.6	5.8	4.6	5.5	6.8	6.4	700	70	310	14
silver	mg/L	-	0.0001	< 0.01	< 0.005	**0.002**	< 0.001	< 0.003	< 0.002	< 0.01	< 0.005	< 0.001	< 0.001	**0.0003**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.005	**0.0003**	< 0.001	< 0.0001
sodium	mg/L	200 d	-	85	110	110	6600	6500	7200	140	120	93	1100	1100	1100	1100	210	540	18000	36	310	34
strontium	mg/L	-	-	14	25	11	56	60	66	53	41	14	12	12	14	14	17	13	200	8.9	48	6.6
sulphide	mg/L	0.05	-	-	-	-	-	-	< 0.020	-	-	< 0.020	-	-	< 0.020	< 0.020	-	-	0.130	-	-	< 0.02
sulphate	mg/L	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
thallium	mg/L	-	0.0003	**0.007**	**0.012**	**0.0045**	< 0.0005	< 0.001	< 0.001	**0.014**	**0.010**	**0.002**	< 0.0005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	**0.005**	**0.00038**	**0.00150**	< 0.00005
tin	mg/L	-	-	< 0.1	< 0.05	0.012	< 0.01	< 0.03	< 0.02	< 0.1	< 0.05	< 0.01	< 0.01	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.11	0.001	< 0.01	< 0.001
titanium	mg/L	-	-	4.9	14	7.2	0.12	< 0.1	< 0.1	8.8	12	2.4	0.058	0.038	0.013	0.03	0.026	0.034	7.5	0.6	2.6	0.063
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	9000	-	-	27	26	-	-	44000	-	-	180
turbidity	NTU	1	-	-	-	-	-	-	-	-	-	14000	-	-	14	22	-	-	96000	-	-	330
uranium	mg/L	0.1	0.005	**0.086**	**0.140**	**0.047**	0.002	< 0.003	< 0.002	**0.13**	**0.08**	**0.02**	< 0.001	0.0002	0.0002	0.0002	0.0029	0.0043	**0.037**	**0.0084**	**0.0420**	0.0034
vanadium	mg/L	-	0.006	**1.3**	**2.2**	**0.76**	< 0.01	< 0.03	**0.033**	**3.5**	**2.2**	**0.3**	< 0.01	< 0.005	< 0.005	< 0.005	0.002	< 0.005	**1.3**	**0.092**	**0.320**	**0.008**
zinc	mg/L	5	0.02	**3.3**	**6.1**	**2**	**0.059**	**0.100**	< 0.100	**10**	**7**	**1**	< 0.05	< 0.005	< 0.005	< 0.005	**0.069**	< 0.005	**3.9**	**0.37**	**1.30**	**0.03**

NOTES:
Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

TABLE D.2
Groundwater Quality in On-Site Monitoring Wells - Total Metals Analyses
Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-09 intermediate			MW-09 deep		MW-10 shallow			MW-10 intermediate		MW-10 deep		MW-11 shallow			MW-11 intermediate			MW-11 deep	
				Oct-08	Nov-09	Oct-10	Oct-08	Oct-10	Oct-08	Nov-09	Oct-10	Oct-08	Oct-10	Oct-08	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Dec-09	Oct-10	Oct-08	Oct-10
aluminum	mg/L	0.1	[0.075] a	**180**	**310**	**33**	NOT SAMPLED	NOT SAMPLED	**1000**	**1800**	**420**	**510**	**9.3**	NOT SAMPLED	NOT SAMPLED	**840**	**880**	**470**	**12**	**5**	**2**	NOT SAMPLED	**17**
alkalinity	mg $CaCO_3$/L	30-500	-	-	305	261			-	475	472	-	400			-	321	322	-	431	453		-
ammonia as N	mg/L	-	-	-	2.5	2.2			-	-	0.43	-	0.92			-	-	0.21	-	-	1.3		-
antimony	mg/L	-	[0.02]	< 0.005	< 0.005	< 0.0005			< 0.05	< 0.03	0.006	< 0.005	< 0.0005			< 0.05	< 0.03	< 0.005	< 0.001	0.0006	< 0.0005		< 0.03
arsenic	mg/L	0.025	[0.005]	**0.054**	**0.10**	**0.02**			**0.27**	**0.59**	**0.12**	**0.11**	**0.01**			**0.4**	**0.4**	**0.2**	**0.019**	**0.015**	**0.013**		**0.061**
barium	mg/L	1	-	2.1	4	0.48			13	26	5	6.9	0.3			18	18	9	0.14	0.085	0.057		< 0.3
beryllium	mg/L	-	1.1	0.009	0.017	0.0021			0.057	0.10	0.02	0.025	0.0007			< 0.05	0.04	0.024	0.001	< 0.0005	< 0.0005		< 0.03
bismuth	mg/L	-	-	< 0.01	< 0.01	< 0.001			< 0.1	< 0.05	< 0.01	< 0.01	< 0.001			< 0.1	< 0.05	< 0.01	< 0.001	< 0.001	0.003		< 0.05
boron	mg/L	5	0.2	**3.7**	**5.2**	**3.6**			**1.4**	**3.1**	**0.8**	**4.3**	**1.0**			**1.5**	**1.3**	**0.8**	**1.4**	**1.6**	**1.3**		**4.8**
bromide	mg/L	-	-	-	1	-			-	< 1	-	-	-			-	< 1	-	-	< 1	-		-
cadmium	mg/L	0.005	0.0005	**0.002**	**0.003**	0.0003			< 0.01	**0.0190**	**0.003**	**0.005**	0.0001			< 0.0100	**0.0100**	**0.006**	0.0002	< 0.0001	< 0.0001		**0.013**
calcium	mg/L	-	-	1300	2200	390			7800	17000	2900	2800	120			7600	7800	3900	210	140	99		6700
chloride	mg/L	250	-	-	115	-			-	-		-	-			-	-	-	-	-	-		-
chromium	mg/L	0.05	-	0.36	0.52	0.06			2	4	1	0.79	0.01			3.4	2.9	1.4	0.025	0.012	0.006		< 0.3
cobalt	mg/L	-	0.0009	**0.16**	**0.26**	**0.03**			**1.1**	**2.0**	**0.4**	**0.51**	**0.01**			**0.88**	**0.85**	**0.42**	**0.012**	**0.007**	**0.002**		< 0.030
copper	mg/L	1	[0.005] b	**0.15**	**0.20**	**0.02**			**1.4**	**2.5**	**0.6**	**0.43**	**0.01**			**2.3**	**2.3**	**1.1**	**0.022**	**0.011**	0.005		**0.096**
fluoride	mg/L	1.5 - 2.4	-	-	0.5	0.3			-	0.3	0.2	-	0.2			-	0.3	0.2	-	0.3	0.3		0.1
free cyanide	mg/L	0.2	0.005	-	< 0.002	< 0.002			-	-	< 0.002	-	< 0.002			-	-	< 0.002	-	-	< 0.002		< 0.002
hardness	mg $CaCO_3$/L	80-100	-	-	-	600			-	-	480	-	370			-	-	550	-	-	450		-
iron	mg/L	0.3	0.3	**260**	**410**	**45**			**1700**	**3200**	**660**	**780**	**15**			**1700**	**1600**	**840**	**20**	**11**	**5**		**67**
lead	mg/L	0.01	[0.005] c	**0.1**	**0.2**	**0.02**			**0.65**	**1**	**0.21**	**0.21**	0.0046			**0.68**	**0.66**	**0.35**	**0.008**	0.0046	0.0017		< 0.03
magnesium	mg/L	-	-	190	300	82			1200	2300	490	480	66			960	960	480	87	70	72		1500
manganese	mg/L	0.05	-	10	18.0	2.4			71	150	28	27	1			79	82	42	1.3	0.6	0.2		4.2
mercury	mg/L	0.001	0.0002	< 0.0015 (1)	< 0.0001	< 0.0001			< 0.0015 (1)	< 0.0015	< 0.0001	< 0.0015 (1)	< 0.0001			< 0.0015 (1)	**0.0003**	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001		< 0.0001
molybdenum	mg/L	-	0.04	0.035	**0.050**	**0.011**			< 0.1	< 0.05	0.02	0.023	0.004			< 0.1	< 0.05	0.029	0.004	0.004	0.004		< 0.05
nickel	mg/L	-	0.025	**0.36**	**0.6**	**0.071 (1)**			**2.2**	**4.1**	**0.9**	**1**	0.019			**1.8**	**1.8**	**0.9**	0.023	0.012	0.005		< 0.05
nitrate as N	mg/L	10	-	-	< 0.1	< <0.1			-	0.4	< 0.1	-	< 0.1			-	< 0.1	< 0.1	-	< 0.1	< 0.1		-
nitrite as N	mg/L	1	-	-	< 0.01	0.02			-	0.03	0.05	-	0.08			-	0.03	0.02	-	< 0.01	< 0.01		-
pH	pH Units	6.5-8.5	6.5-8.5	-	7.8	7.81			-	-	7.7	-	7.8			-	-	7.88	-	-	7.88		-
phenol	mg/L	-	-	-	< 0.001	< 0.001			-	-	< 0.001	-	< 0.001			-	-	< 0.001	-	-	< 0.001		< 0.001
phosphate	mg/L	-	-	-	< 0.01	< 0.01			-	< 0.01	< 0.01	-	< 0.01			-	< 0.01	< 0.01	-	< 0.01	< 0.01		< 0.01
total phosphorous	mg/L	-	0.01	-	-	**1.8**			-	-	**26**	-	**0.56**			-	-	**28**	-	-	**0.19**		< 5
potassium	mg/L	-	-	88	130	30			270	360	120	150	15			220	190	110	21	18	18		260
selenium	mg/L	0.01	0.1	< 0.02	< 0.02	< 0.002			< 0.2	< 0.1	< 0.02	< 0.02	< 0.002			< 0.2	< 0.1	< 0.02	< 0.002	< 0.002	< 0.002		< 0.1
silicon	mg/L	-	-	77	420	51			190	1100	440	130	22			86	790	550	27	17	12		25
silver	mg/L	-	0.0001	**0.003**	**0.002**	**0.0002**			< 0.01	**0.005**	**0.002**	**0.001**	< 0.0001			< 0.01	< 0.005	0.003	< 0.0001	< 0.0001	< 0.0001		< 0.005
sodium	mg/L	200 d	-	170	200	190			74	67	29	85	35			60	54	22	64	64	60		14000
strontium	mg/L	-	-	22	34	18			24	40	8.9	27	12			16	16	8.5	12	11	12		130
sulphide	mg/L	0.05	-	-	-	< <0.02			-	-	0.230	-	<0.02			-	-	0.170	-	-	< 0.020		0.040
sulphate	mg/L	500	-	-	-	-			-	-	-	-	-			-	-	-	-	-	-		-
thallium	mg/L	-	0.0003	**0.0019**	**0.0026**	0.0003			**0.007**	**0.012**	**0.004**	**0.004**	0.00009			**0.009**	**0.007**	**0.004**	0.00009	0.00007	< 0.00005		< 0.003
tin	mg/L	-	-	< 0.01	< 0.01	< 0.001	**Note:** Insufficent water.	**Note:** Insufficent water.	< 0.1	< 0.05	< 0.01	< 0.01	< 0.001	**Note:** Insufficent water.	**Note:** Insufficent water.	< 0.100	< 0.05	< 0.01	< 0.001	< 0.001	0.001	**Note:** Insufficent water.	< 0.05
titanium	mg/L	-	-	1.7	4.0	0.4			5.3	12	6.1	3.5	0.14			4.8	7.9	5.9	0.2	0.097	0.038		< 0.3
TSS	mg/L	-	-	-	16000	3300			-	-	91000	-	440			-	-	88000	-	-	240		-
turbidity	NTU	1	-	-	-	3400			-	-	94000	-	340			-	-	62000	-	-	210		-
uranium	mg/L	0.1	0.005	**0.01**	**0.02**	0.0023			**0.09**	**0.13**	**0.03**	**0.03**	0.0011			**0.093**	**0.066**	**0.04**	0.0017	0.0009	0.0008		**0.011**
vanadium	mg/L	-	0.006	**0.32**	**0.52**	**0.06**			**1.80**	**2.70**	**0.77**	**0.83**	**0.02**			**1.6**	**1.6**	**0.9**	**0.025**	**0.011**	0.005		**0.140**
zinc	mg/L	5	0.02	**1.1**	**1.3**	**0.1**			**5.5**	**9.6**	**2.0**	**2.5**	**0.045**			**4.5**	**4.4**	**2.1**	**0.06**	**0.03**	0.02		**0.79**

NOTES:

Shaded area indicates an exceedance of the MOE Ontario Drinking Water Standard (June 2006) for that specific parameter.
Bolded areas indicate an exceedance of the MOE Provincial Water Quality Objectives (July 1994) for that specific parameter.
[ ] indicate interim PWQO concentration
a = interim PWQO at pH > 6.5 to 9.0 measured in clay-free samples.
b = interim PWQO if hardness greater than 20 mg/L.
c = interim PWQO if hardness greater than 80 mg/L
d = Local Medical Office of Health should be notified when sodium concentrations exceed 20 mg/L so that this information may be communciated to local physicians for their use with patients on sodium reduced diets.
(1) Sample bottle contained visible sediment. Results may be biased high due to analyte present in sediment.

Table D.3
Groundwater Quality - Bekkers Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				BEKKERS			
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Jul-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	0.038	0.01	0.012	0.015
alkalinity	mg $CaCO_3$/L				30-500	362	435	77	295
ammonia-N	mg/L					0.31	<0.05	1.0	0.84
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.0005
arsenic	mg/L		0.025			<0.001	<0.001	<0.001	<0.001
barium	mg/L	1				0.037	0.022	0.010	0.015
beryllium	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			0.69	0.46	1.8	1.5
bromide	mg/L					<1	<1	3	1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					140	130	190	190
chloride	mg/L			250		104	49	**264**	118
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.069	0.014	0.006	0.005
fluoride	mg/L	1.5 [a]				0.2	0.2	0.2	0.2
free cyanide	mg/L					<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**760**	**890**	**740**	**810**
iron	mg/L			0.3		<0.05	<0.1	<0.1	<0.1
lead	mg/L	0.01 [c]				0.0063	<0.0005	0.0010	0.0014
magnesium	mg/L					130	140	79	96
manganese	mg/L			0.05		0.043	0.011	**0.15**	**0.1**
mercury	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.007	0.007	0.018	0.016
nickel	mg/L					<0.001	<0.001	<0.001	<0.001
nitrate as N	mg/L	10.0 [b]				3	2.9	<0.1	2.4
nitrite as N	mg/L	1.0 [b]				0.11	<0.01	<0.01	0.06
pH	pH Units				6.5-8.5	8.1	8.2	7.8	7.91
phenol	mg/L					<0.001	<0.001	0.001	<0.001
phosphate	mg/L					<0.01	<0.01	<0.01	<0.01
total phosphorous	mg/L					0.005	0.01	<0.002	<0.002
potassium	mg/L					13	9.6	17	17
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002
silicon	mg/L					6	6.4	4.3	4.5
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		120	83	**260**	**260**
strontium	mg/L					6.1	5	12	12
sulphate	mg/L			500 [d]		**563**	**543**	**838**	**617**
sulphide	mg/L					<0.02	<0.02	<0.02	<0.02
thallium	mg/L					<0.05	<0.00005	<0.00005	<0.00005
tin	mg/L					0.001	<0.001	<0.001	<0.001
titanium	mg/L					<0.005	<0.005	<0.005	<0.005
TSS	mg/L					<10	<10	<10	<10
turbidity	NTU			5 [e]		1.4	0.3	0.6	0.3
uranium	mg/L					0.0057	0.0074	0.0004	0.0017
vanadium	mg/L					<0.001	<0.001	<0.001	<0.001
zinc	mg/L			5		0.04	0.032	<0.03	0.017

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.4
Groundwater Quality - Eno/Myers Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				ENO/MEYERS				
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	**0.12**	0.036	NOT SAMPLED **Note:** Well not in use.	NOT SAMPLED **Note:** Well not in use.	NOT SAMPLED **Note:** Well not in use.
alkalinity	mg $CaCO_3$/L				30-500	360	372			
ammonia-N	mg/L					0.47	0.14			
antimony	mg/L		0.006			<0.002	<0.001			
arsenic	mg/L		0.025			<0.002	<0.001			
barium	mg/L	1				0.040	0.039			
beryllium	mg/L					<0.001	<0.0005			
bismuth	mg/L					<0.002	<0.001			
boron	mg/L		5			0.085	0.048			
bromide	mg/L					<0.1	<1			
cadmium	mg/L	0.005				<0.00007	0.0003			
calcium	mg/L					170	110			
chloride	mg/L			250		71	30			
chromium	mg/L	0.05				<0.002	<0.005			
cobalt	mg/L					0.0009	<0.0005			
copper	mg/L			1		0.037	0.002			
fluoride	mg/L	1.5 [a]				0.31	0.4			
free cyanide	mg/L					<0.002	<0.002			
hardness	mg $CaCO_3$/L				80-100	**730**	**390**			
iron	mg/L			0.3		0.065	0.072			
lead	mg/L	0.01 [c]				0.0011	<0.0005			
magnesium	mg/L					75	34			
manganese	mg/L			0.05		0.014	0.004			
mercury	mg/L					<0.00005	<0.0001			
molybdenum	mg/L					<0.002	<0.001			
nickel	mg/L					<0.002	<0.001			
nitrate as N	mg/L	10.0 [b]				9.4	0.7			
nitrite as N	mg/L	1.0 [b]				<0.01	0.02			
pH	pH Units				6.5-8.5	7.72	8.1			
phenol	mg/L					<0.001	<0.001			
phosphate	mg/L					<0.5	<0.01			
phosphorous	mg/L					0.06	-			
total phosphorous	mg/L					<0.01	<0.002			
potassium	mg/L					4.1	3			
selenium	mg/L	0.01				<0.002	<0.002			
silicon	mg/L					5.6	3.9			
silver	mg/L					<0.0001	<0.0001			
sodium	mg/L			20/200 [f]		39	23			
strontium	mg/L					1.8	0.76			
sulphide	mg/L					77	<0.02			
sulphate	mg/L			500 [d]		230	80			
thallium	mg/L					<0.0002	<0.00005			
tin	mg/L					<0.002	<0.001			
titanium	mg/L					<0.01	<0.005			
TSS	mg/L					2	2			
turbidity	NTU			5 [e]		<0.1	1.6			
uranium	mg/L					0.0042	0.0024			
vanadium	mg/L					<0.002	<0.001			
zinc	mg/L			5		0.4	0.014			

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.5
Groundwater Quality - Featherstone Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				FEATHERSTONE						
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Mar-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	0.007	<0.01	0.029	0.005	NOT SAMPLED **Note:** Cistern installed. Well not in use.	NOT SAMPLED **Note:** Cistern installed. Well not in use.
alkalinity	mg $CaCO_3$/L				30-500	255	98	260	378	253		
ammonia-N	mg/L					1.22	0.3	1.2	0.38	1.2		
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.001	<0.0005		
arsenic	mg/L		0.025			<0.002	<0.002	<0.002	<0.001	<0.001		
barium	mg/L	1				0.017	0.008	0.02	0.019	0.015		
beryllium	mg/L					<0.001	<0.001	<0.001	<0.0005	<0.0005		
bismuth	mg/L					<0.001	<0.001	-	<0.001	<0.001		
boron	mg/L		5			1.28	0.397	1.400	0.54	1.4		
bromide	mg/L					0.5	0.5	0.6	<1	<1		
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
calcium	mg/L					135	45.4	110	150	110		
chloride	mg/L			250		53.2	12.1	49	17	32		
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005	<0.005		
cobalt	mg/L					<0.0001	<0.0001	<0.0001	<0.0005	<0.0005		
copper	mg/L			1		0.0008	0.0138	<0.002	0.023	0.012		
fluoride	mg/L	1.5 [a]				0.2	0.1	0.2	0.2	0.2		
free cyanide	mg/L					<0.001	<0.001	<0.001	<0.002	<0.002		
hardness	mg $CaCO_3$/L				80-100	**724**	**197**	**570**	**480**	**600**		
iron	mg/L			0.3		**0.81**	0.12	**0.41**	0.24	**0.35**		
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	0.0027	0.0043		
magnesium	mg/L					93.7	20.4	73	41	79		
manganese	mg/L			0.05		**0.06**	0.02	0.046	0.026	**0.051**		
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.0001	<0.0001		
molybdenum	mg/L					0.004	0.002	-	0.002	0.003		
nickel	mg/L					<0.001	<0.001	0.001	<0.001	<0.001		
nitrate as N	mg/L	10.0 [b]				<0.2	<0.2	<0.05	0.2	1.6		
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.01	0.01	0.02		
pH	pH Units				6.5-8.5	7.71	7.46	8.19	8.1	8.1		
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001		
phosphate	mg/L					<1	<1	<0.5	<0.01	<0.01		
phosphorous	mg/L					<0.05	-	-	-			
total phosphorous	mg/L					0.005	0.033	<0.01	<0.002	0.011		
potassium	mg/L					13.5	4.5	11	5.9	12		
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002	<0.002		
silicon	mg/L					6.04	2.18	-	4.8	5.7		
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
sodium	mg/L			20/200 [f]		127	24.7	99.0	45	110		
strontium	mg/L					11.7	2.940	-	5.4	11		
sulphide	mg/L					0.04	<0.01	0.50	<0.02	0.74		
sulphate	mg/L			500 [d]		**601**	137	**560**	210	**559**		
thallium	mg/L					0.00006	<0.00005	<0.00005	<0.00005	<0.00005		
tin	mg/L					<0.001	<0.001	-	<0.001	0.001		
titanium	mg/L					<0.005	<0.005	-	<0.005	<0.005		
TSS	mg/L					3	5	<2	<3	<10		
turbidity	NTU			5 [e]		2.1	3.6	2.0	2	4.1		
uranium	mg/L					<0.0001	<0.0001	<0.0001	0.0005	<0.0001		
vanadium	mg/L					0.0016	0.0009	<0.002	<0.001	<0.001		
zinc	mg/L			5		0.006	0.012	0.007	0.024	0.025		

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.6
Groundwater Quality - Finucci Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				FINUCCI							
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Duplicate Nov-02	Mar-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	<0.005	<0.005	0.012	0.005	0.006	0.010	<0.005
alkalinity	mg $CaCO_3$/L				30-500	391	394	389	400	402	417	404	405
ammonia-N	mg/L					0.50	0.50	0.92	1.30	0.76	0.28	1.3	1.2
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.0012	<0.0005	<0.0005
arsenic	mg/L		0.025			<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
barium	mg/L	1				0.014	0.014	0.013	0.013	0.014	0.014	0.014	0.014
beryllium	mg/L					<0.001	<0.001	<0.001	-	<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			2.84	2.82	2.96	3.10	3.7	2.9	3.0	3.0
bromide	mg/L					<0.5	<0.5	<0.5	0.2	<1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					111.0	97.2	107	89	100	92	89	98
chloride	mg/L			250		33.3	34.4	37.3	22	23	18	18	20
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					<0.0001	<0.0001	<0.0001	0.0007	<0.0005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.0064	0.0066	0.0035	0.011	0.027	0.022	0.016	0.01
fluoride	mg/L	1.5 [a]				0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3
free cyanide	mg/L					<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**627**	**553**	**597**	**510**	**490**	**510**	**520**	**520**
iron	mg/L			0.3		<0.03	<0.03	<0.03	0.03	**0.34**	<0.1	0.2	<0.1
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	<0.0005	0.005	0.0022	0.0016	0.0013
magnesium	mg/L					84.7	75.3	79.7	70	82	75	71	77
manganese	mg/L			0.05		0.008	0.008	0.015	0.015	0.011	0.011	0.017	0.013
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.003	0.003	0.003	-	0.003	0.003	0.003	0.003
nickel	mg/L					0.002	0.002	0.001	0.001	<0.001	0.001	0.001	<0.001
nitrate as N	mg/L	10.0 [b]				1.3	1.3	1.2	0.7	1.2	1.2	0.7	0.7
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.2	0.2	0.02	<0.01	<0.01	<0.01
pH	pH Units				6.5-8.5	7.93	7.98	7.81	8.22	8.2	8.1	8.0	8.0
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					<1	<1	<1	<0.5	0.01	<0.01	<0.01	<0.01
phosphorous	mg/L					<0.05	<0.05	-	-	-	-		<0.02
total phosphorous	mg/L					<0.002	<0.002	0.007	<0.01	0.002	0.006	<0.002	<0.1
potassium	mg/L					29.6	26.5	25.5	23	27	25	23	27
selenium	mg/L	0.01				<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
silicon	mg/L					5.55	4.99	5.12	-	5.8	5.8	5.6	5.9
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		140	130	134	110	140	110	97	110
strontium	mg/L					14.3	14.1	13	-	15	15	14	16
sulphide	mg/L					<0.01	-	<0.01	0.02	<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		437	446	440	-	392	351	338	354
thallium	mg/L					0.00006	0.00008	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
tin	mg/L					<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
titanium	mg/L					<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005
TSS	mg/L					2	2	2	2	<1	<10	<10	<10
turbidity	NTU			5 [e]		0.2	0.2	1.1	0.5	3.5	0.3	2.0	1.3
uranium	mg/L					0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0002
vanadium	mg/L					0.0023	0.0045	0.0026	<0.002	<0.001	<0.001	<0.001	<0.001
zinc	mg/L			5		0.066	0.066	0.013	0.069	0.067	0.16	0.083	0.034

NOTES:

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Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.7
Groundwater Quality - Hendervale House Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				HENDERVALE HOUSE							
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Mar-03	Duplicate Mar-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	<0.005	<0.005	<0.01	<0.005	0.007	0.007	0.018
alkalinity	mg $CaCO_3$/L				30-500	356	357	362	360	380	353	360	356
ammonia-N	mg/L					0.43	0.5	0.5	0.47	0.63	0.54	0.54	0.36
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.002	<0.001	<0.0005	<0.0005	<0.0005
arsenic	mg/L		0.025			0.013	0.013	0.013	0.013	0.01	0.007	0.013	0.008
barium	mg/L	1				0.028	0.024	0.023	0.024	0.021	0.019	0.025	0.025
beryllium	mg/L					<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			0.51	0.707	0.705	0.550	0.79	0.82	0.75	0.7
bromide	mg/L					<0.5	<0.5	<0.5	<0.1	<1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.00007	<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					91.3	82.8	81.4	72	93	80	85	94
chloride	mg/L			250		97.8	63.5	64.4	88	66	69	83	113
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					0.0001	0.0002	0.0002	<0.005	<0.0005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.0045	0.0014	0.0015	0.002	0.019	0.025	0.018	0.03
fluoride	mg/L	1.5 [a]				0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
free cyanide	mg/L					<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**613**	**552**	**549**	**470**	**580**	**500**	**550**	**570**
iron	mg/L			0.3		**1.81**	**1.39**	**1.35**	**0.74**	**0.6**	**0.53**	**1.3**	**0.44**
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
magnesium	mg/L					93.4	84	84.1	69	90	77	84	90
manganese	mg/L			0.05		**0.052**	0.046	0.045	0.029	0.032	0.036	0.042	0.034
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.004	0.005	0.005	<0.005	0.005	0.005	0.005	0.004
nickel	mg/L					<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
nitrate as N	mg/L	10.0 [b]				<0.2	<0.2	<0.2	0.1	<0.1	<0.1	<0.1	0.2
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.2	0.01	<0.01	<0.01	0.02	<0.01
pH	pH Units				6.5-8.5	7.74	7.61	7.57	7.67	8.1	8.2	8.0	7.97
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					<1	<1	<1	<0.5	<0.01	<0.01	<0.01	<0.01
phosphorous	mg/L					<0.05	-	-	-	-	-		
total phosphorous	mg/L					0.003	0.007	0.007	<0.01	<0.002	0.017	<0.002	<0.1
potassium	mg/L					9.1	9.2	9.2	7.5	10	9.9	9.4	10
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
silicon	mg/L					9.92	9.12	9	-	10	8.7	9.2	9.8
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		54.9	58.4	58.1	45.0	69	68	64	70
strontium	mg/L					4.37	4.55	4.59	4.60	5.1	5.3	5.6	6.3
sulphide	mg/L					0.01	0.01		<0.02	<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		187	213	215	190	210	229	197	197
thallium	mg/L					0.00007	<0.00005	0.00005	-	<0.00005	<0.00005	<0.00005	<0.00005
tin	mg/L					<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001	<0.001
titanium	mg/L					<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005
TSS	mg/L					4	10	9	2	<1	<10	<10	<10
turbidity	NTU			5 [e]		2.2	**9.7**	**9.7**	**12**	3.5	2	**8**	3.6
uranium	mg/L					0.0015	0.0011	0.0011	0.0012	0.0011	0.0009	0.0012	0.0011
vanadium	mg/L					0.002	0.0025	0.0017	<0.002	<0.001	<0.001	<0.001	<0.001
zinc	mg/L			5		0.007	0.01	0.01	0.007	0.026	0.009	0.006	0.016

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets

"-" Parameter not analysed

Table D.8
Groundwater Quality - Hendervale Cottage Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				HENDERVALE COTTAGE			
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	0.007	0.005	0.006	0.007
alkalinity	mg CaCO$_3$/L				30-500	385	361	356	360
ammonia-N	mg/L					0.5	0.39	0.42	0.36
antimony	mg/L		0.006			<0.001	<0.0005	<0.0005	<0.0005
arsenic	mg/L		0.025			0.016	0.014	0.014	0.01
barium	mg/L	1				0.032	0.037	0.029	0.03
beryllium	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			0.52	0.44	0.48	0.4
bromide	mg/L					<1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					100.0	92	90	100
chloride	mg/L			250		97	83	131	135
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.001	0.003	0.006	<0.001
fluoride	mg/L	1.5 [a]				0.2	0.2	0.2	0.2
free cyanide	mg/L					<0.002	<0.002	<0.002	<0.002
hardness	mg CaCO$_3$/L				80-100	**610**	**510**	**580**	**560**
iron	mg/L			0.3		**1.4**	**1.1**	**1.3**	**1.1**
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	<0.0005
magnesium	mg/L					85	68	78	86
manganese	mg/L			0.05		0.028	0.032	0.029	0.032
mercury	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.003	0.002	0.002	0.002
nickel	mg/L					<0.001	<0.001	<0.001	<0.001
nitrate as N	mg/L	10.0 [b]				<0.1	<0.1	<0.1	<0.1
nitrite as N	mg/L	1.0 [b]				<0.01	<0.01	<0.01	<0.01
pH	pH Units				6.5-8.5	8.1	8.1	7.9	7.8
phenol	mg/L					<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					<0.01	<0.01	<0.01	0.01
phosphorous	mg/L					-	-		
total phosphorous	mg/L					<0.002	0.014	<0.002	<0.1
potassium	mg/L					8.4	7.9	7.4	8
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002
silicon	mg/L					11	10	9.6	11
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		54.0	45	46	52
strontium	mg/L					4.20	4.3	4.3	4.6
sulphide	mg/L					<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		141	104	144	133
thallium	mg/L					<0.00005	<0.00005	<0.00005	<0.00005
tin	mg/L					<0.001	<0.001	<0.001	<0.001
titanium	mg/L					<0.005	<0.005	<0.005	<0.005
TSS	mg/L					<3	<10	<10	10
turbidity	NTU			5 [e]		**12.7**	**8.5**	**17**	**8.5**
uranium	mg/L					0.0011	0.0009	0.0013	0.0012
vanadium	mg/L					<0.001	<0.001	<0.001	<0.001
zinc	mg/L			5		0.008	0.006	0.007	0.009

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

"-" Parameter not analysed

Table D.9
Groundwater Quality - Hendervale Main Barn Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				HENDERVALE MAIN BARN			
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	**0.48**	0.035	**4.4**	0.07
alkalinity	mg $CaCO_3$/L				30-500	170	175	220	238
ammonia-N	mg/L					0.21	<0.05	0.31	0.18
antimony	mg/L		0.006			<0.001	<0.0005	<0.0005	<0.0005
arsenic	mg/L		0.025			<0.001	0.004	0.004	0.005
barium	mg/L	1				0.21	0.02	0.047	0.027
beryllium	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			0.094	0.094	0.14	0.17
bromide	mg/L					<1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					55	46	58	67
chloride	mg/L			250		8	6	14	12
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	0.0014	<0.0005
copper	mg/L			1		0.081	0.002	0.007	0.002
fluoride	mg/L	1.5 [a]				<0.1	<0.1	0.1	0.1
free cyanide	mg/L					<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**220**	**200**	**260**	**280**
iron	mg/L			0.3		0.29	**0.34**	**3.6**	**0.47**
lead	mg/L	0.01 [c]				<0.0005	<0.0005	0.0053	0.0022
magnesium	mg/L					19	20	28	34
manganese	mg/L			0.05		0.005	0.038	**0.1**	**0.074**
mercury	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					<0.001	<0.001	<0.001	<0.001
nickel	mg/L					<0.001	<0.001	0.004	<0.001
nitrate as N	mg/L	10.0 [b]				2.5	0.9	0.9	0.6
nitrite as N	mg/L	1.0 [b]				0.01	<0.01	0.04	0.03
pH	pH Units				6.5-8.5	8.1	8	7.9	7.78
phenol	mg/L					<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					0.01	<0.01	0.16	0.03
phosphorous	mg/L					-	-		
total phosphorous	mg/L					0.014	0.048	0.34	0.14
potassium	mg/L					2.8	2.7	11	6
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002
silicon	mg/L					4.60	4.5	15	7.3
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		9.4	8.5	12	13
strontium	mg/L					0.58	0.84	1.1	1.4
sulphide	mg/L					<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		34	29	45	53
thallium	mg/L					<0.00005	<0.00005	0.00006	<0.00005
tin	mg/L					<0.001	<0.001	<0.001	<0.001
titanium	mg/L					0.019	<0.005	0.18	<0.005
TSS	mg/L					1	<10	46	10
turbidity	NTU			5 [e]		**9.2**	2.4	**94**	**130**
uranium	mg/L					0.0006	0.0004	0.0007	0.0004
vanadium	mg/L					<0.001	<0.001	0.009	<0.001
zinc	mg/L			5		0.170	0.14	0.20	0.07

NOTES:

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Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

"-" Parameter not analysed

Table D.10
Groundwater Quality - Hendervale ABC Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				HENDERVALE ABC
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Oct-10
aluminum	mg/L				0.1	0.083
alkalinity	mg $CaCO_3$/L				30-500	54
ammonia-N	mg/L					<0.05
antimony	mg/L		0.006			<0.0005
arsenic	mg/L		0.025			<0.001
barium	mg/L	1				0.014
beryllium	mg/L					<0.0005
bismuth	mg/L					<0.001
boron	mg/L		5			0.03
bromide	mg/L					<1
cadmium	mg/L	0.005				0.0001
calcium	mg/L					19
chloride	mg/L			250		2
chromium	mg/L	0.05				<0.005
cobalt	mg/L					<0.0005
copper	mg/L			1		0.003
fluoride	mg/L	1.5 [a]				<0.1
free cyanide	mg/L					<0.002
hardness	mg $CaCO_3$/L				80-100	**57**
iron	mg/L			0.3		<0.1
lead	mg/L	0.01 [c]				<0.0005
magnesium	mg/L					3.5
manganese	mg/L			0.05		0.006
mercury	mg/L					<0.0001
molybdenum	mg/L					<0.001
nickel	mg/L					<0.001
nitrate as N	mg/L	10.0 [b]				0.8
nitrite as N	mg/L	1.0 [b]				<0.01
pH	pH Units				6.5-8.5	7.64
phenol	mg/L					<0.001
phosphate	mg/L					0.01
phosphorous	mg/L					-
total phosphorous	mg/L					0.018
potassium	mg/L					1.7
selenium	mg/L	0.01				<0.002
silicon	mg/L					0.96
silver	mg/L					<0.0001
sodium	mg/L			20/200 [f]		3.3
strontium	mg/L					0.17
sulphide	mg/L					<0.02
sulphate	mg/L			500 [d]		6
thallium	mg/L					0.00005
tin	mg/L					<0.001
titanium	mg/L					<0.005
TSS	mg/L					<10
turbidity	NTU			5 [e]		1.6
uranium	mg/L					0.0001
vanadium	mg/L					0.001
zinc	mg/L			5		0.011

NOTES:

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[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

"-" Parameter not analysed

Table D.11
Groundwater Quality - Robinson Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				ROBINSON					
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Jun-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	0.013	0.044	**NOT SAMPLED**	**NOT SAMPLED**	**NOT SAMPLED**
alkalinity	mg $CaCO_3$/L				30-500	461	430	272			
ammonia-N	mg/L					0.24	0.09	0.16			
antimony	mg/L		0.006			<0.0005	<0.002	<0.001			
arsenic	mg/L		0.025			<0.002	<0.002	<0.001			
barium	mg/L	1				0.158	0.053	0.052			
beryllium	mg/L					<0.001	<0.001	<0.005			
bismuth	mg/L					<0.001	-	<0.001			
boron	mg/L		5			0.254	0.39	0.039			
bromide	mg/L					<0.5	<0.2	<1			
cadmium	mg/L	0.005				0.0001	0.00007	<0.0001			
calcium	mg/L					190.0	96	97			
chloride	mg/L			250		49.2	33	25			
chromium	mg/L	0.05				<0.005	<0.002	<0.005			
cobalt	mg/L					0.0011	<0.0005	<0.005			
copper	mg/L			1		0.0102	<0.003	0.27			
fluoride	mg/L	1.5 [a]				0.2	0.29	0.3			
free cyanide	mg/L					<0.001	<0.002	<0.002			
hardness	mg $CaCO_3$/L				80-100	**1249**	**550**	**320**			
iron	mg/L			0.3		**0.50**	<0.02	0.15			
lead	mg/L	0.01 [c]				<0.0005	<0.0005	0.0007			
magnesium	mg/L					187.00	76	32			
manganese	mg/L			0.05		**0.771**	**0.58**	0.033			
mercury	mg/L					<0.00005	<0.00005	<0.0001			
molybdenum	mg/L					0.002	<0.005	<0.001			
nickel	mg/L					0.003	<0.002	0.004			
nitrate as N	mg/L	10.0 [b]				<0.2	0.31	0.5			
nitrite as N	mg/L	1.0 [b]				<0.2	0.14	<0.01			
pH	pH Units				6.5-8.5	7.48	7.76	8			
phenol	mg/L					<0.001	<0.001	<0.001			
phosphate	mg/L					<1	<0.5	0.01			
phosphorous	mg/L					0.06	-	-			
total phosphorous	mg/L					0.050	<0.01	<0.05			
potassium	mg/L					8	5.1	3			
selenium	mg/L	0.01				<0.002	<0.002	<0.002			
silicon	mg/L					7.22	-	3.6			
silver	mg/L					<0.0001	<0.0001	<0.0001			
sodium	mg/L			20/200 [f]		40.4	30	23			
strontium	mg/L					6.93	4.3	0.83			
sulphide	mg/L					<0.01	<0.02	<0.02			
sulphate	mg/L			500 [d]		**720**	240	72			
thallium	mg/L					<0.00005	-	<0.00005			
tin	mg/L					<0.001	<0.05	<0.001	**Note:** Well filled with municipal water	**Note:** Well filled with municipal water	**Note:** Well filled with municipal water
titanium	mg/L					<0.005	<0.01	<0.005			
TSS	mg/L					3	2	<1			
turbidity	NTU			5 [e]		2.5	0.62	1.3			
uranium	mg/L					0.0029	0.0035	0.0017			
vanadium	mg/L					0.0022	<0.002	<0.001			
zinc	mg/L			5		0.195	0.069	0.15			

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[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.12
Groundwater Quality - Sicard Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				SICARD						
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Mar-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	<0.005	<0.01	<0.03	<0.005	<0.05	0.006
alkalinity	mg $CaCO_3$/L				30-500	130	130	150	144	152	134	148
ammonia-N	mg/L					4.05	3.88	3.30	3.55	2.9	4.2	2.5
antimony	mg/L		0.006			<0.0005	<0.0005	<0.002	<0.005	<0.0005	<0.005	<0.0005
arsenic	mg/L		0.025			<0.02	<0.02	<0.002	<0.005	<0.005	<0.01	0.002
barium	mg/L	1				0.011	0.011	0.009	<0.03	0.008	<0.05	0.009
beryllium	mg/L					<0.001	<0.001	<0.001	<0.003	<0.0005	<0.005	<0.0005
bismuth	mg/L					<0.001	0.001	-	<0.005	<0.001	<0.01	<0.001
boron	mg/L		5			**6.7**	**6.74**	4.3	**7.2**	**6.5**	**6.5**	**6.9**
bromide	mg/L					20.9	21.1	16	16	17	21	12
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.00007	<0.0005	<0.0001	<0.001	<0.0001
calcium	mg/L					372	355	270	370	280	370	240
chloride	mg/L			250		**1770**	**1940**	**1400**	**1660**	**1150**	**1780**	**955**
chromium	mg/L	0.05				<0.05	<0.05	<0.002	<0.03	<0.005	<0.05	<0.005
cobalt	mg/L					<0.0001	<0.0001	0.0081	<0.003	<0.0005	<0.005	<0.0005
copper	mg/L			1		0.0155	0.0263	0.0120	0.029	0.018	0.02	0.025
fluoride	mg/L	1.5 [a]				<0.6	<0.6	<0.6	0.4	0.5	0.5	0.6
free cyanide	mg/L					<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**1350**	**1350**	**950**	**1400**	**1000**	**1300**	**860**
iron	mg/L			0.3		0.07	0.14	0.16	**0.37**	0.16	<1	**1.6**
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.005	0.0006
magnesium	mg/L					101	112	89	110	86	110	73
manganese	mg/L			0.05		**0.126**	**0.125**	**0.100**	**0.12**	**0.1**	**0.13**	**0.07**
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.008	<0.007	<0.007	0.008	0.009	<0.01	0.01
nickel	mg/L					<0.001	<0.001	0.002	<0.005	<0.001	<0.01	<0.001
nitrate as N	mg/L	10.0 [b]				0.2	0.4	0.5	0.4	0.3	0.2	0.2
nitrite as N	mg/L	1.0 [b]				<2	0.2	<0.01	0.09	0.01	<0.01	0.02
pH	pH Units				6.5-8.5	7.66	7.56	7.74	7.8	8	7.9	7.76
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					<1	<1	<0.5	<0.01	<0.01	<0.01	<0.01
phosphorous	mg/L					<0.05	-	-	-	-		
total phosphorous	mg/L					<0.002	<0.002	<0.01	0.005	0.026	<0.002	<0.002
potassium	mg/L					35.8	37.8	33.0	40.0	35	42	33
selenium	mg/L	0.01				<0.02	<0.02	0.004	<0.01	<0.01	<0.02	<0.002
silicon	mg/L					3.53	3.82	-	4.2	4.1	3.8	4
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0005	<0.0001	<0.001	<0.0001
sodium	mg/L			20/200 [f]		**982**	**1120**	**820**	**1100**	**850**	**1200**	**760**
strontium	mg/L					11.5	10.5	10	12	9.9	11	9.6
sulphide	mg/L					<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		**1020**	**1040**	**970**	**995**	**732**	**1030**	**952**
thallium	mg/L					<0.00005	<0.00005	-	<0.0003	<0.00005	<0.0005	<0.00005
tin	mg/L					<0.001	<0.001	<0.05	<0.005	<0.001	<0.01	<0.001
titanium	mg/L					<0.005	<0.005	<0.01	<0.030	<0.005	<0.05	<0.005
TSS	mg/L					3	3	2	3	<10	<10	10
turbidity	NTU			5 [e]		0.7	1.4	1.5	2.8	0.6	1.4	**11**
uranium	mg/L					0.0003	<0.0003	0.0003	<0.0005	0.0005	<0.001	0.0007
vanadium	mg/L					0.0010	0.0005	<0.002	<0.005	<0.005	<0.01	<0.001
zinc	mg/L			5		0.014	0.012	0.016	<0.030	<0.03	<0.05	0.032

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.13
Groundwater Quality - Simms Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				SIMMS			
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Aug-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	0.007	0.041	0.019	0.008
alkalinity	mg $CaCO_3$/L				30-500	345	316	164	244
ammonia-N	mg/L					0.09	<0.05	<0.05	<0.05
antimony	mg/L		0.006			0.0009	0.0008	0.0007	0.0008
arsenic	mg/L		0.025			<0.001	<0.001	<0.001	<0.001
barium	mg/L	1				0.055	0.052	0.068	0.062
beryllium	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001	<0.001
boron	mg/L		5			0.036	0.045	0.45	0.19
bromide	mg/L					<1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.0001
calcium	mg/L					110	98	150	120
chloride	mg/L			250		7	6	7	6
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.015	0.07	0.008	0.007
fluoride	mg/L	1.5 [a]				0.2	0.2	0.2	0.2
free cyanide	mg/L					0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**360**	**340**	**650**	**500**
iron	mg/L			0.3		<0.05	<0.1	<0.1	<0.1
lead	mg/L	0.01 [c]				0.0007	**0.021**	0.0006	0.0005
magnesium	mg/L					34	28	55	55
manganese	mg/L			0.05		<0.002	0.004	0.003	0.003
mercury	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					<0.001	<0.001	0.004	0.003
nickel	mg/L					<0.001	<0.001	0.002	<0.001
nitrate as N	mg/L	10.0 [b]				3.8	4.3	0.4	1.7
nitrite as N	mg/L	1.0 [b]				<0.01	<0.01	<0.01	<0.01
pH	pH Units				6.5-8.5	8.2	8.2	7.9	7.95
phenol	mg/L					<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					<0.01	<0.01	<0.01	<0.01
total phosphorous	mg/L					<0.002	0.013	<0.002	<0.1
potassium	mg/L					2.6	2.4	8.3	6.9
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002
silicon	mg/L					5.3	5.1	3.3	4.1
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		12	11	55	37
strontium	mg/L					0.74	0.63	4.6	3.4
sulphate	mg/L			500 [d]		49	38	**597**	295
sulphide	mg/L					<0.02	<0.02	<0.02	<0.02
thallium	mg/L					<0.00005	<0.00005	<0.00005	<0.00005
tin	mg/L					<0.001	<0.001	<0.001	<0.001
titanium	mg/L					<0.005	<0.005	<0.005	<0.005
TSS	mg/L					<10	<10	<10	<10
turbidity	NTU			5 [e]		0.4	0.5	0.6	0.3
uranium	mg/L					0.0027	0.0024	0.0041	0.0033
vanadium	mg/L					<0.001	<0.001	<0.001	<0.001
zinc	mg/L			5		2	2.1	1.6	1.4

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO = aesthetic objective, OG = operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.14
Groundwater Quality - Stevenson Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				STEVENSON					
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Mar-03	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	0.017	0.03	NOT SAMPLED **Note:** Well inaccessible	NOT SAMPLED **Note:** Well not in use	NOT SAMPLED **Note:** Well not in use
alkalinity	mg $CaCO_3$/L				30-500	340	318	412			
ammonia-N	mg/L					0.95	0.48	0.12			
antimony	mg/L		0.006			<0.0005	<0.0005	<0.001			
arsenic	mg/L		0.025			<0.002	<0.002	0.005			
barium	mg/L	1				0.029	0.019	0.043			
beryllium	mg/L					<0.001	<0.001	<0.0005			
bismuth	mg/L					<0.001	<0.001	<0.001			
boron	mg/L		5			1.40	1.39	0.12			
bromide	mg/L					0.9	1.4	<1			
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001			
calcium	mg/L					136	158	160			
chloride	mg/L			250		134	152	88			
chromium	mg/L	0.05				<0.005	<0.005	<0.005			
cobalt	mg/L					<0.0001	<0.0001	<0.0005			
copper	mg/L			1		0.0025	0.006	0.004			
fluoride	mg/L	1.5 [a]				0.3	0.3	0.2			
free cyanide	mg/L					<0.001	<0.001	<0.002			
hardness	mg $CaCO_3$/L				80-100	**890**	**901**	**510**			
iron	mg/L			0.3		0.21	0.03	**2.8**			
lead	mg/L	0.01 [c]				0.0005	<0.0005	<0.0005			
magnesium	mg/L					133	122	35			
manganese	mg/L			0.05		**0.054**	0.020	0.022			
mercury	mg/L					<0.00005	<0.00005	<0.0001			
molybdenum	mg/L					0.005	0.004	0.001			
nickel	mg/L					<0.001	<0.001	<0.001			
nitrate as N	mg/L	10.0 [b]				1.0	1.0	7.3			
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.01			
pH	pH Units				6.5-8.5	7.94	7.84	8.2			
phenol	mg/L					<0.001	<0.001	<0.001			
phosphate	mg/L					<1	1	0.02			
phosphorous	mg/L					<0.05	-	-			
total phosphorous	mg/L					0.012	0.014	0.053			
potassium	mg/L					16.7	14.8	2.2			
selenium	mg/L	0.01				<0.002	<0.002	<0.002			
silicon	mg/L					6.23	5.44	6.8			
silver	mg/L					<0.0001	<0.0001	<0.0001			
sodium	mg/L			20/200 [f]		120	119	99			
strontium	mg/L					16.5	9.72	1.4			
sulphide	mg/L					0.02	<0.01	<0.02			
sulphate	mg/L			500 [d]		**531**	**564**	97			
thallium	mg/L					0.00008	<0.00005	<0.00005			
tin	mg/L					<0.001	<0.001	<0.001			
titanium	mg/L					<0.005	<0.005	<0.005			
TSS	mg/L					4	4	7			
turbidity	NTU			5 [e]		0.6	0.5	**13.8**			
uranium	mg/L					0.0008	0.0018	0.002			
vanadium	mg/L					0.0021	0.0022	<0.001			
zinc	mg/L			5		0.168	0.181	0.79			

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO aesthetic objective, OG operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people

[e] Applicable for all waters at the point of consumption

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.15
Groundwater Quality - Sugiyami Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				SUGIYAMI				
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.01	<0.03	<0.05	<0.005	0.012
alkalinity	mg $CaCO_3$/L				30-500	200	198	189	168	160
ammonia-N	mg/L					2.2	1.64	1.8	2.0	2.1
antimony	mg/L		0.006			<0.002	<0.005	<0.005	<0.0005	<0.0005
arsenic	mg/L		0.025			0.004	<0.005	<0.01	<0.005	<0.005
barium	mg/L	1				0.013	<0.03	<0.05	0.012	0.013
beryllium	mg/L					<0.001	<0.003	<0.005	<0.0005	<0.0005
bismuth	mg/L					-	<0.005	<0.01	<0.001	<0.001
boron	mg/L		5			4.2	**5.3**	4.5	5.0	**5.3**
bromide	mg/L					16	16	19	18	15
cadmium	mg/L	0.005				0.00007	<0.0005	<0.001	<0.0001	<0.0001
calcium	mg/L					320	380	340	360	420
chloride	mg/L			250		**1600**	**1590**	**1660**	**1620**	**1780**
chromium	mg/L	0.05				<0.002	<0.03	<0.05	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.003	<0.005	<0.0005	<0.003
copper	mg/L			1		0.027	0.026	0.035	0.034	0.018
fluoride	mg/L	1.5 [a]				0.47	0.3	0.3	0.4	0.4
free cyanide	mg/L					<0.002	<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**1300**	**1500**	**1300**	**1400**	**1400**
iron	mg/L			0.3		0.29	**0.6**	<1	**0.4**	0.27
lead	mg/L	0.01 [c]				0.0008	<0.003	<0.005	<0.0005	<0.0005
magnesium	mg/L					120	130	130	130	150
manganese	mg/L			0.05		**13**	**0.14**	**0.11**	**0.061**	**0.12**
mercury	mg/L					<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					-	0.006	<0.01	0.006	0.007
nickel	mg/L					<0.002	<0.005	<0.01	<0.005	<0.005
nitrate as N	mg/L	10.0 [b]				0.65	0.2	3	1.6	1.7
nitrite as N	mg/L	1.0 [b]				0.078	0.04	0.01	0.05	0.02
pH	pH Units				6.5-8.5	7.5	7.8	8.1	7.7	7.69
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					0.5	<0.01	<0.01	<0.01	0.01
phosphorous	mg/L					-	-	-		
total phosphorous	mg/L					<0.01	0.003	0.014	<0.002	<0.1
potassium	mg/L					34	40	38	38	44
selenium	mg/L	0.01				**0.012**	<0.01	<0.02	<0.01	<0.01
silicon	mg/L					-	4.6	4.5	3.9	4.3
silver	mg/L					<0.0001	<0.0005	<0.001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		**760**	**920**	**870**	**880**	**960**
strontium	mg/L					-	21	20	21	24
sulphide	mg/L					0.1	<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		**820**	**865**	**802**	**907**	**1010**
thallium	mg/L					<0.0002	<0.0003	<0.0005	<0.00005	<0.00005
tin	mg/L					-	<0.005	<0.01	<0.001	<0.001
titanium	mg/L					-	<0.030	<0.05	<0.005	<0.005
TSS	mg/L					2	2	<10	<10	14
turbidity	NTU			5 [e]		1.1	**5.6**	2.1	2.7	1.5
uranium	mg/L					<0.0002	<0.0005	<0.001	0.0001	<0.0001
vanadium	mg/L					<0.002	<0.005	<0.01	<0.005	<0.005
zinc	mg/L			5		0.19	0.18	0.053	0.078	0.041

NOTES:

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Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

Table D.16
Groundwater Quality - Wiggins Well
Tansley Quarry - Hanson Brick Ltd.

Parameter	Units	Criteria				WIGGINS						
		ODWS MAC	ODWS IMAC	ODWS AO	ODWS OG	Nov-02	Apr-03	Sep-04	Jan-07	Oct-08	Dec-09	Oct-10
aluminum	mg/L				0.1	<0.005	0.034	0.014	<0.005	0.005	**NOT SAMPLED**	**NOT SAMPLED**
alkalinity	mg $CaCO_3$/L				30-500	171	178	170	181	173		
ammonia-N	mg/L					1.25	1.21	1.1	1.24	1.1		
antimony	mg/L		0.006			<0.0005	<0.0005	<0.002	<0.001	<0.0005		
arsenic	mg/L		0.025			<0.002	<0.002	<0.002	0.001	<0.001		
barium	mg/L	1				0.011	0.013	0.011	0.01	0.01		
beryllium	mg/L					<0.001	<0.001	<0.001	<0.0005	<0.0005		
bismuth	mg/L					<0.001	<0.001	-	<0.001	<0.001		
boron	mg/L		5			1.38	1.35	1.3	1.3	1.4		
bromide	mg/L					<0.5	<0.5	0.49	1	<1		
cadmium	mg/L	0.005				<0.0001	0.0001	<0.00007	<0.0001	<0.0001		
calcium	mg/L					143	138	130	150	150		
chloride	mg/L			250		41.7	46.9	40	40	29		
chromium	mg/L	0.05				<0.005	<0.005	<0.002	<0.005	<0.005		
cobalt	mg/L					<0.0001	<0.0001	<0.005	<0.0005	<0.0005		
copper	mg/L			1		0.0007	0.0059	0.004	0.023	0.027		
fluoride	mg/L	1.5 [a]				0.2	0.2	0.23	0.2	0.2		
free cyanide	mg/L					<0.001	<0.001	<0.002	<0.002	<0.002		
hardness	mg $CaCO_3$/L				80-100	**679**	**637**	**620**	**670**	**680**		
iron	mg/L			0.3		**0.55**	**0.33**	**0.59**	**0.98**	**0.42**		
lead	mg/L	0.01 [c]				<0.0005	<0.0005	0.0016	<0.0005	0.0013		
magnesium	mg/L					77.70	70.5	72	81	88		
manganese	mg/L			0.05		**0.088**	**0.086**	**0.08**	**0.086**	**0.084**		
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.0001	<0.0001		
molybdenum	mg/L					0.005	0.005	<0.005	0.005	0.006		
nickel	mg/L					<0.001	<0.001	0.004	<0.001	0.002		
nitrate as N	mg/L	10.0 [b]				<0.2	<0.2	0.05	0.2	<0.1		
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	0.018	<0.01	<0.01		
pH	pH Units				6.5-8.5	7.62	7.94	7.85	8.1	8.2		
phenol	mg/L					<0.001	<0.001	<0.001	<0.001	<0.001		
phosphate	mg/L					<1	<1	<0.5	<0.01	<0.01		
phosphorous	mg/L					-	0.05	-	-	-		
total phosphorous	mg/L					0.022	0.022	<0.01	0.016	0.02		
potassium	mg/L					10.8	10.3	10	13	12		
selenium	mg/L	0.01				<0.002	<0.002	<0.002	<0.002	<0.002		
silicon	mg/L					5.49	5.72	-	5.5	6.2		
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
sodium	mg/L			20/200 [f]		108.0	98.8	97	110	120		
strontium	mg/L					10.20	10.2	11	11	12		
sulphide	mg/L					<0.01	<0.01	<0.02	<0.02	<0.02		
sulphate	mg/L			500 [d]		**686.0**	**710**	**750**	**684**	**693**		
thallium	mg/L					<0.00005	<0.00005	-	<0.00005	<0.00005		
tin	mg/L					<0.001	<0.001	0.05	<0.001	<0.001	**Note:** Cistern installed. Well not in use.	**Note:** Cistern installed. Well not in use.
titanium	mg/L					<0.005	<0.005	<0.01	<0.005	<0.005		
TSS	mg/L					2	2	2	<1	<10		
turbidity	NTU			5 [e]		4.7	1.6	4.3	**6.2**	1.5		
uranium	mg/L					<0.0001	<0.0001	0.0002	<0.0001	<0.0001		
vanadium	mg/L					0.0026	0.0008	<0.002	<0.001	<0.001		
zinc	mg/L			5		0.006	0.098	0.025	0.015	0.02		

NOTES:

ODWS = Ontario Drinking Water Objectives, Standards and Guidelines, dated June 2006. MAC = maximum acceptable concentrations, IMAC = interim maximum acceptable concentrations, AO aesthetic objective, OG operational guideline.

Bold values exceed the ODWS June 2006 standard for that parameter

[a] Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5-0.8 mg/L the optimum level for control of tooth decay. Where supplies contain naturally occurring flouride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources.

[b] Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)

[c] This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

[d] When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

[e] Applicable for all waters at the point of consumption.

[f] The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on Sodium restricted diets.

"-" Parameter not analysed

APPENDIX E

Maxxam Analytical Certificates

Site: TANSLEY QUARRY
Your C.O.C. #: 21882201, 218822-01-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/10/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E7900
Received: 2010/10/19, 18:00

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	4	N/A	2010/10/22	CAM SOP-00448	SM 2320B
Anions	4	N/A	2010/10/25	CAM SOP-00435	SM 4110B
Free Cyanide	4	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	4	2010/10/22	2010/10/22	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	3	N/A	2010/10/26	CAM SOP 00102	SM 2340 B
Hardness (calculated as CaCO3)	1	N/A	2010/10/27	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	4	2010/10/25	2010/10/25	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	4	N/A	2010/10/25	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	1	N/A	2010/10/25	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	3	N/A	2010/10/26	CAM SOP-00447	EPA 6020
Ammonia-N	4	N/A	2010/10/25	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	4	N/A	2010/10/22	CAM SOP-00448	SM 4500H
Phenols (4AAP)	3	N/A	2010/10/22	CAM SOP-00444	MOE ROPHEN-E3179
Phenols (4AAP)	1	N/A	2010/10/26	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	4	N/A	2010/10/25	CAM SOP-00461	SM 4500 P-F
Sulphide	4	N/A	2010/10/22	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	4	2010/10/26	2010/10/26	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	4	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	4	N/A	2010/10/22	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

../2

Site: TANSLEY QUARRY
Your C.O.C. #: 21882201, 218822-01-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/10/28

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: B0E7900
Report Date: 2010/10/28

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HN8954			HN8955			HN8956		
Sampling Date		2010/10/19			2010/10/19			2010/10/19		
COC Number		218822-01-01			218822-01-01			218822-01-01		
	Units	**MW-4S**	**RDL**	**QC Batch**	**MW-4I**	**RDL**	**QC Batch**	**MW-10 S**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	450	1	2304617	1700	1	2304617	480	1	2304617
Inorganics										
Total Ammonia-N	mg/L	<0.05	0.05	2306999	6.0	0.3	2306999	0.43	0.05	2306999
Fluoride (F-)	mg/L	0.2	0.1	2306024	0.5	0.1	2306024	0.2	0.1	2306024
Free Cyanide	mg/L	<0.002	0.002	2305537	<0.002	0.002	2305537	<0.002	0.002	2307536
Orthophosphate (P)	mg/L	<0.01	0.01	2306625	<0.01	0.01	2306625	<0.01	0.01	2306625
pH	pH	7.8		2306023	7.5		2306023	7.7		2306023
Phenols-4AAP	mg/L	<0.001	0.001	2305873	<0.001	0.001	2305836	<0.001	0.001	2305836
Total Phosphorus	mg/L	0.9	0.1	2308680	0.05	0.04	2308680	29	0.2	2308680
Total Suspended Solids	mg/L	750	10	2306514	91	10	2306514	91000	100	2306514
Sulphide	mg/L	<0.02	0.02	2306206	<0.02	0.02	2305566	0.23	0.02	2305566
Turbidity	NTU	4300	0.2	2306000	57	0.1	2306010	94000	3	2306010
Alkalinity (Total as CaCO3)	mg/L	387	1	2306022	50	1	2306022	472	1	2306022
Nitrite (N)	mg/L	0.11	0.01	2306056	<0.01	0.01	2306059	0.05	0.01	2306056
Dissolved Chloride (Cl)	mg/L	5	1	2306098	1500	10	2306098	4	1	2306098
Nitrate (N)	mg/L	4.2	0.1	2306056	<0.1	0.1	2306059	<0.1	0.1	2306056
Nitrate + Nitrite	mg/L	4.3	0.1	2306056	<0.1	0.1	2306059	0.1	0.1	2306056
Dissolved Bromide (Br-)	mg/L	<1	1	2306098	16	1	2306098	<1	1	2306098
Dissolved Sulphate (SO4)	mg/L	103	1	2306098	1750	10	2306098	58	1	2306098

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		HN8957		
Sampling Date		2010/10/19		
COC Number		218822-01-01		
	Units	**MW-10 I**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	370	1	2304617
Inorganics				
Total Ammonia-N	mg/L	0.92	0.05	2306999
Fluoride (F-)	mg/L	0.2	0.1	2306024
Free Cyanide	mg/L	<0.002	0.002	2307536
Orthophosphate (P)	mg/L	<0.01	0.01	2306625
pH	pH	7.8		2306023
Phenols-4AAP	mg/L	<0.001	0.001	2305836
Total Phosphorus	mg/L	0.4	0.1	2308680
Total Suspended Solids	mg/L	440	10	2306514
Sulphide	mg/L	<0.02	0.02	2306206
Turbidity	NTU	340	0.1	2306010
Alkalinity (Total as CaCO3)	mg/L	400	1	2306022
Nitrite (N)	mg/L	0.08	0.01	2306059
Dissolved Chloride (Cl)	mg/L	7	1	2306098
Nitrate (N)	mg/L	<0.1	0.1	2306059
Nitrate + Nitrite	mg/L	0.2	0.1	2306059
Dissolved Bromide (Br-)	mg/L	<1	1	2306098
Dissolved Sulphate (SO4)	mg/L	57	1	2306098

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HN8954			HN8955			HN8956		
Sampling Date		2010/10/19			2010/10/19			2010/10/19		
COC Number		218822-01-01			218822-01-01			218822-01-01		
	Units	**MW-4S**	**RDL**	**QC Batch**	**MW-4I**	**RDL**	**QC Batch**	**MW-10 S**	**RDL**	**QC Batch**
Metals										
Mercury (Hg)	mg/L	<0.0001	0.0001	2307666	<0.0001	0.0001	2307666	<0.0001	0.0001	2307666
Dissolved Aluminum (Al)	ug/L	38	5	2306965	31	5	2306965	170	5	2307033
Total Aluminum (Al)	ug/L	10000	50	2307574	3000	5	2307574	420000	500	2307574
Dissolved Antimony (Sb)	ug/L	<0.5	0.5	2306965	<0.5	0.5	2306965	0.9	0.5	2307033
Total Antimony (Sb)	ug/L	<5	5	2307574	<0.5	0.5	2307574	6	5	2307574
Dissolved Arsenic (As)	ug/L	<1	1	2306965	<5 (1)	5	2306965	4	1	2307033
Total Arsenic (As)	ug/L	<10	10	2307574	2	1	2307574	120	10	2307574
Dissolved Barium (Ba)	ug/L	56	5	2306965	7	5	2306965	90	5	2307033
Total Barium (Ba)	ug/L	150	50	2307574	30	5	2307574	5000	50	2307574
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2306965	<0.5	0.5	2306965	<0.5	0.5	2307033
Total Beryllium (Be)	ug/L	<5	5	2307574	<0.5	0.5	2307574	23	5	2307574
Dissolved Bismuth (Bi)	ug/L	2	1	2306965	2	1	2306965	<1	1	2307033
Total Bismuth (Bi)	ug/L	<10	10	2307574	<1	1	2307574	<10	10	2307574
Dissolved Boron (B)	ug/L	78	10	2306965	6400	10	2306965	170	10	2307033
Total Boron (B)	ug/L	110	100	2307574	7100	10	2307574	820	100	2307574
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2306965	<0.1	0.1	2306965	0.1	0.1	2307033
Total Cadmium (Cd)	ug/L	<1	1	2307574	0.1	0.1	2307574	3	1	2307574
Dissolved Calcium (Ca)	ug/L	77000	200	2306965	460000	200	2306965	67000	200	2307033
Total Calcium (Ca)	ug/L	120000	2000	2307574	500000	2000	2307574	2900000	2000	2307574
Dissolved Chromium (Cr)	ug/L	<5	5	2306965	<5	5	2306965	<5	5	2307033
Total Chromium (Cr)	ug/L	<50	50	2307574	<5	5	2307574	760	50	2307574
Dissolved Cobalt (Co)	ug/L	1.0	0.5	2306965	<0.5	0.5	2306965	2.2	0.5	2307033
Total Cobalt (Co)	ug/L	11	5	2307574	<0.5	0.5	2307574	420	5	2307574
Dissolved Copper (Cu)	ug/L	<1	1	2306965	<5 (1)	5	2306965	1	1	2307033
Total Copper (Cu)	ug/L	19	1	2310377	<1	1	2307574	580	10	2307574
Dissolved Iron (Fe)	ug/L	<100	100	2306965	750	100	2306965	730	100	2307033
Total Iron (Fe)	ug/L	17000	1000	2307574	3000	100	2307574	660000	10000	2307574
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2306965	<0.5	0.5	2306965	<0.5	0.5	2307033
Total Lead (Pb)	ug/L	14	5	2307574	2.0	0.5	2307574	210	5	2307574
Dissolved Magnesium (Mg)	ug/L	62000	50	2306965	130000	50	2306965	77000	50	2307033
Total Magnesium (Mg)	ug/L	69000	500	2307574	140000	50	2307574	490000	500	2307574
Dissolved Manganese (Mn)	ug/L	180	2	2306965	190	2	2306965	140	2	2307033

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HN8954			HN8955			HN8956		
Sampling Date		2010/10/19			2010/10/19			2010/10/19		
COC Number		218822-01-01			218822-01-01			218822-01-01		
	Units	**MW-4S**	**RDL**	**QC Batch**	**MW-4I**	**RDL**	**QC Batch**	**MW-10 S**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	660	20	2307574	250	2	2307574	28000	20	2307574
Dissolved Molybdenum (Mo)	ug/L	6	1	2306965	9	1	2306965	4	1	2307033
Total Molybdenum (Mo)	ug/L	<10	10	2307574	9	1	2307574	20	10	2307574
Dissolved Nickel (Ni)	ug/L	1	1	2306965	<5 (1)	5	2306965	1	1	2307033
Total Nickel (Ni)	ug/L	20	10	2307574	<1	1	2307574	870	10	2307574
Dissolved Phosphorus (P)	ug/L	<100	100	2306965	<100	100	2306965	<100	100	2307033
Total Phosphorus (P)	ug/L	<1000	1000	2307574	<100	100	2307574	26000	1000	2307574
Dissolved Potassium (K)	ug/L	4900	200	2306965	43000	200	2306965	9900	200	2307033
Total Potassium (K)	ug/L	7300	2000	2307574	47000	200	2307574	120000	2000	2307574
Dissolved Selenium (Se)	ug/L	<2	2	2306965	<10 (1)	10	2306965	<2	2	2307033
Total Selenium (Se)	ug/L	<20	20	2307574	<2	2	2307574	<20	20	2307574
Dissolved Silicon (Si)	ug/L	5800	50	2306965	3200	50	2306965	9100	50	2307033
Total Silicon (Si)	ug/L	20000	500	2307574	9900	50	2307574	440000	500	2307574
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2306965	0.2	0.1	2306965	<0.1	0.1	2307033
Total Silver (Ag)	ug/L	<1	1	2307574	<0.1	0.1	2307574	2	1	2307574
Dissolved Sodium (Na)	ug/L	28000	100	2306965	960000	1000	2306965	27000	100	2307033
Total Sodium (Na)	ug/L	28000	1000	2307574	1000000	1000	2307574	29000	1000	2307574
Dissolved Strontium (Sr)	ug/L	1500	1	2306965	12000	1	2306965	3100	1	2307033
Total Strontium (Sr)	ug/L	1700	10	2307574	13000	1	2307574	8900	10	2307574
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2306965	<0.05	0.05	2306965	0.05	0.05	2307033
Total Thallium (Tl)	ug/L	<0.5	0.5	2307574	<0.05	0.05	2307574	4.0	0.5	2307574
Dissolved Tin (Sn)	ug/L	<1	1	2306965	<1	1	2306965	<1	1	2307033
Total Tin (Sn)	ug/L	<10	10	2307574	<1	1	2307574	<10	10	2307574
Dissolved Titanium (Ti)	ug/L	<5	5	2306965	8	5	2306965	<5	5	2307033
Total Titanium (Ti)	ug/L	230	50	2307574	89	5	2307574	6100	500	2307574
Dissolved Uranium (U)	ug/L	7.8	0.1	2306965	<0.1	0.1	2306965	3.7	0.1	2307033
Total Uranium (U)	ug/L	10	1	2307574	0.7	0.1	2307574	26	1	2307574
Dissolved Vanadium (V)	ug/L	<1	1	2306965	<5 (1)	5	2306965	5	1	2307033
Total Vanadium (V)	ug/L	19	10	2307574	<5 (1)	5	2307574	770	10	2307574
Dissolved Zinc (Zn)	ug/L	<5	5	2306965	<5	5	2306965	<5	5	2307033
Total Zinc (Zn)	ug/L	52	50	2307574	<5	5	2307574	2000	50	2307574

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HN8957		
Sampling Date		2010/10/19		
COC Number		218822-01-01		
	Units	**MW-10 I**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2307666
Dissolved Aluminum (Al)	ug/L	27	5	2306560
Total Aluminum (Al)	ug/L	9300	5	2307574
Dissolved Antimony (Sb)	ug/L	<0.5	0.5	2306560
Total Antimony (Sb)	ug/L	<0.5	0.5	2307574
Dissolved Arsenic (As)	ug/L	4	1	2306560
Total Arsenic (As)	ug/L	10	1	2307574
Dissolved Barium (Ba)	ug/L	78	5	2306560
Total Barium (Ba)	ug/L	300	5	2307574
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2306560
Total Beryllium (Be)	ug/L	0.7	0.5	2307574
Dissolved Bismuth (Bi)	ug/L	<1	1	2306560
Total Bismuth (Bi)	ug/L	<1	1	2307574
Dissolved Boron (B)	ug/L	1300	10	2306560
Total Boron (B)	ug/L	1000	10	2307574
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2306560
Total Cadmium (Cd)	ug/L	0.1	0.1	2307574
Dissolved Calcium (Ca)	ug/L	58000	200	2306560
Total Calcium (Ca)	ug/L	120000	1000	2307574
Dissolved Chromium (Cr)	ug/L	<5	5	2306560
Total Chromium (Cr)	ug/L	13	5	2307574
Dissolved Cobalt (Co)	ug/L	3.3	0.5	2306560
Total Cobalt (Co)	ug/L	9.9	0.5	2307574
Dissolved Copper (Cu)	ug/L	<1	1	2306560
Total Copper (Cu)	ug/L	8	1	2310377
Dissolved Iron (Fe)	ug/L	300	100	2306560
Total Iron (Fe)	ug/L	15000	100	2307574
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2306560
Total Lead (Pb)	ug/L	4.6	0.5	2307574
Dissolved Magnesium (Mg)	ug/L	56000	50	2306560
Total Magnesium (Mg)	ug/L	66000	50	2307574
Dissolved Manganese (Mn)	ug/L	33	2	2306560

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HN8957		
Sampling Date		2010/10/19		
COC Number		218822-01-01		
	Units	**MW-10 I**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	590	2	2307574
Dissolved Molybdenum (Mo)	ug/L	3	1	2306560
Total Molybdenum (Mo)	ug/L	4	1	2307574
Dissolved Nickel (Ni)	ug/L	<1	1	2306560
Total Nickel (Ni)	ug/L	19	1	2307574
Dissolved Phosphorus (P)	ug/L	<100	100	2306560
Total Phosphorus (P)	ug/L	560	100	2307574
Dissolved Potassium (K)	ug/L	14000	200	2306560
Total Potassium (K)	ug/L	15000	200	2307574
Dissolved Selenium (Se)	ug/L	<2	2	2306560
Total Selenium (Se)	ug/L	<2	2	2307574
Dissolved Silicon (Si)	ug/L	7400	50	2306560
Total Silicon (Si)	ug/L	22000	50	2307574
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2306560
Total Silver (Ag)	ug/L	<0.1	0.1	2307574
Dissolved Sodium (Na)	ug/L	41000	100	2306560
Total Sodium (Na)	ug/L	35000	100	2307574
Dissolved Strontium (Sr)	ug/L	12000	1	2306560
Total Strontium (Sr)	ug/L	12000	1	2307574
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2306560
Total Thallium (Tl)	ug/L	0.09	0.05	2307574
Dissolved Tin (Sn)	ug/L	<1	1	2306560
Total Tin (Sn)	ug/L	<1	1	2307574
Dissolved Titanium (Ti)	ug/L	<5	5	2306560
Total Titanium (Ti)	ug/L	140	5	2307574
Dissolved Uranium (U)	ug/L	0.8	0.1	2306560
Total Uranium (U)	ug/L	1.1	0.1	2307574
Dissolved Vanadium (V)	ug/L	<1	1	2306560
Total Vanadium (V)	ug/L	17	1	2307574
Dissolved Zinc (Zn)	ug/L	<5	5	2306560
Total Zinc (Zn)	ug/L	45	5	2307574

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HN8954-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HN8956-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E7900

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2305566	SAU	Matrix Spike	Sulphide	2010/10/22		95	%	75 - 125
		Spiked Blank	Sulphide	2010/10/22		103	%	85 - 115
		Method Blank	Sulphide	2010/10/22	<0.02		mg/L	
		RPD	Sulphide	2010/10/22	NC		%	25
2305836	OK	Matrix Spike	Phenols-4AAP	2010/10/22		101	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/22		98	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/22	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/22	NC		%	25
2305873	OK	Matrix Spike	Phenols-4AAP	2010/10/26		98	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/26		97	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/26	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/26	NC		%	25
2306000	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	1.4		%	25
2306010	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD [HN8955-01]	Turbidity	2010/10/22	0.4		%	25
2306022	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/22		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/22	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/22	2.0		%	25
2306024	YPA	Matrix Spike	Fluoride (F-)	2010/10/22		94	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/22		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/22	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/22	NC		%	25
2306056	C_N	Matrix Spike	Nitrite (N)	2010/10/25		98	%	80 - 120
			Nitrate (N)	2010/10/25		98	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		105	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
		RPD	Nitrite (N)	2010/10/25	NC		%	25
			Nitrate (N)	2010/10/25	NC		%	25
			Nitrate + Nitrite	2010/10/25	NC		%	25
2306059	C_N	Matrix Spike	Nitrite (N)	2010/10/23		101	%	80 - 120
			Nitrate (N)	2010/10/23		87	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		105	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.6		%	25
2306098	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/25		101	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/25		98	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/25		99	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/25		96	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/25		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/25		95	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/25	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/25	<1		mg/L	

Golder Associates Ltd
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Client Project #:
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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2306098	FD	Method Blank	Dissolved Sulphate (SO4)	2010/10/25	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/25	NC		%	25
			Dissolved Bromide (Br-)	2010/10/25	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/25	NC		%	25
2306206	SAU	Matrix Spike	Sulphide	2010/10/22		99	%	75 - 125
		Spiked Blank	Sulphide	2010/10/22		92	%	85 - 115
		Method Blank	Sulphide	2010/10/22	<0.02		mg/L	
		RPD	Sulphide	2010/10/22	NC		%	25
2306514	JDO	QC Standard	Total Suspended Solids	2010/10/25		99	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2306560	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/25		91	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/25		100	%	80 - 120
			Dissolved Arsenic (As)	2010/10/25		100	%	80 - 120
			Dissolved Barium (Ba)	2010/10/25		95	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/25		96	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/25		100	%	80 - 120
			Dissolved Boron (B)	2010/10/25		93	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/25		99	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/25		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/25		95	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/25		95	%	80 - 120
			Dissolved Copper (Cu)	2010/10/25		93	%	80 - 120
			Dissolved Iron (Fe)	2010/10/25		102	%	80 - 120
			Dissolved Lead (Pb)	2010/10/25		97	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/25		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/25		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/25		102	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/25		95	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/25		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/25		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/25		101	%	80 - 120
			Dissolved Silicon (Si)	2010/10/25		99	%	80 - 120
			Dissolved Silver (Ag)	2010/10/25		94	%	80 - 120
			Dissolved Sodium (Na)	2010/10/25		96	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/25		99	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/25		95	%	80 - 120
			Dissolved Tin (Sn)	2010/10/25		98	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/25		101	%	80 - 120
			Dissolved Uranium (U)	2010/10/25		104	%	80 - 120
			Dissolved Vanadium (V)	2010/10/25		96	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/25		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/25		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/25		106	%	90 - 110
			Dissolved Arsenic (As)	2010/10/25		102	%	90 - 110
			Dissolved Barium (Ba)	2010/10/25		98	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/25		97	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/25		104	%	90 - 110
			Dissolved Boron (B)	2010/10/25		96	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/25		105	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/25		109	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/25		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/25		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/25		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/25		107	%	90 - 110

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
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Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2306560	HRE	Spiked Blank	Dissolved Lead (Pb)	2010/10/25		102	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/25		103	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/25		105	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/25		108	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/25		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/25		103	%	90 - 110
			Dissolved Potassium (K)	2010/10/25		107	%	90 - 110
			Dissolved Selenium (Se)	2010/10/25		101	%	90 - 110
			Dissolved Silicon (Si)	2010/10/25		106	%	90 - 110
			Dissolved Silver (Ag)	2010/10/25		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/25		104	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/25		101	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/25		100	%	90 - 110
			Dissolved Tin (Sn)	2010/10/25		104	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/25		107	%	90 - 110
			Dissolved Uranium (U)	2010/10/25		109	%	90 - 110
			Dissolved Vanadium (V)	2010/10/25		99	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/25		104	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/25	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/25	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/25	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/25	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/25	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/25	<1		ug/L	
			Dissolved Boron (B)	2010/10/25	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/25	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/25	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/25	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/25	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/25	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/25	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/25	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/25	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/25	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/25	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/25	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/25	<100		ug/L	
			Dissolved Potassium (K)	2010/10/25	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/25	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/25	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/25	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/25	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/25	<1		ug/L	
			Dissolved Thallium (Tl)	2010/10/25	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/25	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/25	<5		ug/L	
			Dissolved Uranium (U)	2010/10/25	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/25	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/25	<5		ug/L	
		RPD	Dissolved Arsenic (As)	2010/10/25	NC		%	25
			Dissolved Boron (B)	2010/10/25	NC		%	25
			Dissolved Cadmium (Cd)	2010/10/25	NC		%	25
			Dissolved Calcium (Ca)	2010/10/25	0.7		%	25
			Dissolved Chromium (Cr)	2010/10/25	NC		%	25
			Dissolved Copper (Cu)	2010/10/25	NC		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2306560	HRE	RPD	Dissolved Iron (Fe)	2010/10/25	NC		%	25
			Dissolved Lead (Pb)	2010/10/25	NC		%	25
			Dissolved Magnesium (Mg)	2010/10/25	3.0		%	25
			Dissolved Manganese (Mn)	2010/10/25	2.3		%	25
			Dissolved Nickel (Ni)	2010/10/25	NC		%	25
			Dissolved Potassium (K)	2010/10/25	1.4		%	25
			Dissolved Sodium (Na)	2010/10/25	0.6		%	25
			Dissolved Zinc (Zn)	2010/10/25	NC		%	25
2306625	DRM	Matrix Spike	Orthophosphate (P)	2010/10/25		93	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/25		102	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/25	<0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/25	NC		%	25
2306965	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/25		98	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/25		103	%	80 - 120
			Dissolved Arsenic (As)	2010/10/25		101	%	80 - 120
			Dissolved Barium (Ba)	2010/10/25		100	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/25		103	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/25		71 (1)	%	80 - 120
			Dissolved Boron (B)	2010/10/25		106	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/25		104	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/25		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/25		98	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/25		99	%	80 - 120
			Dissolved Copper (Cu)	2010/10/25		97	%	80 - 120
			Dissolved Iron (Fe)	2010/10/25		101	%	80 - 120
			Dissolved Lead (Pb)	2010/10/25		97	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/25		99	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/25		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/25		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/25		97	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/25		89	%	80 - 120
			Dissolved Potassium (K)	2010/10/25		100	%	80 - 120
			Dissolved Selenium (Se)	2010/10/25		101	%	80 - 120
			Dissolved Silicon (Si)	2010/10/25		102	%	80 - 120
			Dissolved Silver (Ag)	2010/10/25		89	%	80 - 120
			Dissolved Sodium (Na)	2010/10/25		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/25		102	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/25		97	%	80 - 120
			Dissolved Tin (Sn)	2010/10/25		101	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/25		100	%	80 - 120
			Dissolved Uranium (U)	2010/10/25		99	%	80 - 120
			Dissolved Vanadium (V)	2010/10/25		100	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/25		96	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/25		99	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/25		105	%	90 - 110
			Dissolved Arsenic (As)	2010/10/25		102	%	90 - 110
			Dissolved Barium (Ba)	2010/10/25		102	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/25		102	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/25		102	%	90 - 110
			Dissolved Boron (B)	2010/10/25		107	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/25		103	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/25		107	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/25		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/25		102	%	90 - 110
			Dissolved Copper (Cu)	2010/10/25		97	%	90 - 110

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2306965	HRE	Spiked Blank	Dissolved Iron (Fe)	2010/10/25		103	%	90 - 110
			Dissolved Lead (Pb)	2010/10/25		100	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/25		103	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/25		103	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/25		106	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/25		101	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/25		98	%	90 - 110
			Dissolved Potassium (K)	2010/10/25		105	%	90 - 110
			Dissolved Selenium (Se)	2010/10/25		103	%	90 - 110
			Dissolved Silicon (Si)	2010/10/25		104	%	90 - 110
			Dissolved Silver (Ag)	2010/10/25		101	%	90 - 110
			Dissolved Sodium (Na)	2010/10/25		106	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/25		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/25		102	%	90 - 110
			Dissolved Tin (Sn)	2010/10/25		102	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/25		104	%	90 - 110
			Dissolved Uranium (U)	2010/10/25		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/25		100	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/25		98	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/25	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/25	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/25	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/25	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/25	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/25	<1		ug/L	
			Dissolved Boron (B)	2010/10/25	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/25	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/25	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/25	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/25	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/25	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/25	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/25	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/25	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/25	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/25	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/25	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/25	<100		ug/L	
			Dissolved Potassium (K)	2010/10/25	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/25	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/25	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/25	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/25	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/25	<1		ug/L	
			Dissolved Thallium (Tl)	2010/10/25	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/25	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/25	<5		ug/L	
			Dissolved Uranium (U)	2010/10/25	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/25	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/25	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/25	NC		%	25
2306999	ADB	Matrix Spike	Total Ammonia-N	2010/10/25		94	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/25		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/25	<0.05		mg/L	
		RPD	Total Ammonia-N	2010/10/25	13.2		%	25

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307033 GBU	Matrix Spike	Dissolved Aluminum (Al)	2010/10/25		100	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/25		103	%	80 - 120
		Dissolved Arsenic (As)	2010/10/25		101	%	80 - 120
		Dissolved Barium (Ba)	2010/10/25		102	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/25		109	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/25		98	%	80 - 120
		Dissolved Boron (B)	2010/10/25		107	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/25		100	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/25		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/25		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/25		101	%	80 - 120
		Dissolved Copper (Cu)	2010/10/25		99	%	80 - 120
		Dissolved Iron (Fe)	2010/10/25		102	%	80 - 120
		Dissolved Lead (Pb)	2010/10/25		100	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/25		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/25		NC	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/25		105	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/25		100	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/25		110	%	80 - 120
		Dissolved Potassium (K)	2010/10/25		106	%	80 - 120
		Dissolved Selenium (Se)	2010/10/25		104	%	80 - 120
		Dissolved Silicon (Si)	2010/10/25		105	%	80 - 120
		Dissolved Silver (Ag)	2010/10/25		94	%	80 - 120
		Dissolved Sodium (Na)	2010/10/25		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/25		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/25		99	%	80 - 120
		Dissolved Tin (Sn)	2010/10/25		104	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/25		103	%	80 - 120
		Dissolved Uranium (U)	2010/10/25		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/25		102	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/25		96	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/25		99	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/25		109	%	90 - 110
		Dissolved Arsenic (As)	2010/10/25		100	%	90 - 110
		Dissolved Barium (Ba)	2010/10/25		98	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/25		102	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/25		98	%	90 - 110
		Dissolved Boron (B)	2010/10/25		102	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/25		106	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/25		104	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/25		100	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/25		100	%	90 - 110
		Dissolved Copper (Cu)	2010/10/25		100	%	90 - 110
		Dissolved Iron (Fe)	2010/10/25		101	%	90 - 110
		Dissolved Lead (Pb)	2010/10/25		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/25		103	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/25		104	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/25		106	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/25		100	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/25		101	%	90 - 110
		Dissolved Potassium (K)	2010/10/25		102	%	90 - 110
		Dissolved Selenium (Se)	2010/10/25		102	%	90 - 110
		Dissolved Silicon (Si)	2010/10/25		103	%	90 - 110
		Dissolved Silver (Ag)	2010/10/25		100	%	90 - 110
		Dissolved Sodium (Na)	2010/10/25		101	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307033	GBU	Spiked Blank	Dissolved Strontium (Sr)	2010/10/25		101	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/25		96	%	90 - 110
			Dissolved Tin (Sn)	2010/10/25		110	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/25		104	%	90 - 110
			Dissolved Uranium (U)	2010/10/25		99	%	90 - 110
			Dissolved Vanadium (V)	2010/10/25		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/25		100	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/25	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/25	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/25	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/25	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/25	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/25	<1		ug/L	
			Dissolved Boron (B)	2010/10/25	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/25	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/25	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/25	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/25	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/25	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/25	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/25	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/25	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/25	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/25	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/25	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/25	<100		ug/L	
			Dissolved Potassium (K)	2010/10/25	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/25	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/25	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/25	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/25	100, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2010/10/25	<1		ug/L	
			Dissolved Thallium (Tl)	2010/10/25	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/25	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/25	<5		ug/L	
			Dissolved Uranium (U)	2010/10/25	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/25	1, RDL=1		ug/L	
			Dissolved Zinc (Zn)	2010/10/25	<5		ug/L	
		RPD	Dissolved Boron (B)	2010/10/25	10.5		%	25
			Dissolved Calcium (Ca)	2010/10/25	11.1		%	25
			Dissolved Chromium (Cr)	2010/10/25	NC		%	25
			Dissolved Iron (Fe)	2010/10/25	NC		%	25
			Dissolved Magnesium (Mg)	2010/10/25	10.2		%	25
			Dissolved Manganese (Mn)	2010/10/25	7.0		%	25
			Dissolved Nickel (Ni)	2010/10/25	8.3		%	25
			Dissolved Potassium (K)	2010/10/25	8.1		%	25
			Dissolved Sodium (Na)	2010/10/25	1.1		%	25
			Dissolved Zinc (Zn)	2010/10/25	7.4		%	25
2307536	CP	Matrix Spike	Free Cyanide	2010/10/27		111	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		101	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2307574	GBU	Matrix Spike	Total Aluminum (Al)	2010/10/25		96	%	80 - 120
			Total Antimony (Sb)	2010/10/25		104	%	80 - 120
			Total Arsenic (As)	2010/10/25		98	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307574	GBU	Matrix Spike	Total Barium (Ba)	2010/10/25		101	%	80 - 120
			Total Beryllium (Be)	2010/10/25		107	%	80 - 120
			Total Bismuth (Bi)	2010/10/25		97	%	80 - 120
			Total Boron (B)	2010/10/25		108	%	80 - 120
			Total Cadmium (Cd)	2010/10/25		99	%	80 - 120
			Total Calcium (Ca)	2010/10/25		NC	%	80 - 120
			Total Chromium (Cr)	2010/10/25		98	%	80 - 120
			Total Cobalt (Co)	2010/10/25		99	%	80 - 120
			Total Copper (Cu)	2010/10/25		98	%	80 - 120
			Total Iron (Fe)	2010/10/25		99	%	80 - 120
			Total Lead (Pb)	2010/10/25		97	%	80 - 120
			Total Magnesium (Mg)	2010/10/25		98	%	80 - 120
			Total Manganese (Mn)	2010/10/25		101	%	80 - 120
			Total Molybdenum (Mo)	2010/10/25		101	%	80 - 120
			Total Nickel (Ni)	2010/10/25		99	%	80 - 120
			Total Phosphorus (P)	2010/10/25		100	%	80 - 120
			Total Potassium (K)	2010/10/25		100	%	80 - 120
			Total Selenium (Se)	2010/10/25		100	%	80 - 120
			Total Silicon (Si)	2010/10/25		92	%	80 - 120
			Total Silver (Ag)	2010/10/25		95	%	80 - 120
			Total Sodium (Na)	2010/10/25		94	%	80 - 120
			Total Strontium (Sr)	2010/10/25		101	%	80 - 120
			Total Thallium (Tl)	2010/10/25		95	%	80 - 120
			Total Tin (Sn)	2010/10/25		104	%	80 - 120
			Total Titanium (Ti)	2010/10/25		97	%	80 - 120
			Total Uranium (U)	2010/10/25		100	%	80 - 120
			Total Vanadium (V)	2010/10/25		98	%	80 - 120
			Total Zinc (Zn)	2010/10/25		95	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/25		99	%	85 - 115
			Total Antimony (Sb)	2010/10/25		106	%	85 - 115
			Total Arsenic (As)	2010/10/25		99	%	85 - 115
			Total Barium (Ba)	2010/10/25		107	%	85 - 115
			Total Beryllium (Be)	2010/10/25		106	%	85 - 115
			Total Bismuth (Bi)	2010/10/25		100	%	85 - 115
			Total Boron (B)	2010/10/25		108	%	85 - 115
			Total Cadmium (Cd)	2010/10/25		101	%	85 - 116
			Total Calcium (Ca)	2010/10/25		103	%	85 - 115
			Total Chromium (Cr)	2010/10/25		100	%	85 - 115
			Total Cobalt (Co)	2010/10/25		101	%	85 - 115
			Total Copper (Cu)	2010/10/25		100	%	85 - 115
			Total Iron (Fe)	2010/10/25		100	%	85 - 115
			Total Lead (Pb)	2010/10/25		101	%	85 - 115
			Total Magnesium (Mg)	2010/10/25		101	%	85 - 115
			Total Manganese (Mn)	2010/10/25		103	%	85 - 115
			Total Molybdenum (Mo)	2010/10/25		103	%	85 - 115
			Total Nickel (Ni)	2010/10/25		100	%	85 - 115
			Total Phosphorus (P)	2010/10/25		102	%	85 - 115
			Total Potassium (K)	2010/10/25		100	%	85 - 115
			Total Selenium (Se)	2010/10/25		104	%	85 - 115
			Total Silicon (Si)	2010/10/25		96	%	85 - 115
			Total Silver (Ag)	2010/10/25		96	%	85 - 115
			Total Sodium (Na)	2010/10/25		98	%	85 - 115
			Total Strontium (Sr)	2010/10/25		102	%	85 - 115
			Total Thallium (Tl)	2010/10/25		100	%	85 - 115
			Total Tin (Sn)	2010/10/25		104	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307574	GBU	Spiked Blank	Total Titanium (Ti)	2010/10/25		101	%	85 - 115
			Total Uranium (U)	2010/10/25		106	%	85 - 115
			Total Vanadium (V)	2010/10/25		100	%	85 - 115
			Total Zinc (Zn)	2010/10/25		99	%	85 - 115
		Method Blank	Total Aluminum (Al)	2010/10/25	6, RDL=5		ug/L	
			Total Antimony (Sb)	2010/10/25	0.6, RDL=0.5		ug/L	
			Total Arsenic (As)	2010/10/25	<1		ug/L	
			Total Barium (Ba)	2010/10/25	<5		ug/L	
			Total Beryllium (Be)	2010/10/25	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/25	<1		ug/L	
			Total Boron (B)	2010/10/25	<10		ug/L	
			Total Cadmium (Cd)	2010/10/25	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/25	<200		ug/L	
			Total Chromium (Cr)	2010/10/25	<5		ug/L	
			Total Cobalt (Co)	2010/10/25	<0.5		ug/L	
			Total Copper (Cu)	2010/10/25	7, RDL=1		ug/L	
			Total Iron (Fe)	2010/10/25	<100		ug/L	
			Total Lead (Pb)	2010/10/25	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/25	<50		ug/L	
			Total Manganese (Mn)	2010/10/25	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/25	<1		ug/L	
			Total Nickel (Ni)	2010/10/25	<1		ug/L	
			Total Phosphorus (P)	2010/10/25	<100		ug/L	
			Total Potassium (K)	2010/10/25	<200		ug/L	
			Total Selenium (Se)	2010/10/25	<2		ug/L	
			Total Silicon (Si)	2010/10/25	<50		ug/L	
			Total Silver (Ag)	2010/10/25	<0.1		ug/L	
			Total Sodium (Na)	2010/10/25	<100		ug/L	
			Total Strontium (Sr)	2010/10/25	<1		ug/L	
			Total Thallium (Tl)	2010/10/25	<0.05		ug/L	
			Total Tin (Sn)	2010/10/25	<1		ug/L	
			Total Titanium (Ti)	2010/10/25	<5		ug/L	
			Total Uranium (U)	2010/10/25	0.2, RDL=0.1		ug/L	
			Total Vanadium (V)	2010/10/25	<1		ug/L	
			Total Zinc (Zn)	2010/10/25	<5		ug/L	
		RPD	Total Lead (Pb)	2010/10/25	NC		%	25
2307666	LCH	Matrix Spike	Mercury (Hg)	2010/10/25		102	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/25		99	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/25	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/25	NC		%	25
2308680	VRO	Matrix Spike	Total Phosphorus	2010/10/26		99	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/26		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/26		101	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/26	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/26	NC		%	20
2310377	VIV	Matrix Spike	Total Copper (Cu)	2010/10/27		100	%	80 - 120
		Spiked Blank	Total Copper (Cu)	2010/10/27		99	%	85 - 115
		Method Blank	Total Copper (Cu)	2010/10/27	<1		ug/L	
		RPD	Total Copper (Cu)	2010/10/27	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E7900

spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E7900

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Site: TANSLEY QUARRY
Your C.O.C. #: 21882203, 218822-03-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/10/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E8871
Received: 2010/10/20, 17:40

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	8	N/A	2010/10/22	CAM SOP-00448	SM 2320B
Anions	8	N/A	2010/10/25	CAM SOP-00435	SM 4110B
Free Cyanide	8	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	8	2010/10/22	2010/10/22	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	8	N/A	2010/10/27	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	7	2010/10/26	2010/10/26	CAM SOP-00453	EPA 7470
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	3	N/A	2010/10/26	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	5	N/A	2010/10/27	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	8	N/A	2010/10/26	CAM SOP-00447	EPA 6020
Ammonia-N	8	N/A	2010/10/26	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	6	N/A	2010/10/22	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	8	N/A	2010/10/22	CAM SOP-00448	SM 4500H
Phenols (4AAP)	7	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Phenols (4AAP)	1	N/A	2010/10/28	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	4	N/A	2010/10/22	CAM SOP-00461	SM 4500 P-F
Orthophosphate	4	N/A	2010/10/25	CAM SOP-00461	SM 4500 P-F
Sulphide	8	N/A	2010/10/22	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	8	2010/10/26	2010/10/26	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	8	N/A	2010/10/22	CAM SOP-00428	SM 2540D
Turbidity	8	N/A	2010/10/22	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

../2

Site: TANSLEY QUARRY
Your C.O.C. #: 21882203, 218822-03-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/10/28

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

==
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Total cover pages: 2

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO3349			HO3350		HO3351		
Sampling Date		2010/10/20 09:45			2010/10/20 09:20		2010/10/20 11:30		
COC Number		218822-03-01			218822-03-01		218822-03-01		
	Units	**MW-9S**	**RDL**	**QC Batch**	**MW-9I**	**QC Batch**	**MW-5S**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	410	1	2304417	600	2304417	430	1	2304417
Inorganics									
Total Ammonia-N	mg/L	0.17	0.05	2308218	2.2	2308218	<0.05	0.05	2308218
Fluoride (F-)	mg/L	0.2	0.1	2306024	0.3	2306024	0.1	0.1	2306024
Free Cyanide	mg/L	<0.002	0.002	2307536	<0.002	2307536	<0.002	0.002	2307536
Orthophosphate (P)	mg/L	0.01	0.01	2305439	<0.01	2306625	<0.01	0.01	2305439
pH	pH	7.87		2306023	7.81	2306023	7.80		2306023
Phenols-4AAP	mg/L	<0.001	0.001	2312742	<0.001	2307332	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.2	0.1	2308680	1.7	2308680	2.9	0.1	2308680
Total Suspended Solids	mg/L	180	10	2306070	3300	2306070	4000	50	2306070
Sulphide	mg/L	<0.02	0.02	2306206	<0.02	2305566	<0.02	0.02	2306206
Turbidity	NTU	330	0.1	2305994	3400	2305994	24	0.1	2305994
Alkalinity (Total as CaCO3)	mg/L	412	1	2306022	261	2306022	302	1	2306022
Nitrite (N)	mg/L	0.04	0.01	2305409	0.02	2305409	<0.01	0.01	2305407
Dissolved Chloride (Cl)	mg/L	10	1	2306098	196	2306098	26	1	2306098
Nitrate (N)	mg/L	0.4	0.1	2305409	<0.1	2305409	<0.1	0.1	2305407
Nitrate + Nitrite	mg/L	0.5	0.1	2305409	<0.1	2305409	<0.1	0.1	2305407
Dissolved Bromide (Br-)	mg/L	<1	1	2306098	2	2306098	<1	1	2306098
Dissolved Sulphate (SO4)	mg/L	68	1	2306098	385	2306098	96	1	2306098

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO3352			HO3353		HO3354		
Sampling Date		2010/10/20 12:10			2010/10/20 11:00		2010/10/20 14:40		
COC Number		218822-03-01			218822-03-01		218822-03-01		
	Units	**MW-5I**	**RDL**	**QC Batch**	**MW-5 STRADDLE**	**RDL**	**MW-8S**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	390	1	2304417	300	1	990	1	2304417
Inorganics									
Total Ammonia-N	mg/L	2.1	0.05	2308218	0.54	0.05	0.38	0.05	2308218
Fluoride (F-)	mg/L	0.4	0.1	2306024	0.2	0.1	0.2	0.1	2306024
Free Cyanide	mg/L	<0.002	0.002	2307536	<0.002	0.002	<0.002	0.002	2307536
Orthophosphate (P)	mg/L	<0.01	0.01	2305439	<0.01	0.01	<0.01	0.01	2306625
pH	pH	7.77		2306023	7.93		7.69		2306023
Phenols-4AAP	mg/L	<0.001	0.001	2307332	<0.001	0.001	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.02	0.02	2308680	4.0	0.1	6.7	0.2	2308680
Total Suspended Solids	mg/L	<10	10	2306070	3600	20	9000	50	2306070
Sulphide	mg/L	<0.02	0.02	2305566	<0.02	0.02	<0.02	0.02	2306206
Turbidity	NTU	15	0.1	2305994	3400	0.1	14000	0.5	2305994
Alkalinity (Total as CaCO3)	mg/L	252	1	2306022	294	1	545	1	2306022
Nitrite (N)	mg/L	<0.01	0.01	2305409	0.03	0.01	0.02	0.01	2305409
Dissolved Chloride (Cl)	mg/L	176	1	2306098	8	1	13	1	2306098
Nitrate (N)	mg/L	<0.1	0.1	2305409	<0.1	0.1	<0.1	0.1	2305409
Nitrate + Nitrite	mg/L	<0.1	0.1	2305409	0.1	0.1	<0.1	0.1	2305409
Dissolved Bromide (Br-)	mg/L	2	1	2306098	<1	1	<1	1	2306098
Dissolved Sulphate (SO4)	mg/L	179	1	2306098	52	1	576	5	2306098

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO3355			HO3356		
Sampling Date		2010/10/20 15:40			2010/10/20		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-8I**	**RDL**	**QC Batch**	**DUP 1**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	2000	1	2304417	2000	1	2304417
Inorganics							
Total Ammonia-N	mg/L	5.6	0.3	2308218	5.0	0.05	2308218
Fluoride (F-)	mg/L	0.4	0.1	2306024	0.4	0.1	2306024
Free Cyanide	mg/L	<0.002	0.002	2305537	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	<0.01	0.01	2305439	<0.01	0.01	2306625
pH	pH	7.55		2306023	7.59		2306023
Phenols-4AAP	mg/L	<0.001	0.001	2307332	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.03	0.02	2308680	0.02	0.02	2308680
Total Suspended Solids	mg/L	27	10	2306070	26	10	2306070
Sulphide	mg/L	<0.02	0.02	2306206	<0.02	0.02	2305566
Turbidity	NTU	14	0.1	2305994	22	0.1	2305994
Alkalinity (Total as CaCO3)	mg/L	139	1	2306022	145	1	2306022
Nitrite (N)	mg/L	<0.01	0.01	2305409	<0.01	0.01	2305407
Dissolved Chloride (Cl)	mg/L	2240	20	2306098	2150	20	2306098
Nitrate (N)	mg/L	<0.1	0.1	2305409	<0.1	0.1	2305407
Nitrate + Nitrite	mg/L	<0.1	0.1	2305409	<0.1	0.1	2305407
Dissolved Bromide (Br-)	mg/L	23	1	2306098	29	1	2306098
Dissolved Sulphate (SO4)	mg/L	1010	20	2306098	1010	20	2306098

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3349			HO3350	HO3351		
Sampling Date		2010/10/20 09:45			2010/10/20 09:20	2010/10/20 11:30		
COC Number		218822-03-01			218822-03-01	218822-03-01		
	Units	**MW-9S**	**RDL**	**QC Batch**	**MW-9I**	**MW-5S**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/L	<0.0001	0.0001	2309195	<0.0001	<0.0001	0.0001	2309195
Dissolved Aluminum (Al)	ug/L	20	5	2307876	56	52	5	2308237
Total Aluminum (Al)	ug/L	4000	5	2308953	33000	26000	50	2308953
Dissolved Antimony (Sb)	ug/L	1.2	0.5	2307876	<0.5	<0.5	0.5	2308237
Total Antimony (Sb)	ug/L	<0.5	0.5	2308953	<0.5	0.5	0.5	2308953
Dissolved Arsenic (As)	ug/L	2	1	2307876	3	<1	1	2308237
Total Arsenic (As)	ug/L	4	1	2308953	18	21	1	2308953
Dissolved Barium (Ba)	ug/L	61	5	2307876	40	60	5	2308237
Total Barium (Ba)	ug/L	90	5	2308953	480	630	5	2308953
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2307876	<0.5	<0.5	0.5	2308237
Total Beryllium (Be)	ug/L	<0.5	0.5	2308953	2.1	1.6	0.5	2308953
Dissolved Bismuth (Bi)	ug/L	<1	1	2307876	<1	<1	1	2308237
Total Bismuth (Bi)	ug/L	<1	1	2308953	<1	<1	1	2308953
Dissolved Boron (B)	ug/L	540	10	2307876	3400	20	10	2308237
Total Boron (B)	ug/L	550	10	2308953	3600	38	10	2308953
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2307876	<0.1	<0.1	0.1	2308237
Total Cadmium (Cd)	ug/L	<0.1	0.1	2308953	0.3	1.0	0.1	2308953
Dissolved Calcium (Ca)	ug/L	59000	400	2307876	140000	120000	200	2308237
Total Calcium (Ca)	ug/L	66000	200	2308953	390000	470000	200	2308953
Dissolved Chromium (Cr)	ug/L	<5	5	2307876	<5	<5	5	2308237
Total Chromium (Cr)	ug/L	9	5	2308953	57	61	5	2308953
Dissolved Cobalt (Co)	ug/L	1.4	0.5	2307876	4.9	1.3	0.5	2308237
Total Cobalt (Co)	ug/L	4.1	0.5	2308953	29	36	0.5	2308953
Dissolved Copper (Cu)	ug/L	<1	1	2307876	<1	<1	1	2308237
Total Copper (Cu)	ug/L	4	1	2308953	23	170	1	2308953
Dissolved Iron (Fe)	ug/L	<100	100	2307876	580	<100	100	2308237
Total Iron (Fe)	ug/L	6000	100	2308953	45000	62000	100	2308953
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2307876	<0.5	<0.5	0.5	2308237
Total Lead (Pb)	ug/L	2.3	0.5	2308953	20	48	0.5	2308953
Dissolved Magnesium (Mg)	ug/L	63000	50	2307876	57000	31000	50	2308237
Total Magnesium (Mg)	ug/L	64000	50	2308953	82000	63000	50	2308953
Dissolved Manganese (Mn)	ug/L	35	2	2307876	67	4	2	2308237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3349			HO3350	HO3351		
Sampling Date		2010/10/20 09:45			2010/10/20 09:20	2010/10/20 11:30		
COC Number		218822-03-01			218822-03-01	218822-03-01		
	Units	**MW-9S**	**RDL**	**QC Batch**	**MW-9I**	**MW-5S**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	150	2	2308953	2400	7100	2	2308953
Dissolved Molybdenum (Mo)	ug/L	7	1	2307876	7	<1	1	2308237
Total Molybdenum (Mo)	ug/L	8	1	2308953	11	4	1	2308953
Dissolved Nickel (Ni)	ug/L	<1	1	2307876	<1	<1	1	2308237
Total Nickel (Ni)	ug/L	8	1	2308953	71 (1)	63 (1)	5	2308953
Dissolved Phosphorus (P)	ug/L	<100	100	2307876	<100	<100	100	2308237
Total Phosphorus (P)	ug/L	140	100	2308953	1800	2700	100	2308953
Dissolved Potassium (K)	ug/L	12000	200	2307876	23000	700	200	2308237
Total Potassium (K)	ug/L	13000	200	2308953	30000	6600	200	2308953
Dissolved Selenium (Se)	ug/L	<2	2	2307876	<2	2	2	2308237
Total Selenium (Se)	ug/L	<2	2	2308953	<2	<2	2	2308953
Dissolved Silicon (Si)	ug/L	8400	50	2307876	5300	5100	50	2308237
Total Silicon (Si)	ug/L	14000	50	2308953	51000	40000	50	2308953
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2307876	<0.1	<0.1	0.1	2308237
Total Silver (Ag)	ug/L	<0.1	0.1	2308953	0.2	0.2	0.1	2308953
Dissolved Sodium (Na)	ug/L	35000	100	2307876	210000	6200	100	2308237
Total Sodium (Na)	ug/L	34000	100	2308953	190000	6700	100	2308953
Dissolved Strontium (Sr)	ug/L	6400	1	2307876	17000	190	1	2308237
Total Strontium (Sr)	ug/L	6600	1	2308953	18000	720	1	2308953
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2307876	<0.05	<0.05	0.05	2308237
Total Thallium (Tl)	ug/L	<0.05	0.05	2308953	0.28	0.40	0.05	2308953
Dissolved Tin (Sn)	ug/L	<1	1	2307876	<1	<1	1	2308237
Total Tin (Sn)	ug/L	<1	1	2308953	<1	<1	1	2308953
Dissolved Titanium (Ti)	ug/L	<5	5	2307876	<5	<5	5	2308237
Total Titanium (Ti)	ug/L	63	5	2308953	430	520	5	2308953
Dissolved Uranium (U)	ug/L	3.2	0.1	2307876	0.4	1.9	0.1	2308237
Total Uranium (U)	ug/L	3.4	0.1	2308953	2.3	3.8	0.1	2308953
Dissolved Vanadium (V)	ug/L	<1	1	2307876	<1	<1	1	2308237
Total Vanadium (V)	ug/L	8	1	2308953	59	57	1	2308953
Dissolved Zinc (Zn)	ug/L	<5	5	2307876	<5	<5	5	2308237
Total Zinc (Zn)	ug/L	32	5	2308953	140	190	5	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: B0E8871
Report Date: 2010/10/28

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3352			HO3353		
Sampling Date		2010/10/20 12:10			2010/10/20 11:00		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-5I**	**RDL**	**QC Batch**	**MW-5 STRADDLE**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337	<0.0001	0.0001	2309195
Dissolved Aluminum (Al)	ug/L	16	5	2308237	44	5	2307876
Total Aluminum (Al)	ug/L	380	5	2308953	19000	5	2308953
Dissolved Antimony (Sb)	ug/L	<0.5	0.5	2308237	1.1	0.5	2307876
Total Antimony (Sb)	ug/L	<0.5	0.5	2308953	<0.5	0.5	2308953
Dissolved Arsenic (As)	ug/L	2	1	2308237	6	1	2307876
Total Arsenic (As)	ug/L	4	1	2308953	23	1	2308953
Dissolved Barium (Ba)	ug/L	19	5	2308237	66	5	2307876
Total Barium (Ba)	ug/L	23	5	2308953	330	5	2308953
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2308237	<0.5	0.5	2307876
Total Beryllium (Be)	ug/L	<0.5	0.5	2308953	1.1	0.5	2308953
Dissolved Bismuth (Bi)	ug/L	<1	1	2308237	<1	1	2307876
Total Bismuth (Bi)	ug/L	<1	1	2308953	<1	1	2308953
Dissolved Boron (B)	ug/L	2700	10	2308237	950	10	2307876
Total Boron (B)	ug/L	2800	10	2308953	1200	10	2308953
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2308237	<0.1	0.1	2307876
Total Cadmium (Cd)	ug/L	<0.1	0.1	2308953	0.4	0.1	2308953
Dissolved Calcium (Ca)	ug/L	99000	200	2308237	67000	400	2307876
Total Calcium (Ca)	ug/L	100000	200	2308953	410000	200	2308953
Dissolved Chromium (Cr)	ug/L	<5	5	2308237	<5	5	2307876
Total Chromium (Cr)	ug/L	<5	5	2308953	34	5	2308953
Dissolved Cobalt (Co)	ug/L	<0.5	0.5	2308237	3.5	0.5	2307876
Total Cobalt (Co)	ug/L	<0.5	0.5	2308953	20	0.5	2308953
Dissolved Copper (Cu)	ug/L	<1	1	2308237	<1	1	2307876
Total Copper (Cu)	ug/L	1	1	2308953	54	1	2308953
Dissolved Iron (Fe)	ug/L	270	100	2308237	<100	100	2307876
Total Iron (Fe)	ug/L	1100	100	2308953	40000	100	2308953
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2308237	<0.5	0.5	2307876
Total Lead (Pb)	ug/L	<0.5	0.5	2308953	17	0.5	2308953
Dissolved Magnesium (Mg)	ug/L	35000	50	2308237	33000	50	2307876
Total Magnesium (Mg)	ug/L	35000	50	2308953	66000	50	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3352			HO3353		
Sampling Date		2010/10/20 12:10			2010/10/20 11:00		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-5I**	**RDL**	**QC Batch**	**MW-5 STRADDLE**	**RDL**	**QC Batch**
Dissolved Manganese (Mn)	ug/L	36	2	2308237	33	2	2307876
Total Manganese (Mn)	ug/L	43	2	2308953	2900	2	2308953
Dissolved Molybdenum (Mo)	ug/L	4	1	2308237	4	1	2307876
Total Molybdenum (Mo)	ug/L	4	1	2308953	6	1	2308953
Dissolved Nickel (Ni)	ug/L	<1	1	2308237	<1	1	2307876
Total Nickel (Ni)	ug/L	<1	1	2308953	37 (1)	5	2308953
Dissolved Phosphorus (P)	ug/L	<100	100	2308237	<100	100	2307876
Total Phosphorus (P)	ug/L	<100	100	2308953	2800	100	2308953
Dissolved Potassium (K)	ug/L	20000	200	2308237	5700	200	2307876
Total Potassium (K)	ug/L	20000	200	2308953	10000	200	2308953
Dissolved Selenium (Se)	ug/L	<2	2	2308237	<2	2	2307876
Total Selenium (Se)	ug/L	<2	2	2308953	<2	2	2308953
Dissolved Silicon (Si)	ug/L	5600	50	2308237	9700	50	2307876
Total Silicon (Si)	ug/L	6900	50	2308953	35000	50	2308953
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2308237	<0.1	0.1	2307876
Total Silver (Ag)	ug/L	<0.1	0.1	2308953	0.2	0.1	2308953
Dissolved Sodium (Na)	ug/L	110000	100	2308237	22000	100	2307876
Total Sodium (Na)	ug/L	110000	100	2308953	24000	100	2308953
Dissolved Strontium (Sr)	ug/L	14000	1	2308237	6000	1	2307876
Total Strontium (Sr)	ug/L	14000	1	2308953	7500	1	2308953
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2308237	<0.05	0.05	2307876
Total Thallium (Tl)	ug/L	<0.05	0.05	2308953	0.22	0.05	2308953
Dissolved Tin (Sn)	ug/L	<1	1	2308237	<1	1	2307876
Total Tin (Sn)	ug/L	<1	1	2308953	<1	1	2308953
Dissolved Titanium (Ti)	ug/L	<5	5	2308237	<5	5	2307876
Total Titanium (Ti)	ug/L	15	5	2308953	380	5	2308953
Dissolved Uranium (U)	ug/L	0.1	0.1	2308237	0.3	0.1	2307876
Total Uranium (U)	ug/L	0.1	0.1	2308953	1.6	0.1	2308953
Dissolved Vanadium (V)	ug/L	<1	1	2308237	2	1	2307876
Total Vanadium (V)	ug/L	<1	1	2308953	39	1	2308953
Dissolved Zinc (Zn)	ug/L	<5	5	2308237	<5	5	2307876

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3352			HO3353		
Sampling Date		2010/10/20 12:10			2010/10/20 11:00		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-5I**	**RDL**	**QC Batch**	**MW-5 STRADDLE**	**RDL**	**QC Batch**
Total Zinc (Zn)	ug/L	<5	5	2308953	110	5	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3354			HO3355		
Sampling Date		2010/10/20 14:40			2010/10/20 15:40		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-8S**	**RDL**	**QC Batch**	**MW-8I**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	0.0001	0.0001	2308912	<0.0001	0.0001	2309386
Dissolved Aluminum (Al)	ug/L	42	5	2308237	65	50	2307876
Total Aluminum (Al)	ug/L	140000	50	2308953	290	5	2308953
Dissolved Antimony (Sb)	ug/L	0.7	0.5	2308237	<5	5	2307876
Total Antimony (Sb)	ug/L	<5	5	2308953	<0.5	0.5	2308953
Dissolved Arsenic (As)	ug/L	2	1	2308237	<10	10	2307876
Total Arsenic (As)	ug/L	54	10	2308953	<5 (1)	5	2308953
Dissolved Barium (Ba)	ug/L	19	5	2308237	<50	50	2307876
Total Barium (Ba)	ug/L	1200	50	2308953	15	5	2308953
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2308237	<5	5	2307876
Total Beryllium (Be)	ug/L	8	5	2308953	<0.5	0.5	2308953
Dissolved Bismuth (Bi)	ug/L	<1	1	2308237	<10	10	2307876
Total Bismuth (Bi)	ug/L	<10	10	2308953	<1	1	2308953
Dissolved Boron (B)	ug/L	1700	10	2308237	6100	100	2307876
Total Boron (B)	ug/L	2000	100	2308953	6100	10	2308953
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2308237	<1	1	2307876
Total Cadmium (Cd)	ug/L	1	1	2308953	<0.1	0.1	2308953
Dissolved Calcium (Ca)	ug/L	120000	200	2308237	530000	2000	2307876
Total Calcium (Ca)	ug/L	740000	2000	2308953	460000	2000	2308953
Dissolved Chromium (Cr)	ug/L	<5	5	2308237	<50	50	2307876
Total Chromium (Cr)	ug/L	210	50	2308953	<5	5	2308953
Dissolved Cobalt (Co)	ug/L	8.7	0.5	2308237	<5	5	2307876
Total Cobalt (Co)	ug/L	120	5	2308953	<0.5	0.5	2308953
Dissolved Copper (Cu)	ug/L	<1	1	2308237	<10	10	2307876
Total Copper (Cu)	ug/L	220	10	2308953	<1	1	2308953
Dissolved Iron (Fe)	ug/L	540	100	2308237	<1000	1000	2307876
Total Iron (Fe)	ug/L	240000	1000	2308953	1200	100	2308953
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2308237	<5	5	2307876
Total Lead (Pb)	ug/L	96	5	2308953	<0.5	0.5	2308953
Dissolved Magnesium (Mg)	ug/L	170000	50	2308237	160000	500	2307876
Total Magnesium (Mg)	ug/L	270000	500	2308953	150000	50	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3354			HO3355		
Sampling Date		2010/10/20 14:40			2010/10/20 15:40		
COC Number		218822-03-01			218822-03-01		
	Units	**MW-8S**	**RDL**	**QC Batch**	**MW-8I**	**RDL**	**QC Batch**
Dissolved Manganese (Mn)	ug/L	170	2	2308237	210	20	2307876
Total Manganese (Mn)	ug/L	6400	20	2308953	210	2	2308953
Dissolved Molybdenum (Mo)	ug/L	5	1	2308237	<10	10	2307876
Total Molybdenum (Mo)	ug/L	14	10	2308953	7	1	2308953
Dissolved Nickel (Ni)	ug/L	2	1	2308237	<10	10	2307876
Total Nickel (Ni)	ug/L	260	10	2308953	<5 (1)	5	2308953
Dissolved Phosphorus (P)	ug/L	<100	100	2308237	<1000	1000	2307876
Total Phosphorus (P)	ug/L	6700	1000	2308953	<100	100	2308953
Dissolved Potassium (K)	ug/L	16000	200	2308237	46000	2000	2307876
Total Potassium (K)	ug/L	63000	2000	2308953	47000	200	2308953
Dissolved Selenium (Se)	ug/L	<2	2	2308237	<20	20	2307876
Total Selenium (Se)	ug/L	<20	20	2308953	<10 (1)	10	2308953
Dissolved Silicon (Si)	ug/L	7700	50	2308237	3900	500	2307876
Total Silicon (Si)	ug/L	190000	500	2308953	4600	50	2308953
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2308237	<1	1	2307876
Total Silver (Ag)	ug/L	<1	1	2308953	<0.1	0.1	2308953
Dissolved Sodium (Na)	ug/L	90000	100	2308237	1300000	1000	2307876
Total Sodium (Na)	ug/L	93000	1000	2308953	1100000	1000	2308953
Dissolved Strontium (Sr)	ug/L	12000	1	2308237	13000	10	2307876
Total Strontium (Sr)	ug/L	14000	10	2308953	14000	1	2308953
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2308237	<0.5	0.5	2307876
Total Thallium (Tl)	ug/L	1.7	0.5	2308953	<0.05	0.05	2308953
Dissolved Tin (Sn)	ug/L	<1	1	2308237	<10	10	2307876
Total Tin (Sn)	ug/L	<10	10	2308953	<1	1	2308953
Dissolved Titanium (Ti)	ug/L	<5	5	2308237	<50	50	2307876
Total Titanium (Ti)	ug/L	2400	50	2308953	13	5	2308953
Dissolved Uranium (U)	ug/L	8.0	0.1	2308237	<1	1	2307876
Total Uranium (U)	ug/L	15	1	2308953	0.2	0.1	2308953
Dissolved Vanadium (V)	ug/L	<1	1	2308237	<10	10	2307876
Total Vanadium (V)	ug/L	260	10	2308953	<5 (1)	5	2308953
Dissolved Zinc (Zn)	ug/L	<5	5	2308237	<50	50	2307876
Total Zinc (Zn)	ug/L	650	50	2308953	<5	5	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3356		
Sampling Date		2010/10/20		
COC Number		218822-03-01		
	Units	**DUP 1**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2309195
Dissolved Aluminum (Al)	ug/L	<50	50	2307876
Total Aluminum (Al)	ug/L	740	5	2308953
Dissolved Antimony (Sb)	ug/L	<5	5	2307876
Total Antimony (Sb)	ug/L	<0.5	0.5	2308953
Dissolved Arsenic (As)	ug/L	<10	10	2307876
Total Arsenic (As)	ug/L	<5 (1)	5	2308953
Dissolved Barium (Ba)	ug/L	<50	50	2307876
Total Barium (Ba)	ug/L	16	5	2308953
Dissolved Beryllium (Be)	ug/L	<5	5	2307876
Total Beryllium (Be)	ug/L	<0.5	0.5	2308953
Dissolved Bismuth (Bi)	ug/L	<10	10	2307876
Total Bismuth (Bi)	ug/L	<1	1	2308953
Dissolved Boron (B)	ug/L	6300	100	2307876
Total Boron (B)	ug/L	5900	10	2308953
Dissolved Cadmium (Cd)	ug/L	<1	1	2307876
Total Cadmium (Cd)	ug/L	<0.1	0.1	2308953
Dissolved Calcium (Ca)	ug/L	530000	2000	2307876
Total Calcium (Ca)	ug/L	460000	2000	2308953
Dissolved Chromium (Cr)	ug/L	<50	50	2307876
Total Chromium (Cr)	ug/L	<5	5	2308953
Dissolved Cobalt (Co)	ug/L	<5	5	2307876
Total Cobalt (Co)	ug/L	<0.5	0.5	2308953
Dissolved Copper (Cu)	ug/L	<10	10	2307876
Total Copper (Cu)	ug/L	<1	1	2308953
Dissolved Iron (Fe)	ug/L	<1000	1000	2307876
Total Iron (Fe)	ug/L	1500	100	2308953
Dissolved Lead (Pb)	ug/L	<5	5	2307876
Total Lead (Pb)	ug/L	<0.5	0.5	2308953
Dissolved Magnesium (Mg)	ug/L	160000	500	2307876
Total Magnesium (Mg)	ug/L	150000	50	2308953
Dissolved Manganese (Mn)	ug/L	220	20	2307876

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO3356		
Sampling Date		2010/10/20		
COC Number		218822-03-01		
	Units	**DUP 1**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	210	2	2308953
Dissolved Molybdenum (Mo)	ug/L	<10	10	2307876
Total Molybdenum (Mo)	ug/L	7	1	2308953
Dissolved Nickel (Ni)	ug/L	<10	10	2307876
Total Nickel (Ni)	ug/L	<5 (1)	5	2308953
Dissolved Phosphorus (P)	ug/L	<1000	1000	2307876
Total Phosphorus (P)	ug/L	<100	100	2308953
Dissolved Potassium (K)	ug/L	47000	2000	2307876
Total Potassium (K)	ug/L	47000	200	2308953
Dissolved Selenium (Se)	ug/L	<20	20	2307876
Total Selenium (Se)	ug/L	<10 (1)	10	2308953
Dissolved Silicon (Si)	ug/L	4000	500	2307876
Total Silicon (Si)	ug/L	5500	50	2308953
Dissolved Silver (Ag)	ug/L	<1	1	2307876
Total Silver (Ag)	ug/L	<0.1	0.1	2308953
Dissolved Sodium (Na)	ug/L	1400000	1000	2307876
Total Sodium (Na)	ug/L	1100000	100	2308953
Dissolved Strontium (Sr)	ug/L	13000	10	2307876
Total Strontium (Sr)	ug/L	14000	1	2308953
Dissolved Thallium (Tl)	ug/L	<0.5	0.5	2307876
Total Thallium (Tl)	ug/L	<0.05	0.05	2308953
Dissolved Tin (Sn)	ug/L	<10	10	2307876
Total Tin (Sn)	ug/L	<1	1	2308953
Dissolved Titanium (Ti)	ug/L	<50	50	2307876
Total Titanium (Ti)	ug/L	30	5	2308953
Dissolved Uranium (U)	ug/L	<1	1	2307876
Total Uranium (U)	ug/L	0.2	0.1	2308953
Dissolved Vanadium (V)	ug/L	<10	10	2307876
Total Vanadium (V)	ug/L	<5 (1)	5	2308953
Dissolved Zinc (Zn)	ug/L	<50	50	2307876
Total Zinc (Zn)	ug/L	<5	5	2308953

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	2.7°C
Package 2	6.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO3354-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO3355-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO3356-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E8871

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305407	ADB	Matrix Spike	Nitrite (N)	2010/10/22		103	%	80 - 120
			Nitrate (N)	2010/10/22		104	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		102	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrite (N)	2010/10/23	NC		%	25
			Nitrate (N)	2010/10/23	NC		%	25
			Nitrate + Nitrite	2010/10/23	NC		%	25
2305409	ADB	Matrix Spike [HO3349-01]	Nitrite (N)	2010/10/22		103	%	80 - 120
			Nitrate (N)	2010/10/22		95	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/22		103	%	85 - 115
			Nitrate (N)	2010/10/22		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/22	<0.01		mg/L	
			Nitrate (N)	2010/10/22	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/22	<0.1		mg/L	
		RPD [HO3349-01]	Nitrite (N)	2010/10/22	NC		%	25
			Nitrate (N)	2010/10/22	NC		%	25
			Nitrate + Nitrite	2010/10/22	NC		%	25
2305439	DRM	Matrix Spike	Orthophosphate (P)	2010/10/22		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/22		104	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/22	<0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/22	NC		%	25
2305537	CP	Matrix Spike [HO3356-04]	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD [HO3356-04]	Free Cyanide	2010/10/27	NC		%	25
2305566	SAU	Matrix Spike	Sulphide	2010/10/22		95	%	75 - 125
		Spiked Blank	Sulphide	2010/10/22		103	%	85 - 115
		Method Blank	Sulphide	2010/10/22	<0.02		mg/L	
		RPD	Sulphide	2010/10/22	NC		%	25
2305994	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	1.2		%	25
2306022	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/22		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/22	<1		mg/L	
		RPD [HO3350-01]	Alkalinity (Total as CaCO3)	2010/10/22	2.0		%	25
2306024	YPA	Matrix Spike [HO3350-01]	Fluoride (F-)	2010/10/22		94	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/22		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/22	<0.1		mg/L	
		RPD [HO3350-01]	Fluoride (F-)	2010/10/22	NC		%	25
2306070	JDO	QC Standard	Total Suspended Solids	2010/10/22		95	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/22	<10		mg/L	
		RPD [HO3355-02]	Total Suspended Solids	2010/10/22	NC		%	25
2306098	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/25		101	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/25		98	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/25		99	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/25		96	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/25		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/25		95	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/25	<1		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2306098 FD	Method Blank	Dissolved Bromide (Br-)	2010/10/25	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/25	<1		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/25	NC		%	25
		Dissolved Bromide (Br-)	2010/10/25	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/25	NC		%	25
2306206 SAU	Matrix Spike	Sulphide	2010/10/22		99	%	75 - 125
	Spiked Blank	Sulphide	2010/10/22		92	%	85 - 115
	Method Blank	Sulphide	2010/10/22	<0.02		mg/L	
	RPD	Sulphide	2010/10/22	NC		%	25
2306625 DRM	Matrix Spike	Orthophosphate (P)	2010/10/25		93	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2010/10/25		102	%	80 - 120
	Method Blank	Orthophosphate (P)	2010/10/25	<0.01		mg/L	
	RPD	Orthophosphate (P)	2010/10/25	NC		%	25
2307332 OK	Matrix Spike [HO3350-09]	Phenols-4AAP	2010/10/27		102	%	75 - 125
	Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
	Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
	RPD [HO3350-09]	Phenols-4AAP	2010/10/27	NC		%	25
2307536 CP	Matrix Spike [HO3351-04]	Free Cyanide	2010/10/27		111	%	80 - 120
	Spiked Blank	Free Cyanide	2010/10/27		101	%	80 - 120
	Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
	RPD [HO3351-04]	Free Cyanide	2010/10/27	NC		%	25
2307876 JBW	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		103	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		103	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		98	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		98	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/27		99	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		96	%	80 - 120
		Dissolved Boron (B)	2010/10/27		100	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		102	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		103	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		99	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		97	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		98	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		104	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		101	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		96	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		NC	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		102	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		98	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		101	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		104	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		98	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		97	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		101	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		100	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		97	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		103	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		99	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		101	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307876 JBW	Spiked Blank	Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		96	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		96	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
		Dissolved Boron (B)	2010/10/27		103	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		100	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		99	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		99	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		97	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		94	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		100	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		101	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		100	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		98	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		99	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		97	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		101	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		98	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		105	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		98	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		102	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		98	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		95	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		98	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		97	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	0.8, RDL=0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
		Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	0.1, RDL=0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307876	JBW	Method Blank	Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Arsenic (As)	2010/10/27	NC		%	25
			Dissolved Boron (B)	2010/10/27	NC		%	25
			Dissolved Cadmium (Cd)	2010/10/27	NC		%	25
			Dissolved Calcium (Ca)	2010/10/27	0.4		%	25
			Dissolved Chromium (Cr)	2010/10/27	NC		%	25
			Dissolved Copper (Cu)	2010/10/27	NC		%	25
			Dissolved Iron (Fe)	2010/10/27	NC		%	25
			Dissolved Lead (Pb)	2010/10/27	NC		%	25
			Dissolved Magnesium (Mg)	2010/10/27	1.5		%	25
			Dissolved Manganese (Mn)	2010/10/27	NC		%	25
			Dissolved Nickel (Ni)	2010/10/27	NC		%	25
			Dissolved Potassium (K)	2010/10/27	0.5		%	25
			Dissolved Sodium (Na)	2010/10/27	1.4		%	25
			Dissolved Zinc (Zn)	2010/10/27	NC		%	25
2308218	ADB	Matrix Spike [HO3355-03]	Total Ammonia-N	2010/10/26		NC	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/26		100	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/26	<0.05		mg/L	
		RPD [HO3355-03]	Total Ammonia-N	2010/10/26	5.5		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120
			Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
			Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
			Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
		Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308680 VRO	Matrix Spike						
	[HO3352-03]	Total Phosphorus	2010/10/26		99	%	80 - 120
	QC Standard	Total Phosphorus	2010/10/26		102	%	85 - 115
	Spiked Blank	Total Phosphorus	2010/10/26		101	%	85 - 115
	Method Blank	Total Phosphorus	2010/10/26	<0.02		mg/L	
	RPD [HO3352-03]	Total Phosphorus	2010/10/26	NC		%	20
2308912 MC	Matrix Spike	Mercury (Hg)	2010/10/26		97	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		96	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2308953 HRE	Matrix Spike	Total Aluminum (Al)	2010/10/26		104	%	80 - 120
		Total Antimony (Sb)	2010/10/26		105	%	80 - 120
		Total Arsenic (As)	2010/10/26		102	%	80 - 120
		Total Barium (Ba)	2010/10/26		101	%	80 - 120
		Total Beryllium (Be)	2010/10/26		99	%	80 - 120
		Total Bismuth (Bi)	2010/10/26		100	%	80 - 120
		Total Boron (B)	2010/10/26		NC	%	80 - 120
		Total Cadmium (Cd)	2010/10/26		102	%	80 - 120
		Total Calcium (Ca)	2010/10/26		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/26		98	%	80 - 120
		Total Cobalt (Co)	2010/10/26		97	%	80 - 120
		Total Copper (Cu)	2010/10/26		95	%	80 - 120
		Total Iron (Fe)	2010/10/26		95	%	80 - 120
		Total Lead (Pb)	2010/10/26		96	%	80 - 120
		Total Magnesium (Mg)	2010/10/26		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/26		97	%	80 - 120
		Total Molybdenum (Mo)	2010/10/26		107	%	80 - 120
		Total Nickel (Ni)	2010/10/26		94	%	80 - 120
		Total Phosphorus (P)	2010/10/26		102	%	80 - 120
		Total Potassium (K)	2010/10/26		NC	%	80 - 120
		Total Selenium (Se)	2010/10/26		98	%	80 - 120
		Total Silicon (Si)	2010/10/26		90	%	80 - 120
		Total Silver (Ag)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308953	HRE	Matrix Spike	Total Sodium (Na)	2010/10/26		NC	%	80 - 120
			Total Strontium (Sr)	2010/10/26		NC	%	80 - 120
			Total Thallium (Tl)	2010/10/26		101	%	80 - 120
			Total Tin (Sn)	2010/10/26		104	%	80 - 120
			Total Titanium (Ti)	2010/10/26		97	%	80 - 120
			Total Uranium (U)	2010/10/26		103	%	80 - 120
			Total Vanadium (V)	2010/10/26		99	%	80 - 120
			Total Zinc (Zn)	2010/10/26		95	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/26		101	%	85 - 115
			Total Antimony (Sb)	2010/10/26		105	%	85 - 115
			Total Arsenic (As)	2010/10/26		101	%	85 - 115
			Total Barium (Ba)	2010/10/26		105	%	85 - 115
			Total Beryllium (Be)	2010/10/26		102	%	85 - 115
			Total Bismuth (Bi)	2010/10/26		105	%	85 - 115
			Total Boron (B)	2010/10/26		104	%	85 - 115
			Total Cadmium (Cd)	2010/10/26		104	%	85 - 116
			Total Calcium (Ca)	2010/10/26		101	%	85 - 115
			Total Chromium (Cr)	2010/10/26		101	%	85 - 115
			Total Cobalt (Co)	2010/10/26		98	%	85 - 115
			Total Copper (Cu)	2010/10/26		100	%	85 - 115
			Total Iron (Fe)	2010/10/26		100	%	85 - 115
			Total Lead (Pb)	2010/10/26		101	%	85 - 115
			Total Magnesium (Mg)	2010/10/26		101	%	85 - 115
			Total Manganese (Mn)	2010/10/26		100	%	85 - 115
			Total Molybdenum (Mo)	2010/10/26		106	%	85 - 115
			Total Nickel (Ni)	2010/10/26		98	%	85 - 115
			Total Phosphorus (P)	2010/10/26		104	%	85 - 115
			Total Potassium (K)	2010/10/26		99	%	85 - 115
			Total Selenium (Se)	2010/10/26		102	%	85 - 115
			Total Silicon (Si)	2010/10/26		98	%	85 - 115
			Total Silver (Ag)	2010/10/26		98	%	85 - 115
			Total Sodium (Na)	2010/10/26		101	%	85 - 115
			Total Strontium (Sr)	2010/10/26		99	%	85 - 115
			Total Thallium (Tl)	2010/10/26		104	%	85 - 115
			Total Tin (Sn)	2010/10/26		103	%	85 - 115
			Total Titanium (Ti)	2010/10/26		101	%	85 - 115
			Total Uranium (U)	2010/10/26		105	%	85 - 115
			Total Vanadium (V)	2010/10/26		101	%	85 - 115
			Total Zinc (Zn)	2010/10/26		100	%	85 - 115
		Method Blank	Total Aluminum (Al)	2010/10/26	<5		ug/L	
			Total Antimony (Sb)	2010/10/26	<0.5		ug/L	
			Total Arsenic (As)	2010/10/26	<1		ug/L	
			Total Barium (Ba)	2010/10/26	<5		ug/L	
			Total Beryllium (Be)	2010/10/26	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/26	<1		ug/L	
			Total Boron (B)	2010/10/26	<10		ug/L	
			Total Cadmium (Cd)	2010/10/26	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/26	<200		ug/L	
			Total Chromium (Cr)	2010/10/26	<5		ug/L	
			Total Cobalt (Co)	2010/10/26	<0.5		ug/L	
			Total Copper (Cu)	2010/10/26	<1		ug/L	
			Total Iron (Fe)	2010/10/26	<100		ug/L	
			Total Lead (Pb)	2010/10/26	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/26	<50		ug/L	
			Total Manganese (Mn)	2010/10/26	<2		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308953 HRE	Method Blank	Total Molybdenum (Mo)	2010/10/26	<1		ug/L	
		Total Nickel (Ni)	2010/10/26	<1		ug/L	
		Total Phosphorus (P)	2010/10/26	<100		ug/L	
		Total Potassium (K)	2010/10/26	<200		ug/L	
		Total Selenium (Se)	2010/10/26	<2		ug/L	
		Total Silicon (Si)	2010/10/26	<50		ug/L	
		Total Silver (Ag)	2010/10/26	<0.1		ug/L	
		Total Sodium (Na)	2010/10/26	<100		ug/L	
		Total Strontium (Sr)	2010/10/26	<1		ug/L	
		Total Thallium (Tl)	2010/10/26	<0.05		ug/L	
		Total Tin (Sn)	2010/10/26	<1		ug/L	
		Total Titanium (Ti)	2010/10/26	<5		ug/L	
		Total Uranium (U)	2010/10/26	<0.1		ug/L	
		Total Vanadium (V)	2010/10/26	<1		ug/L	
		Total Zinc (Zn)	2010/10/26	<5		ug/L	
	RPD	Total Aluminum (Al)	2010/10/26	16.3		%	25
		Total Arsenic (As)	2010/10/26	6.3		%	25
		Total Barium (Ba)	2010/10/26	2.9		%	25
		Total Boron (B)	2010/10/26	0.9		%	25
		Total Cadmium (Cd)	2010/10/26	NC		%	25
		Total Calcium (Ca)	2010/10/26	5.1		%	25
		Total Chromium (Cr)	2010/10/26	NC		%	25
		Total Copper (Cu)	2010/10/26	NC		%	25
		Total Iron (Fe)	2010/10/26	9.2		%	25
		Total Lead (Pb)	2010/10/26	NC		%	25
		Total Magnesium (Mg)	2010/10/26	4.8		%	25
		Total Manganese (Mn)	2010/10/26	5.2		%	25
		Total Phosphorus (P)	2010/10/26	NC		%	25
		Total Potassium (K)	2010/10/26	7.4		%	25
		Total Selenium (Se)	2010/10/26	NC		%	25
		Total Sodium (Na)	2010/10/26	5.4		%	25
		Total Uranium (U)	2010/10/26	NC		%	25
		Total Zinc (Zn)	2010/10/26	NC		%	25
2309195 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		103	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2312742 OK	Matrix Spike [HO3349-09]	Phenols-4AAP	2010/10/28		104	%	75 - 125
	Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
	Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
	RPD [HO3349-09]	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E8871

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B0E8871

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site Location: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2011/10/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	2	N/A	2010/10/25	CAM SOP-00448	SM 2320B
Alkalinity	3	N/A	2010/10/26	CAM SOP-00448	SM 2320B
Anions	2	N/A	2010/10/26	CAM SOP-00435	SM 4110B
Anions	3	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free (WAD) Cyanide	5	N/A	2010/10/27	CAM SOP-00457	SM4500-CN-I modified
Fluoride	2	2010/10/23	2010/10/25	CAM SOP-00448	APHA 4500FC
Fluoride	3	2010/10/25	2010/10/26	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	5	N/A	2010/10/27	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	5	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	5	N/A	2010/10/27	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	5	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	5	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water 0	1	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water 0	4	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	2	N/A	2010/10/25	CAM SOP-00448	SM 4500H
pH	3	N/A	2010/10/26	CAM SOP-00448	SM 4500H
Phenols (4AAP)	5	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	5	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	5	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	5	2010/10/27	2010/10/28	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	5	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/22	CAM SOP-00417	APHA 2130B
Turbidity	4	N/A	2010/10/25	CAM SOP-00417	APHA 2130B

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and

Site Location: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2011/10/25

CERTIFICATE OF ANALYSIS

-2-

performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7339			HO7347			HO7348		
Sampling Date		2010/10/21 08:40			2010/10/21 14:40			2010/10/21 16:20		
COC Number		218822-06-01			218822-06-01			218822-06-01		
	Units	**MW-7S**	**RDL**	**QC Batch**	**MW6-STRADDLE**	**RDL**	**QC Batch**	**MW1-D**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	590	1	2306386	340	1	2306386	8800	1	2306386
Inorganics										
Total Ammonia-N	mg/L	0.47	0.05	2309117	0.48	0.05	2309117	20	0.5	2309117
Fluoride (F-)	mg/L	0.3	0.1	2307258	0.2	0.1	2308317	0.2	0.1	2307258
Free Cyanide	mg/L	<0.002	0.002	2305537	<0.002	0.002	2305537	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.01	0.01	2307096	0.01	0.01	2307096	<0.01	0.01	2307096
pH	pH	7.79		2307263	7.95		2308316	6.97		2307263
Phenols-4AAP	mg/L	<0.001	0.001	2307332	<0.001	0.001	2307332	<0.001	0.001	2307332
Total Phosphorus	mg/L	34	0.4	2310823	6.6	0.2	2310823	0.15	0.02	2310823
Total Suspended Solids	mg/L	91000	200	2306994	17000	200	2306994	600	10	2306994
Sulphide	mg/L	0.10	0.02	2307657	0.08	0.02	2307657	<0.02	0.02	2307659
Turbidity	NTU	63000	3	2307794	18000	1	2307794	300	0.1	2306734
Alkalinity (Total as CaCO3)	mg/L	569	1	2307261	315	1	2308315	34	1	2307261
Nitrite (N)	mg/L	0.09	0.01	2307099	0.03	0.01	2307099	<0.01	0.01	2306880
Dissolved Chloride (Cl)	mg/L	22	1	2307256	9	1	2306882	16300	200	2306882
Nitrate (N)	mg/L	<0.1	0.1	2307099	0.3	0.1	2307099	<0.1	0.1	2306880
Nitrate + Nitrite	mg/L	0.2	0.1	2307099	0.3	0.1	2307099	<0.1	0.1	2306880
Dissolved Bromide (Br-)	mg/L	<1	1	2307256	<1	1	2306882	160	10	2306882
Dissolved Sulphate (SO4)	mg/L	181	1	2307256	60	1	2306882	1820	10	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7349			HO7350		
Sampling Date		2010/10/21 16:50			2010/10/21		
COC Number		218822-06-01			218822-06-01		
	Units	**MW1-I**	**RDL**	**QC Batch**	**DUP-2**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	1100	1	2306386	9600	1	2306386
Inorganics							
Total Ammonia-N	mg/L	0.05	0.05	2309117	20	0.5	2309117
Fluoride (F-)	mg/L	0.2	0.1	2308317	<1 (1)	1	2308317
Free Cyanide	mg/L	<0.002	0.002	2305537	0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.01	0.01	2307096	0.01	0.01	2307096
pH	pH	7.88		2308316	7.02		2308316
Phenols-4AAP	mg/L	<0.001	0.001	2307332	0.002	0.001	2307332
Total Phosphorus	mg/L	3.0	0.1	2310823	0.44	0.04	2310823
Total Suspended Solids	mg/L	4500	100	2307063	660	10	2307063
Sulphide	mg/L	<0.02	0.02	2307659	<0.02	0.02	2307657
Turbidity	NTU	2900	0.1	2307794	400	0.1	2307794
Alkalinity (Total as CaCO3)	mg/L	452	1	2308315	33	1	2308315
Nitrite (N)	mg/L	0.01	0.01	2307099	<0.01	0.01	2307099
Dissolved Chloride (Cl)	mg/L	214	2	2307256	17200	200	2306882
Nitrate (N)	mg/L	0.7	0.1	2307099	<0.1	0.1	2307099
Nitrate + Nitrite	mg/L	0.8	0.1	2307099	<0.1	0.1	2307099
Dissolved Bromide (Br-)	mg/L	<1	1	2307256	169	10	2306882
Dissolved Sulphate (SO4)	mg/L	445	1	2307256	1830	10	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7339			HO7347		
Sampling Date		2010/10/21 08:40			2010/10/21 14:40		
COC Number		218822-06-01			218822-06-01		
	Units	**MW-7S**	**RDL**	**QC Batch**	**MW6-STRADDLE**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0015 (1)	0.0015	2310410	<0.0001	0.0001	2310337
Dissolved Aluminum (Al)	ug/L	940	5	2310428	460	5	2310428
Total Aluminum (Al)	ug/L	380000	5000	2311988	210000	5000	2311988
Dissolved Antimony (Sb)	ug/L	0.8	0.5	2310428	0.6	0.5	2310428
Total Antimony (Sb)	ug/L	<5	5	2311988	10	5	2311988
Dissolved Arsenic (As)	ug/L	3	1	2310428	5	1	2310428
Total Arsenic (As)	ug/L	180	10	2311988	51	10	2311988
Dissolved Barium (Ba)	ug/L	66	5	2310428	62	5	2310428
Total Barium (Ba)	ug/L	3800	50	2311988	2300	50	2311988
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2310428	<0.5	0.5	2310428
Total Beryllium (Be)	ug/L	19	5	2311988	7	5	2311988
Dissolved Bismuth (Bi)	ug/L	<1	1	2310428	<1	1	2310428
Total Bismuth (Bi)	ug/L	<10	10	2311988	<10	10	2311988
Dissolved Boron (B)	ug/L	4500	10	2310428	180	10	2310428
Total Boron (B)	ug/L	5500	100	2311988	490	100	2311988
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2310428	<0.1	0.1	2310428
Total Cadmium (Cd)	ug/L	4	1	2311988	1	1	2311988
Dissolved Calcium (Ca)	ug/L	72000	200	2310428	76000	200	2310428
Total Calcium (Ca)	ug/L	2800000	2000	2311988	740000	2000	2311988
Dissolved Chromium (Cr)	ug/L	<5	5	2310428	<5	5	2310428
Total Chromium (Cr)	ug/L	600	50	2311988	180	50	2311988
Dissolved Cobalt (Co)	ug/L	5.0	0.5	2310428	5.0	0.5	2310428
Total Cobalt (Co)	ug/L	360	5	2311988	130	5	2311988
Dissolved Copper (Cu)	ug/L	2	1	2310428	1	1	2310428
Total Copper (Cu)	ug/L	740	10	2311988	150	10	2311988
Dissolved Iron (Fe)	ug/L	1600	100	2310428	700	100	2310428
Total Iron (Fe)	ug/L	750000	10000	2311988	210000	1000	2311988
Dissolved Lead (Pb)	ug/L	1.4	0.5	2310428	0.6	0.5	2310428
Total Lead (Pb)	ug/L	330	5	2311988	57	5	2311988
Dissolved Magnesium (Mg)	ug/L	99000	50	2310428	38000	50	2310428

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
(5 mm sediments)

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7339			HO7347		
Sampling Date		2010/10/21 08:40			2010/10/21 14:40		
COC Number		218822-06-01			218822-06-01		
	Units	**MW-7S**	**RDL**	**QC Batch**	**MW6-STRADDLE**	**RDL**	**QC Batch**
Total Magnesium (Mg)	ug/L	490000	500	2311988	150000	500	2311988
Dissolved Manganese (Mn)	ug/L	300	2	2310428	56	2	2310428
Total Manganese (Mn)	ug/L	22000	20	2311988	7200	20	2311988
Dissolved Molybdenum (Mo)	ug/L	7	1	2310428	3	1	2310428
Total Molybdenum (Mo)	ug/L	32	10	2311988	<10	10	2311988
Dissolved Nickel (Ni)	ug/L	3	1	2310428	2	1	2310428
Total Nickel (Ni)	ug/L	810	10	2311988	280	10	2311988
Dissolved Phosphorus (P)	ug/L	120	100	2310428	<100	100	2310428
Total Phosphorus (P)	ug/L	25000	1000	2311988	7700	1000	2311988
Dissolved Potassium (K)	ug/L	7000	200	2310428	5800	200	2310428
Total Potassium (K)	ug/L	100000	2000	2311988	57000	2000	2311988
Dissolved Selenium (Se)	ug/L	<2	2	2310428	<2	2	2310428
Dissolved Silicon (Si)	ug/L	10000	50	2310428	9400	50	2310428
Total Silicon (Si)	ug/L	460000	500	2311988	180000	500	2311988
Total Selenium (Se)	ug/L	<20	20	2311988	<20	20	2311988
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2310428	<0.1	0.1	2310428
Total Silver (Ag)	ug/L	2	1	2311988	<1	1	2311988
Dissolved Sodium (Na)	ug/L	95000	100	2310428	16000	100	2310428
Total Sodium (Na)	ug/L	110000	1000	2311988	22000	1000	2311988
Dissolved Strontium (Sr)	ug/L	3600	1	2310428	4300	1	2310428
Total Strontium (Sr)	ug/L	11000	10	2311988	7000	10	2311988
Dissolved Thallium (Tl)	ug/L	0.05	0.05	2310428	0.07	0.05	2310428
Total Thallium (Tl)	ug/L	4.5	0.5	2311988	1.8	0.5	2311988
Dissolved Tin (Sn)	ug/L	<1	1	2310428	<1	1	2310428
Total Tin (Sn)	ug/L	12	10	2311988	<10	10	2311988
Dissolved Titanium (Ti)	ug/L	24	5	2310428	6	5	2310428
Total Titanium (Ti)	ug/L	7200	500	2311988	2100	50	2311988
Dissolved Uranium (U)	ug/L	10	0.1	2310428	1.1	0.1	2310428
Total Uranium (U)	ug/L	47	1	2311988	7	1	2311988
Dissolved Vanadium (V)	ug/L	4	1	2310428	2	1	2310428
Total Vanadium (V)	ug/L	760	10	2311988	240	10	2311988
Dissolved Zinc (Zn)	ug/L	5	5	2310428	5	5	2310428
Total Zinc (Zn)	ug/L	2000	50	2311988	680	50	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7348		HO7349		HO7350		
Sampling Date		2010/10/21 16:20		2010/10/21 16:50		2010/10/21		
COC Number		218822-06-01		218822-06-01		218822-06-01		
	Units	**MW1-D**	**RDL**	**MW1-I**	**RDL**	**DUP-2**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/L	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	2310337
Dissolved Aluminum (Al)	ug/L	<100	100	74	5	<100	100	2308237
Total Aluminum (Al)	ug/L	6200	50	60000	500	9200	300	2311988
Dissolved Antimony (Sb)	ug/L	<10	10	<0.5	0.5	<10	10	2308237
Total Antimony (Sb)	ug/L	5	5	<0.5	0.5	<30	30	2311988
Dissolved Arsenic (As)	ug/L	31	20	<1	1	27	20	2308237
Total Arsenic (As)	ug/L	<50	50	28	1	<50	50	2311988
Dissolved Barium (Ba)	ug/L	<100	100	15	5	<100	100	2308237
Total Barium (Ba)	ug/L	95	50	430	5	<300	300	2311988
Dissolved Beryllium (Be)	ug/L	<10	10	<0.5	0.5	<10	10	2308237
Total Beryllium (Be)	ug/L	<5	5	3.1	0.5	<30	30	2311988
Dissolved Bismuth (Bi)	ug/L	<20	20	<1	1	<20	20	2308237
Total Bismuth (Bi)	ug/L	<10	10	<1	1	<50	50	2311988
Dissolved Boron (B)	ug/L	6100	200	140	10	5800	200	2308237
Total Boron (B)	ug/L	6400	100	190	10	6100	500	2311988
Dissolved Cadmium (Cd)	ug/L	<2	2	<0.1	0.1	<2	2	2308237
Total Cadmium (Cd)	ug/L	<1	1	0.6	0.1	<5	5	2311988
Dissolved Calcium (Ca)	ug/L	2500000	4000	110000	200	2700000	4000	2308237
Total Calcium (Ca)	ug/L	2800000	2000	520000	2000	2900000	10000	2311988
Dissolved Chromium (Cr)	ug/L	<100	100	<5	5	<100	100	2308237
Total Chromium (Cr)	ug/L	<500	500	110	5	<300	300	2311988
Dissolved Cobalt (Co)	ug/L	<10	10	4.6	0.5	<10	10	2308237
Total Cobalt (Co)	ug/L	<5	5	52	0.5	<30	30	2311988
Dissolved Copper (Cu)	ug/L	<20	20	<1	1	<20	20	2308237
Total Copper (Cu)	ug/L	48	10	95	1	72	50	2311988
Dissolved Iron (Fe)	ug/L	6500	2000	130	100	8600	2000	2308237
Total Iron (Fe)	ug/L	20000	1000	120000	1000	25000	5000	2311988
Dissolved Lead (Pb)	ug/L	<10	10	<0.5	0.5	<10	10	2308237
Total Lead (Pb)	ug/L	9	5	54	0.5	<30	30	2311988
Dissolved Magnesium (Mg)	ug/L	610000	1000	200000	50	660000	1000	2308237
Total Magnesium (Mg)	ug/L	720000	500	270000	50	730000	3000	2311988
Dissolved Manganese (Mn)	ug/L	1400	40	31	2	1500	40	2308237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7348		HO7349		HO7350		
Sampling Date		2010/10/21 16:20		2010/10/21 16:50		2010/10/21		
COC Number		218822-06-01		218822-06-01		218822-06-01		
	Units	**MW1-D**	**RDL**	**MW1-I**	**RDL**	**DUP-2**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	1800	20	2700	2	2000	100	2311988
Dissolved Molybdenum (Mo)	ug/L	<20	20	2	1	<20	20	2308237
Total Molybdenum (Mo)	ug/L	11	10	5	1	<50	50	2311988
Dissolved Nickel (Ni)	ug/L	<20	20	2	1	<20	20	2308237
Total Nickel (Ni)	ug/L	<50	50	110	1	<50	50	2311988
Dissolved Phosphorus (P)	ug/L	<2000	2000	<100	100	<2000	2000	2308237
Total Phosphorus (P)	ug/L	<1000	1000	3200	100	<5000	5000	2311988
Dissolved Potassium (K)	ug/L	150000	4000	5500	200	150000	4000	2308237
Total Potassium (K)	ug/L	160000	2000	18000	200	160000	10000	2311988
Dissolved Selenium (Se)	ug/L	93	40	3	2	58	40	2308237
Dissolved Silicon (Si)	ug/L	3000	1000	7400	50	3000	1000	2308237
Total Silicon (Si)	ug/L	11000	500	77000	500	14000	3000	2311988
Total Selenium (Se)	ug/L	<100	100	6	2	<100	100	2311988
Dissolved Silver (Ag)	ug/L	<2	2	<0.1	0.1	<2	2	2308237
Total Silver (Ag)	ug/L	<1	1	0.4	0.1	<5	5	2311988
Dissolved Sodium (Na)	ug/L	7200000	2000	52000	100	7500000	2000	2308237
Total Sodium (Na)	ug/L	7200000	10000	59000	100	8500000	5000	2311988
Dissolved Strontium (Sr)	ug/L	54000	20	2100	1	59000	20	2308237
Total Strontium (Sr)	ug/L	61000	10	3400	1	64000	50	2311988
Dissolved Thallium (Tl)	ug/L	<1	1	<0.05	0.05	<1	1	2308237
Total Thallium (Tl)	ug/L	<0.5	0.5	0.57	0.05	<3	3	2311988
Dissolved Tin (Sn)	ug/L	<20	20	<1	1	<20	20	2308237
Total Tin (Sn)	ug/L	<10	10	<1	1	<50	50	2311988
Dissolved Titanium (Ti)	ug/L	<100	100	<5	5	<100	100	2308237
Total Titanium (Ti)	ug/L	100	50	1100	50	<300	300	2311988
Dissolved Uranium (U)	ug/L	<2	2	11	0.1	<2	2	2308237
Total Uranium (U)	ug/L	1	1	17	0.1	<5	5	2311988
Dissolved Vanadium (V)	ug/L	76	20	2	1	66	20	2308237
Total Vanadium (V)	ug/L	<50	50	120	1	<50	50	2311988
Dissolved Zinc (Zn)	ug/L	<100	100	<5	5	<100	100	2308237
Total Zinc (Zn)	ug/L	76	50	310	5	<300	300	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

Test Summary

Maxxam ID HO7339
Sample ID MW-7S
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2307261	N/A	2010/10/25	YOGESH PATEL
Anions	IC	2307256	N/A	2010/10/26	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2305537	N/A	2010/10/27	CHRISTINE PHAM
Fluoride	F	2307258	2010/10/23	2010/10/25	YOGESH PATEL
Hardness (calculated as CaCO3)		2306386	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2310428	N/A	2010/10/27	VIVIANA CANZONIERI
Total Metals Analysis by ICPMS	ICP/MS	2311988	N/A	2010/10/29	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2309117	N/A	2010/10/28	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2307099	N/A	2010/10/25	CHANDRA NANDLAL
pH	PH	2307263	N/A	2010/10/25	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2307332	N/A	2010/10/27	GODWIN OKEREKE
Orthophosphate	AC	2307096	N/A	2010/10/26	DEONARINE RAMNARINE
Sulphide	ISE/S	2307657	N/A	2010/10/25	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2310823	2010/10/27	2010/10/28	VIORICA ROTARU
Total Suspended Solids	SLDS	2306994	N/A	2010/10/25	JAGJIT DEOL
Turbidity	TURB	2307794	N/A	2010/10/25	KULDIP THAKUR

Maxxam ID HO7347
Sample ID MW6-STRADDLE
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2308315	N/A	2010/10/26	YOGESH PATEL
Anions	IC	2306882	N/A	2010/10/27	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2305537	N/A	2010/10/27	CHRISTINE PHAM
Fluoride	F	2308317	2010/10/25	2010/10/26	YOGESH PATEL
Hardness (calculated as CaCO3)		2306386	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310337	2010/10/27	2010/10/27	MAGDALENA CARLOS
Dissolved Metals by ICPMS	ICP/MS	2310428	N/A	2010/10/27	VIVIANA CANZONIERI
Total Metals Analysis by ICPMS	ICP/MS	2311988	N/A	2010/10/29	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2309117	N/A	2010/10/28	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2307099	N/A	2010/10/25	CHANDRA NANDLAL
pH	PH	2308316	N/A	2010/10/26	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2307332	N/A	2010/10/27	GODWIN OKEREKE
Orthophosphate	AC	2307096	N/A	2010/10/26	DEONARINE RAMNARINE
Sulphide	ISE/S	2307657	N/A	2010/10/25	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2310823	2010/10/27	2010/10/28	VIORICA ROTARU
Total Suspended Solids	SLDS	2306994	N/A	2010/10/25	JAGJIT DEOL
Turbidity	TURB	2307794	N/A	2010/10/25	KULDIP THAKUR

Maxxam ID HO7348
Sample ID MW1-D
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2307261	N/A	2010/10/25	YOGESH PATEL
Anions	IC	2306882	N/A	2010/10/27	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2305537	N/A	2010/10/27	CHRISTINE PHAM
Fluoride	F	2307258	2010/10/23	2010/10/25	YOGESH PATEL
Hardness (calculated as CaCO3)		2306386	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310337	2010/10/27	2010/10/27	MAGDALENA CARLOS

Test Summary

Dissolved Metals by ICPMS	ICP/MS	2308237	N/A	2010/10/27	HUA REN
Total Metals Analysis by ICPMS	ICP/MS	2311988	N/A	2010/10/29	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2309117	N/A	2010/10/28	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2306880	N/A	2010/10/23	CHANDRA NANDLAL
pH	PH	2307263	N/A	2010/10/25	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2307332	N/A	2010/10/27	GODWIN OKEREKE
Orthophosphate	AC	2307096	N/A	2010/10/26	DEONARINE RAMNARINE
Sulphide	ISE/S	2307659	N/A	2010/10/25	SURINDER RAI
Total Phosphorus (Colourimetric)	LACH/P	2310823	2010/10/27	2010/10/28	VIORICA ROTARU
Total Suspended Solids	SLDS	2306994	N/A	2010/10/25	JAGJIT DEOL
Turbidity	TURB	2306734	N/A	2010/10/22	KULDIP THAKUR

Maxxam ID HO7349
Sample ID MW1-I
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2308315	N/A	2010/10/26	YOGESH PATEL
Anions	IC	2307256	N/A	2010/10/26	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2305537	N/A	2010/10/27	CHRISTINE PHAM
Fluoride	F	2308317	2010/10/25	2010/10/26	YOGESH PATEL
Hardness (calculated as CaCO3)		2306386	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310337	2010/10/27	2010/10/27	MAGDALENA CARLOS
Dissolved Metals by ICPMS	ICP/MS	2308237	N/A	2010/10/27	HUA REN
Total Metals Analysis by ICPMS	ICP/MS	2311988	N/A	2010/10/29	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2309117	N/A	2010/10/28	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2307099	N/A	2010/10/25	CHANDRA NANDLAL
pH	PH	2308316	N/A	2010/10/26	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2307332	N/A	2010/10/27	GODWIN OKEREKE
Orthophosphate	AC	2307096	N/A	2010/10/26	DEONARINE RAMNARINE
Sulphide	ISE/S	2307659	N/A	2010/10/25	SURINDER RAI
Total Phosphorus (Colourimetric)	LACH/P	2310823	2010/10/27	2010/10/28	VIORICA ROTARU
Total Suspended Solids	SLDS	2307063	N/A	2010/10/25	JAGJIT DEOL
Turbidity	TURB	2307794	N/A	2010/10/25	KULDIP THAKUR

Maxxam ID HO7349 Dup
Sample ID MW1-I
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Anions	IC	2307256	N/A	2010/10/26	FARI DEHDEZI

Maxxam ID HO7350
Sample ID DUP-2
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2308315	N/A	2010/10/26	YOGESH PATEL
Anions	IC	2306882	N/A	2010/10/27	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2305537	N/A	2010/10/27	CHRISTINE PHAM
Fluoride	F	2308317	2010/10/25	2010/10/26	YOGESH PATEL
Hardness (calculated as CaCO3)		2306386	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310337	2010/10/27	2010/10/27	MAGDALENA CARLOS
Dissolved Metals by ICPMS	ICP/MS	2308237	N/A	2010/10/27	HUA REN
Total Metals Analysis by ICPMS	ICP/MS	2311988	N/A	2010/10/29	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2309117	N/A	2010/10/28	ALINA DOBREANU

Test Summary

Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2307099	N/A	2010/10/25	CHANDRA NANDLAL
pH	PH	2308316	N/A	2010/10/26	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2307332	N/A	2010/10/27	GODWIN OKEREKE
Orthophosphate	AC	2307096	N/A	2010/10/26	DEONARINE RAMNARINE
Sulphide	ISE/S	2307657	N/A	2010/10/25	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2310823	2010/10/27	2010/10/28	VIORICA ROTARU
Total Suspended Solids	SLDS	2307063	N/A	2010/10/25	JAGJIT DEOL
Turbidity	TURB	2307794	N/A	2010/10/25	KULDIP THAKUR

Maxxam ID HO7350 Dup
Sample ID DUP-2
Matrix Water

Collected 2010/10/21
Shipped
Received 2010/10/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2308315	N/A	2010/10/26	YOGESH PATEL
Fluoride	F	2308317	2010/10/25	2010/10/26	YOGESH PATEL
pH	PH	2308316	N/A	2010/10/26	YOGESH PATEL

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Site Location: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2306734	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.2		NTU	
		RPD	Turbidity	2010/10/22	0.8		%	20
2306880	C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
			Nitrate (N)	2010/10/23		92	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		94	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		99	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	20
			Dissolved Bromide (Br-)	2010/10/27	NC		%	20
			Dissolved Sulphate (SO4)	2010/10/27	2.1		%	20
2306994	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096	DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099	C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
			Nitrate (N)	2010/10/25		94	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
2307256	FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		98	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		97	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	20
			Dissolved Bromide (Br-)	2010/10/26	NC		%	20

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	RPD [HO7349-01]	Dissolved Sulphate (SO4)	2010/10/26	0.6		%	20
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	80 - 120
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	20
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	80 - 120
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	80 - 120
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	20
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.2		NTU	
		RPD	Turbidity	2010/10/25	NC		%	20
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120
			Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
			Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
			Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237	HRE	Spiked Blank	Dissolved Antimony (Sb)	2010/10/27		102	%	80 - 120
			Dissolved Arsenic (As)	2010/10/27		98	%	80 - 120
			Dissolved Barium (Ba)	2010/10/27		101	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		100	%	80 - 120
			Dissolved Boron (B)	2010/10/27		105	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		100	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		98	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		97	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		98	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		97	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		101	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		105	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		96	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		97	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		102	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		99	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		103	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		99	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		96	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		101	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		100	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		99	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		99	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	20
		Dissolved Boron (B)	2010/10/26	NC		%	20
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	20
		Dissolved Calcium (Ca)	2010/10/26	NC		%	20
		Dissolved Chromium (Cr)	2010/10/26	NC		%	20
		Dissolved Copper (Cu)	2010/10/26	NC		%	20
		Dissolved Iron (Fe)	2010/10/26	NC		%	20
		Dissolved Lead (Pb)	2010/10/26	NC		%	20
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	20
		Dissolved Manganese (Mn)	2010/10/26	NC		%	20
		Dissolved Nickel (Ni)	2010/10/26	NC		%	20
		Dissolved Potassium (K)	2010/10/26	NC		%	20
		Dissolved Sodium (Na)	2010/10/26	NC		%	20
		Dissolved Zinc (Zn)	2010/10/26	NC		%	20
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	80 - 120
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	20
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	20
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
		Dissolved Boron (B)	2010/10/27		100	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428 VIV	Matrix Spike	Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		104	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		98	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		100	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/27		99	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		96	%	80 - 120
		Dissolved Boron (B)	2010/10/27		101	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		102	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		102	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		100	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		100	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		100	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		100	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		98	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		99	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		102	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		102	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		100	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		102	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		104	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		100	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		102	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		99	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		98	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		99	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		97	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		106	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		99	%	80 - 120
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Site Location: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428 VIV	Method Blank	Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
		Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	20
2310823 VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
	QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
	Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
	Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
	RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988 VIV	Matrix Spike						
	[HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
		Total Antimony (Sb)	2010/10/29		112	%	80 - 120
		Total Arsenic (As)	2010/10/29		103	%	80 - 120
		Total Barium (Ba)	2010/10/29		102	%	80 - 120
		Total Beryllium (Be)	2010/10/29		104	%	80 - 120
		Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
		Total Boron (B)	2010/10/29		112	%	80 - 120
		Total Cadmium (Cd)	2010/10/29		103	%	80 - 120
		Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Site Location: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike						
	[HO7344-03]	Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	80 - 120
		Total Antimony (Sb)	2010/10/29		110	%	80 - 120
		Total Arsenic (As)	2010/10/29		103	%	80 - 120
		Total Barium (Ba)	2010/10/29		101	%	80 - 120
		Total Beryllium (Be)	2010/10/29		103	%	80 - 120
		Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
		Total Boron (B)	2010/10/29		110	%	80 - 120
		Total Cadmium (Cd)	2010/10/29		101	%	80 - 120
		Total Calcium (Ca)	2010/10/29		109	%	80 - 120
		Total Chromium (Cr)	2010/10/29		105	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		103	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		108	%	80 - 120
		Total Manganese (Mn)	2010/10/29		108	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		107	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		119 (1)	%	80 - 120
		Total Potassium (K)	2010/10/29		105	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		106	%	80 - 120
		Total Silver (Ag)	2010/10/29		97	%	80 - 120
		Total Sodium (Na)	2010/10/29		106	%	80 - 120
		Total Strontium (Sr)	2010/10/29		105	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		107	%	80 - 120
		Total Titanium (Ti)	2010/10/29		110	%	80 - 120
		Total Uranium (U)	2010/10/29		101	%	80 - 120
		Total Vanadium (V)	2010/10/29		105	%	80 - 120
		Total Zinc (Zn)	2010/10/29		107	%	80 - 120
	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
		Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
		Total Arsenic (As)	2010/10/29	<1		ug/L	
		Total Barium (Ba)	2010/10/29	<5		ug/L	
		Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
		Total Bismuth (Bi)	2010/10/29	<1		ug/L	
		Total Boron (B)	2010/10/29	<10		ug/L	
		Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
		Total Calcium (Ca)	2010/10/29	<200		ug/L	
		Total Chromium (Cr)	2010/10/29	<5		ug/L	
		Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
		Total Copper (Cu)	2010/10/29	<1		ug/L	
		Total Iron (Fe)	2010/10/29	<100		ug/L	
		Total Lead (Pb)	2010/10/29	<0.5		ug/L	
		Total Magnesium (Mg)	2010/10/29	<50		ug/L	
		Total Manganese (Mn)	2010/10/29	<2		ug/L	
		Total Molybdenum (Mo)	2010/10/29	<1		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1)   Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

Eva

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site Location: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2011/10/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0F0605
Received: 2010/10/22, 18:42

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	6	N/A	2010/10/27	CAM SOP-00448	SM 2320B
Alkalinity	1	N/A	2010/11/04	CAM SOP-00448	SM 2320B
Anions	6	N/A	2010/10/28	CAM SOP-00435	SM 4110B
Anions	1	N/A	2010/11/04	CAM SOP-00435	SM 4110B
Free (WAD) Cyanide	7	N/A	2010/10/28	CAM SOP-00457	SM4500-CN-I modified
Fluoride	2	2010/10/26	2010/10/27	CAM SOP-00448	APHA 4500FC
Fluoride	5	2010/10/27	2010/10/27	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/27	CAM SOP 00102	SM 2340 B
Hardness (calculated as CaCO3)	2	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Hardness (calculated as CaCO3)	4	N/A	2010/10/29	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	7	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	2	N/A	2010/10/27	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	3	N/A	2010/10/28	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	2	N/A	2010/11/03	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	4	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	2	N/A	2010/11/01	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	1	N/A	2010/11/02	CAM SOP-00447	EPA 6020
Ammonia-N	7	N/A	2010/10/29	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	7	N/A	2010/10/27	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	7	N/A	2010/10/27	CAM SOP-00448	SM 4500H
Phenols (4AAP)	5	N/A	2010/10/28	CAM SOP-00444	MOE ROPHEN-E3179
Phenols (4AAP)	2	N/A	2010/10/29	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	7	N/A	2010/10/27	CAM SOP-00461	SM 4500 P-F
Sulphide	7	N/A	2010/10/29	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	7	2010/10/28	2010/10/29	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	7	N/A	2010/10/26	CAM SOP-00428	SM 2540D
Turbidity	7	N/A	2010/10/26	CAM SOP-00417	APHA 2130B

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for

Site Location: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2011/10/25

CERTIFICATE OF ANALYSIS

-2-

Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

RESULTS OF ANALYSES OF WATER

Maxxam ID		HP1799			HP1802			HP1803		
Sampling Date		2010/10/22 12:15			2010/10/22 14:00			2010/10/22 15:20		
COC Number		218822-07-01			218822-07-01			218822-07-01		
	Units	**MW-2 I**	**RDL**	**QC Batch**	**MW-3 S**	**RDL**	**QC Batch**	**MW 3D**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	940	1	2307681	1000	1	2307681	3300	1	2307681
Inorganics										
Total Ammonia-N	mg/L	1.5	0.05	2311760	1.2	0.05	2311760	7.9	0.3	2311760
Fluoride (F-)	mg/L	0.2	0.1	2310990	0.2	0.1	2310990	0.3	0.1	2310990
Free Cyanide	mg/L	<0.002	0.002	2310421	<0.002	0.002	2310421	<0.002	0.002	2310421
Orthophosphate (P)	mg/L	<0.01	0.01	2309967	<0.01	0.01	2309967	<0.01	0.01	2309967
pH	pH	7.74		2310988	7.76		2310988	7.45		2310988
Phenols-4AAP	mg/L	<0.001	0.001	2310392	<0.001	0.001	2310392	<0.001	0.001	2310392
Total Phosphorus	mg/L	0.13	0.02	2312352	5.0	0.1	2312352	0.10	0.04	2312352
Total Suspended Solids	mg/L	360	10	2309004	21000	100	2309004	190	10	2309004
Sulphide	mg/L	<0.02	0.02	2314198	<0.02	0.02	2314201	<0.02	0.02	2314201
Turbidity	NTU	320	0.1	2309735	19000	1	2309735	100	0.1	2309127
Alkalinity (Total as CaCO3)	mg/L	129	1	2310982	109	1	2310982	72	1	2310982
Nitrite (N)	mg/L	<0.01	0.01	2309646	0.02	0.01	2309646	<0.01	0.01	2309753
Dissolved Chloride (Cl)	mg/L	147	1	2309997	574	10	2309997	4980	50	2309997
Nitrate (N)	mg/L	<0.1	0.1	2309646	<0.1	0.1	2309646	<0.1	0.1	2309753
Nitrate + Nitrite	mg/L	<0.1	0.1	2309646	<0.1	0.1	2309646	<0.1	0.1	2309753
Dissolved Bromide (Br-)	mg/L	2	1	2309997	7	1	2309997	62	10	2309997
Dissolved Sulphate (SO4)	mg/L	1120	10	2309997	933	10	2309997	1450	10	2309997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HP1804			HP1805			HP1806		
Sampling Date		2010/10/22 16:30			2010/10/22 17:20			2010/10/22		
COC Number		218822-07-01			218822-07-01			218822-07-01		
	Units	**MW 11 S**	**RDL**	**QC Batch**	**MW 11 I**	**RDL**	**QC Batch**	**DUP 3**	**RDL**	**QC Batch**

Calculated Parameters										
Hardness (CaCO3)	mg/L	550	1	2307681	450	1	2307681	2000	1	2307681
Inorganics										
Total Ammonia-N	mg/L	0.21	0.05	2311760	1.3	0.05	2311760	0.06	0.05	2311760
Fluoride (F-)	mg/L	0.2	0.1	2310990	0.3	0.1	2310990	0.2	0.1	2310990
Free Cyanide	mg/L	<0.002	0.002	2310421	<0.002	0.002	2310421	<0.002	0.002	2310421
Orthophosphate (P)	mg/L	<0.01	0.01	2309967	<0.01	0.01	2309967	<0.01	0.01	2309967
pH	pH	7.88		2310988	7.88		2310988	7.56		2310988
Phenols-4AAP	mg/L	<0.001	0.001	2310392	<0.001	0.001	2311195	<0.001	0.001	2310392
Total Phosphorus	mg/L	19	0.2	2312352	0.22	0.04	2312352	1.1	0.1	2312352
Total Suspended Solids	mg/L	88000	200	2309004	240	10	2309004	1600	20	2309004
Sulphide	mg/L	0.17	0.02	2314201	<0.02	0.02	2314198	<0.02	0.02	2314201
Turbidity	NTU	62000	2	2309735	210	0.1	2309735	3700	0.1	2309127
Alkalinity (Total as CaCO3)	mg/L	322	1	2318844	453	1	2310982	700	1	2310982
Nitrite (N)	mg/L	0.02	0.01	2309646	<0.01	0.01	2309646	<0.01	0.01	2309646
Dissolved Chloride (Cl)	mg/L	3	1	2319861	9	1	2309997	12	1	2309997
Nitrate (N)	mg/L	<0.1	0.1	2309646	<0.1	0.1	2309646	<0.1	0.1	2309646
Nitrate + Nitrite	mg/L	<0.1	0.1	2309646	<0.1	0.1	2309646	<0.1	0.1	2309646
Dissolved Bromide (Br-)	mg/L	<1	1	2319861	<1	1	2309997	<1	1	2309997
Dissolved Sulphate (SO4)	mg/L	77	1	2319861	140	1	2309997	1380	10	2309997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		HP1807		
Sampling Date		2010/10/22 11:10		
COC Number		218822-07-01		
	Units	**MW 2 SHALLOW**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	1900	1	2307681
Inorganics				
Total Ammonia-N	mg/L	<0.05	0.05	2311760
Fluoride (F-)	mg/L	0.2	0.1	2310990
Free Cyanide	mg/L	<0.002	0.002	2310421
Orthophosphate (P)	mg/L	<0.01	0.01	2309967
pH	pH	7.57		2310988
Phenols-4AAP	mg/L	<0.001	0.001	2311195
Total Phosphorus	mg/L	1.1	0.1	2312352
Total Suspended Solids	mg/L	1700	30	2309004
Sulphide	mg/L	<0.02	0.02	2314201
Turbidity	NTU	3600	0.1	2309735
Alkalinity (Total as CaCO3)	mg/L	700	1	2310982
Nitrite (N)	mg/L	<0.01	0.01	2309646
Dissolved Chloride (Cl)	mg/L	11	1	2309997
Nitrate (N)	mg/L	<0.1	0.1	2309646
Nitrate + Nitrite	mg/L	<0.1	0.1	2309646
Dissolved Bromide (Br-)	mg/L	<1	1	2309997
Dissolved Sulphate (SO4)	mg/L	1410	10	2309997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1799			HP1802		
Sampling Date		2010/10/22 12:15			2010/10/22 14:00		
COC Number		218822-07-01			218822-07-01		
	Units	**MW-2 I**	**RDL**	**QC Batch**	**MW-3 S**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2310491	<0.0001	0.0001	2310410
Dissolved Aluminum (Al)	ug/L	150	5	2310916	32	5	2310896
Total Aluminum (Al)	ug/L	3000	5	2313486	88000	50	2313486
Dissolved Antimony (Sb)	ug/L	0.9	0.5	2310916	0.6	0.5	2310896
Total Antimony (Sb)	ug/L	<0.5	0.5	2313486	<5	5	2313486
Dissolved Arsenic (As)	ug/L	3	1	2310916	3	1	2310896
Total Arsenic (As)	ug/L	4	1	2313486	51	10	2313486
Dissolved Barium (Ba)	ug/L	7	5	2310916	14	5	2310896
Total Barium (Ba)	ug/L	40	5	2313486	690	50	2313486
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2310916	<0.5	0.5	2310896
Total Beryllium (Be)	ug/L	<0.5	0.5	2313486	<5	5	2313486
Dissolved Bismuth (Bi)	ug/L	<1	1	2310916	<1	1	2310896
Total Bismuth (Bi)	ug/L	<1	1	2313486	<10	10	2313486
Dissolved Boron (B)	ug/L	2000	10	2310916	1300	10	2310896
Total Boron (B)	ug/L	2300	10	2313486	1600	100	2313486
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2310916	<0.1	0.1	2310896
Total Cadmium (Cd)	ug/L	<0.1	0.1	2313486	2	1	2313486
Dissolved Calcium (Ca)	ug/L	180000	1000	2310916	220000	200	2310896
Total Calcium (Ca)	ug/L	230000	200	2313486	1400000	2000	2313486
Dissolved Chromium (Cr)	ug/L	<5	5	2310916	<5	5	2310896
Total Chromium (Cr)	ug/L	6	5	2313486	180	50	2313486
Dissolved Cobalt (Co)	ug/L	<0.5	0.5	2310916	5.1	0.5	2310896
Total Cobalt (Co)	ug/L	2.8	0.5	2313486	83	5	2313486
Dissolved Copper (Cu)	ug/L	<1	1	2310916	<1	1	2310896
Total Copper (Cu)	ug/L	4	1	2313486	230	10	2313486
Dissolved Iron (Fe)	ug/L	760	100	2310916	1100	100	2310896
Total Iron (Fe)	ug/L	5600	100	2313486	160000	1000	2313486
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2310916	<0.5	0.5	2310896
Total Lead (Pb)	ug/L	2.5	0.5	2313486	87	5	2313486
Dissolved Magnesium (Mg)	ug/L	120000	50	2310916	120000	50	2310896
Total Magnesium (Mg)	ug/L	130000	50	2313486	260000	500	2313486
Dissolved Manganese (Mn)	ug/L	130	2	2310916	140	2	2310896

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1799			HP1802		
Sampling Date		2010/10/22 12:15			2010/10/22 14:00		
COC Number		218822-07-01			218822-07-01		
	Units	**MW-2 I**	**RDL**	**QC Batch**	**MW-3 S**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	340	2	2313486	9500	20	2313486
Dissolved Molybdenum (Mo)	ug/L	9	1	2310916	12	1	2310896
Total Molybdenum (Mo)	ug/L	10	1	2313486	16	10	2313486
Dissolved Nickel (Ni)	ug/L	<1	1	2310916	<1	1	2310896
Total Nickel (Ni)	ug/L	6	1	2313486	160	10	2313486
Dissolved Phosphorus (P)	ug/L	<100	100	2310916	<100	100	2310896
Total Phosphorus (P)	ug/L	170	100	2313486	9100	1000	2313486
Dissolved Potassium (K)	ug/L	17000	200	2310916	16000	200	2310896
Total Potassium (K)	ug/L	21000	200	2313486	43000	2000	2313486
Dissolved Selenium (Se)	ug/L	<2	2	2310916	2	2	2310896
Dissolved Silicon (Si)	ug/L	5100	50	2310916	6500	50	2310896
Total Silicon (Si)	ug/L	9700	50	2313486	120000	500	2313486
Total Selenium (Se)	ug/L	<2	2	2313486	<20	20	2313486
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2310916	<0.1	0.1	2310896
Total Silver (Ag)	ug/L	<0.1	0.1	2313486	<1	1	2313486
Dissolved Sodium (Na)	ug/L	200000	100	2310916	320000	100	2310896
Total Sodium (Na)	ug/L	210000	100	2313486	290000	1000	2313486
Dissolved Strontium (Sr)	ug/L	11000	1	2310916	13000	1	2310896
Total Strontium (Sr)	ug/L	13000	1	2313486	15000	10	2313486
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2310916	<0.05	0.05	2310896
Total Thallium (Tl)	ug/L	<0.05	0.05	2313486	1.1	0.5	2313486
Dissolved Tin (Sn)	ug/L	<1	1	2310916	<1	1	2310896
Total Tin (Sn)	ug/L	<1	1	2313486	<10	10	2313486
Dissolved Titanium (Ti)	ug/L	<5	5	2310916	<5	5	2310896
Total Titanium (Ti)	ug/L	60	5	2313486	2600	50	2313486
Dissolved Uranium (U)	ug/L	0.2	0.1	2310916	0.3	0.1	2310896
Total Uranium (U)	ug/L	0.5	0.1	2313486	10	1	2313486
Dissolved Vanadium (V)	ug/L	<1	1	2310916	3	1	2310896
Total Vanadium (V)	ug/L	6	1	2313486	180	10	2313486
Dissolved Zinc (Zn)	ug/L	<10 (1)	10	2310916	<5	5	2310896
Total Zinc (Zn)	ug/L	16	5	2313486	480	50	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1803			HP1804		
Sampling Date		2010/10/22 15:20			2010/10/22 16:30		
COC Number		218822-07-01			218822-07-01		
	Units	**MW 3D**	**RDL**	**QC Batch**	**MW 11 S**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410	<0.0001	0.0001	2310410
Dissolved Aluminum (Al)	ug/L	110	50	2310916	4800	5	2318318
Total Aluminum (Al)	ug/L	3300	5	2313486	470000	500	2313486
Dissolved Antimony (Sb)	ug/L	<5	5	2310916	1.1	0.5	2318318
Total Antimony (Sb)	ug/L	<0.5	0.5	2313486	<5	5	2313486
Dissolved Arsenic (As)	ug/L	<10	10	2310916	5	1	2318318
Total Arsenic (As)	ug/L	7 (1)	5	2313486	200	10	2313486
Dissolved Barium (Ba)	ug/L	<50	50	2310916	200	5	2318318
Total Barium (Ba)	ug/L	54	5	2313486	9200	50	2313486
Dissolved Beryllium (Be)	ug/L	<5	5	2310916	<0.5	0.5	2318318
Total Beryllium (Be)	ug/L	<0.5	0.5	2313486	24	5	2313486
Dissolved Bismuth (Bi)	ug/L	<10	10	2310916	<1	1	2318318
Total Bismuth (Bi)	ug/L	<1	1	2313486	<10	10	2313486
Dissolved Boron (B)	ug/L	4600	100	2310916	89	10	2318318
Total Boron (B)	ug/L	4800	10	2313486	810	100	2313486
Dissolved Cadmium (Cd)	ug/L	<1	1	2310916	<0.1	0.1	2318318
Total Cadmium (Cd)	ug/L	<0.1	0.1	2313486	6	1	2313486
Dissolved Calcium (Ca)	ug/L	870000	2000	2310916	130000	200	2318318
Total Calcium (Ca)	ug/L	970000	2000	2313486	3900000	2000	2313486
Dissolved Chromium (Cr)	ug/L	<50	50	2310916	14	5	2318318
Total Chromium (Cr)	ug/L	6	5	2313486	1400	50	2313486
Dissolved Cobalt (Co)	ug/L	<5	5	2310916	13	0.5	2318318
Total Cobalt (Co)	ug/L	1.2	0.5	2313486	420	5	2313486
Dissolved Copper (Cu)	ug/L	<10	10	2310916	13	1	2318318
Total Copper (Cu)	ug/L	2	1	2313486	1100	10	2313486
Dissolved Iron (Fe)	ug/L	2800	1000	2310916	7600	100	2318318
Total Iron (Fe)	ug/L	5400	100	2313486	840000	100	2313486
Dissolved Lead (Pb)	ug/L	<5	5	2310916	5.1	0.5	2318318
Total Lead (Pb)	ug/L	1.6	0.5	2313486	350	5	2313486
Dissolved Magnesium (Mg)	ug/L	280000	500	2310916	58000	50	2318318
Total Magnesium (Mg)	ug/L	270000	50	2313486	480000	500	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1803			HP1804		
Sampling Date		2010/10/22 15:20			2010/10/22 16:30		
COC Number		218822-07-01			218822-07-01		
	Units	**MW 3D**	**RDL**	**QC Batch**	**MW 11 S**	**RDL**	**QC Batch**
Dissolved Manganese (Mn)	ug/L	390	20	2310916	680	2	2318318
Total Manganese (Mn)	ug/L	510	2	2313486	42000	20	2313486
Dissolved Molybdenum (Mo)	ug/L	<10	10	2310916	2	1	2318318
Total Molybdenum (Mo)	ug/L	7	1	2313486	29	10	2313486
Dissolved Nickel (Ni)	ug/L	<10	10	2310916	9	1	2318318
Total Nickel (Ni)	ug/L	<5 (1)	5	2313486	860	50	2313486
Dissolved Phosphorus (P)	ug/L	<1000	1000	2310916	450	100	2318318
Total Phosphorus (P)	ug/L	<100	100	2313486	28000	1000	2313486
Dissolved Potassium (K)	ug/L	61000	2000	2310916	7100	200	2318318
Total Potassium (K)	ug/L	65000	200	2313486	110000	2000	2313486
Dissolved Selenium (Se)	ug/L	<20	20	2310916	<2	2	2318318
Dissolved Silicon (Si)	ug/L	4000	500	2310916	17000	50	2318318
Total Silicon (Si)	ug/L	10000	50	2313486	550000	5000	2313486
Total Selenium (Se)	ug/L	<20 (1)	20	2313486	<20	20	2313486
Dissolved Silver (Ag)	ug/L	<1	1	2310916	<0.1	0.1	2318318
Total Silver (Ag)	ug/L	0.2	0.1	2313486	3	1	2313486
Dissolved Sodium (Na)	ug/L	2400000	1000	2310916	13000	100	2318318
Total Sodium (Na)	ug/L	2500000	1000	2313486	22000	1000	2313486
Dissolved Strontium (Sr)	ug/L	20000	10	2310916	1200	1	2318318
Total Strontium (Sr)	ug/L	23000	1	2313486	8500	10	2313486
Dissolved Thallium (Tl)	ug/L	<0.5	0.5	2310916	0.06	0.05	2318318
Total Thallium (Tl)	ug/L	<0.05	0.05	2313486	4.4	0.5	2313486
Dissolved Tin (Sn)	ug/L	<10	10	2310916	<1	1	2318318
Total Tin (Sn)	ug/L	<1	1	2313486	<10	10	2313486
Dissolved Titanium (Ti)	ug/L	<50	50	2310916	160	5	2318318
Total Titanium (Ti)	ug/L	150	5	2313486	5900	500	2313486
Dissolved Uranium (U)	ug/L	<1	1	2310916	4.2	0.1	2318318
Total Uranium (U)	ug/L	0.2	0.1	2313486	40	1	2313486
Dissolved Vanadium (V)	ug/L	<10	10	2310916	10	1	2318318
Total Vanadium (V)	ug/L	<5 (1)	5	2313486	850	10	2313486
Dissolved Zinc (Zn)	ug/L	<50	50	2310916	21	5	2318318
Total Zinc (Zn)	ug/L	83	5	2313486	2100	50	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1805			HP1806		
Sampling Date		2010/10/22 17:20			2010/10/22		
COC Number		218822-07-01			218822-07-01		
	Units	**MW 11 I**	**RDL**	**QC Batch**	**DUP 3**	**RDL**	**QC Batch**

Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410	<0.0001	0.0001	2310410
Dissolved Aluminum (Al)	ug/L	78	5	2318318	260	5	2310916
Total Aluminum (Al)	ug/L	2400	5	2316529	25000	50	2313486
Dissolved Antimony (Sb)	ug/L	0.6	0.5	2318318	0.6	0.5	2310916
Total Antimony (Sb)	ug/L	<0.5	0.5	2316529	<0.5	0.5	2313486
Dissolved Arsenic (As)	ug/L	12	1	2318318	2	1	2310916
Total Arsenic (As)	ug/L	13	1	2316529	10	1	2313486
Dissolved Barium (Ba)	ug/L	23	5	2318318	17	5	2310916
Total Barium (Ba)	ug/L	57	5	2316529	210	5	2313486
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2318318	<0.5	0.5	2310916
Total Beryllium (Be)	ug/L	<0.5	0.5	2316529	1.3	0.5	2313486
Dissolved Bismuth (Bi)	ug/L	<1	1	2318318	<1	1	2310916
Total Bismuth (Bi)	ug/L	3	1	2316529	<1	1	2313486
Dissolved Boron (B)	ug/L	1200	10	2318318	340	10	2310916
Total Boron (B)	ug/L	1300	10	2316529	340	10	2313486
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2318318	<0.1	0.1	2310916
Total Cadmium (Cd)	ug/L	<0.1	0.1	2316529	0.3	0.1	2313486
Dissolved Calcium (Ca)	ug/L	70000	1000	2318318	210000	200	2310916
Total Calcium (Ca)	ug/L	99000	200	2316529	370000	200	2313486
Dissolved Chromium (Cr)	ug/L	<5	5	2318318	<5	5	2310916
Total Chromium (Cr)	ug/L	6	5	2316529	43	5	2313486
Dissolved Cobalt (Co)	ug/L	3.9	0.5	2318318	4.9	0.5	2310916
Total Cobalt (Co)	ug/L	2.3	0.5	2316529	21	0.5	2313486
Dissolved Copper (Cu)	ug/L	<1	1	2318318	<1	1	2310916
Total Copper (Cu)	ug/L	5	1	2316529	40	1	2313486
Dissolved Iron (Fe)	ug/L	830	100	2318318	1100	100	2310916
Total Iron (Fe)	ug/L	4900	100	2316529	46000	100	2313486
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2318318	<0.5	0.5	2310916
Total Lead (Pb)	ug/L	1.7	0.5	2316529	20	0.5	2313486
Dissolved Magnesium (Mg)	ug/L	66000	50	2318318	360000	50	2310916
Total Magnesium (Mg)	ug/L	72000	50	2316529	360000	50	2313486
Dissolved Manganese (Mn)	ug/L	33	2	2318318	250	2	2310916

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1805			HP1806		
Sampling Date		2010/10/22 17:20			2010/10/22		
COC Number		218822-07-01			218822-07-01		
	Units	**MW 11 I**	**RDL**	**QC Batch**	**DUP 3**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	240	2	2316529	1200	2	2313486
Dissolved Molybdenum (Mo)	ug/L	3	1	2318318	3	1	2310916
Total Molybdenum (Mo)	ug/L	4	1	2316529	4	1	2313486
Dissolved Nickel (Ni)	ug/L	<1	1	2318318	5	1	2310916
Total Nickel (Ni)	ug/L	5	1	2316529	51 (1)	5	2313486
Dissolved Phosphorus (P)	ug/L	<100	100	2318318	<100	100	2310916
Total Phosphorus (P)	ug/L	190	100	2316529	1100	100	2313486
Dissolved Potassium (K)	ug/L	16000	200	2318318	9300	200	2310916
Total Potassium (K)	ug/L	18000	200	2316529	15000	200	2313486
Dissolved Selenium (Se)	ug/L	<2	2	2318318	<2	2	2310916
Dissolved Silicon (Si)	ug/L	8600	50	2318318	9600	50	2310916
Total Silicon (Si)	ug/L	12000	50	2316529	43000	50	2313486
Total Selenium (Se)	ug/L	<2	2	2316529	<2	2	2313486
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2318318	<0.1	0.1	2310916
Total Silver (Ag)	ug/L	<0.1	0.1	2316529	0.2	0.1	2313486
Dissolved Sodium (Na)	ug/L	55000	100	2318318	72000	100	2310916
Total Sodium (Na)	ug/L	60000	100	2316529	69000	100	2313486
Dissolved Strontium (Sr)	ug/L	11000	1	2318318	4200	1	2310916
Total Strontium (Sr)	ug/L	12000	1	2316529	4600	1	2313486
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2318318	<0.05	0.05	2310916
Total Thallium (Tl)	ug/L	<0.05	0.05	2316529	0.25	0.05	2313486
Dissolved Tin (Sn)	ug/L	<1	1	2318318	<1	1	2310916
Total Tin (Sn)	ug/L	1	1	2316529	<1	1	2313486
Dissolved Titanium (Ti)	ug/L	<5	5	2318318	6	5	2310916
Total Titanium (Ti)	ug/L	38	5	2316529	610	50	2313486
Dissolved Uranium (U)	ug/L	0.3	0.1	2318318	18	0.1	2310916
Total Uranium (U)	ug/L	0.8	0.1	2316529	21	0.1	2313486
Dissolved Vanadium (V)	ug/L	<1	1	2318318	4	1	2310916
Total Vanadium (V)	ug/L	5	1	2316529	54	1	2313486
Dissolved Zinc (Zn)	ug/L	<5	5	2318318	<10 (1)	10	2310916
Total Zinc (Zn)	ug/L	15	5	2316529	130	5	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1807		
Sampling Date		2010/10/22 11:10		
COC Number		218822-07-01		
	Units	**MW 2 SHALLOW**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410
Dissolved Aluminum (Al)	ug/L	160	5	2310896
Total Aluminum (Al)	ug/L	22000	5	2313486
Dissolved Antimony (Sb)	ug/L	<0.5	0.5	2310896
Total Antimony (Sb)	ug/L	<0.5	0.5	2313486
Dissolved Arsenic (As)	ug/L	2	1	2310896
Total Arsenic (As)	ug/L	9	1	2313486
Dissolved Barium (Ba)	ug/L	16	5	2310896
Total Barium (Ba)	ug/L	180	5	2313486
Dissolved Beryllium (Be)	ug/L	<0.5	0.5	2310896
Total Beryllium (Be)	ug/L	1.3	0.5	2313486
Dissolved Bismuth (Bi)	ug/L	<1	1	2310896
Total Bismuth (Bi)	ug/L	<1	1	2313486
Dissolved Boron (B)	ug/L	310	10	2310896
Total Boron (B)	ug/L	330	10	2313486
Dissolved Cadmium (Cd)	ug/L	<0.1	0.1	2310896
Total Cadmium (Cd)	ug/L	0.2	0.1	2313486
Dissolved Calcium (Ca)	ug/L	210000	200	2310896
Total Calcium (Ca)	ug/L	340000	200	2313486
Dissolved Chromium (Cr)	ug/L	<5	5	2310896
Total Chromium (Cr)	ug/L	38	5	2313486
Dissolved Cobalt (Co)	ug/L	1.6	0.5	2310896
Total Cobalt (Co)	ug/L	19	0.5	2313486
Dissolved Copper (Cu)	ug/L	<1	1	2310896
Total Copper (Cu)	ug/L	36	1	2313486
Dissolved Iron (Fe)	ug/L	970	100	2310896
Total Iron (Fe)	ug/L	40000	100	2313486
Dissolved Lead (Pb)	ug/L	<0.5	0.5	2310896
Total Lead (Pb)	ug/L	17	0.5	2313486
Dissolved Magnesium (Mg)	ug/L	340000	50	2310896
Total Magnesium (Mg)	ug/L	360000	50	2313486
Dissolved Manganese (Mn)	ug/L	230	2	2310896

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1807		
Sampling Date		2010/10/22 11:10		
COC Number		218822-07-01		
	Units	**MW 2 SHALLOW**	**RDL**	**QC Batch**
Total Manganese (Mn)	ug/L	1000	2	2313486
Dissolved Molybdenum (Mo)	ug/L	3	1	2310896
Total Molybdenum (Mo)	ug/L	4	1	2313486
Dissolved Nickel (Ni)	ug/L	5	1	2310896
Total Nickel (Ni)	ug/L	42 (1)	5	2313486
Dissolved Phosphorus (P)	ug/L	<100	100	2310896
Total Phosphorus (P)	ug/L	980	100	2313486
Dissolved Potassium (K)	ug/L	9400	200	2310896
Total Potassium (K)	ug/L	15000	200	2313486
Dissolved Selenium (Se)	ug/L	<2	2	2310896
Dissolved Silicon (Si)	ug/L	9200	50	2310896
Total Silicon (Si)	ug/L	40000	50	2313486
Total Selenium (Se)	ug/L	<2	2	2313486
Dissolved Silver (Ag)	ug/L	<0.1	0.1	2310896
Total Silver (Ag)	ug/L	0.2	0.1	2313486
Dissolved Sodium (Na)	ug/L	69000	100	2310896
Total Sodium (Na)	ug/L	68000	100	2313486
Dissolved Strontium (Sr)	ug/L	4500	1	2310896
Total Strontium (Sr)	ug/L	4600	1	2313486
Dissolved Thallium (Tl)	ug/L	<0.05	0.05	2310896
Total Thallium (Tl)	ug/L	0.24	0.05	2313486
Dissolved Tin (Sn)	ug/L	<1	1	2310896
Total Tin (Sn)	ug/L	<1	1	2313486
Dissolved Titanium (Ti)	ug/L	9	5	2310896
Total Titanium (Ti)	ug/L	560	50	2313486
Dissolved Uranium (U)	ug/L	18	0.1	2310896
Total Uranium (U)	ug/L	20	0.1	2313486
Dissolved Vanadium (V)	ug/L	2	1	2310896
Total Vanadium (V)	ug/L	47	1	2313486
Dissolved Zinc (Zn)	ug/L	<5	5	2310896
Total Zinc (Zn)	ug/L	120	5	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2011/10/25

Site Location: TANSLEY QUARRY
Sampler Initials: AF

Test Summary

Maxxam ID HP1799
Sample ID MW-2 I
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/26	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/29	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310491	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2310916	N/A	2010/10/28	JOHN BOWMAN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/10/29	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2310392	N/A	2010/10/28	GODWIN OKEREKE
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314198	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309735	N/A	2010/10/26	KULDIP THAKUR

Maxxam ID HP1802
Sample ID MW-3 S
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/26	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/28	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2310896	N/A	2010/10/27	HUA REN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/10/29	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2310392	N/A	2010/10/28	GODWIN OKEREKE
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314201	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309735	N/A	2010/10/26	KULDIP THAKUR

Maxxam ID HP1803
Sample ID MW 3D
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/27	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/29	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG

Test Summary

Dissolved Metals by ICPMS	ICP/MS	2310916	N/A	2010/10/28	JOHN BOWMAN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/10/29	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309753	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2310392	N/A	2010/10/28	GODWIN OKEREKE
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314201	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309127	N/A	2010/10/26	KULDIP THAKUR

Maxxam ID	HP1804	**Collected**	2010/10/22
Sample ID	MW 11 S	**Shipped**	
Matrix	Water	**Received**	2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2318844	N/A	2010/11/04	YOGESH PATEL
Anions	IC	2319861	N/A	2010/11/04	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/27	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/29	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2318318	N/A	2010/11/03	JOHN BOWMAN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/10/29	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2310392	N/A	2010/10/28	GODWIN OKEREKE
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314201	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309735	N/A	2010/10/26	KULDIP THAKUR

Maxxam ID	HP1805	**Collected**	2010/10/22
Sample ID	MW 11 I	**Shipped**	
Matrix	Water	**Received**	2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/27	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/28	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2318318	N/A	2010/11/03	JOHN BOWMAN
Total Metals Analysis by ICPMS	ICP/MS	2316529	N/A	2010/11/02	VIVIANA CANZONIERI
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2311195	N/A	2010/10/29	BRAMDEO MOTIRAM
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314198	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309735	N/A	2010/10/26	KULDIP THAKUR

Test Summary

Maxxam ID HP1806
Sample ID DUP 3
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/27	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/29	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2310916	N/A	2010/10/28	JOHN BOWMAN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/11/01	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2310392	N/A	2010/10/28	GODWIN OKEREKE
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314201	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309127	N/A	2010/10/26	KULDIP THAKUR

Maxxam ID HP1806 Dup
Sample ID DUP 3
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE

Maxxam ID HP1807
Sample ID MW 2 SHALLOW
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Alkalinity	PH	2310982	N/A	2010/10/27	YOGESH PATEL
Anions	IC	2309997	N/A	2010/10/28	FARI DEHDEZI
Free (WAD) Cyanide	TECH/CN	2310421	N/A	2010/10/28	CHRISTINE PHAM
Fluoride	F	2310990	2010/10/27	2010/10/27	YOGESH PATEL
Hardness (calculated as CaCO3)		2307681	N/A	2010/10/27	AUTOMATED STATCHK
Mercury in Water by CVAA	CVAA	2310410	2010/10/27	2010/10/27	LAWRENCE CHEUNG
Dissolved Metals by ICPMS	ICP/MS	2310896	N/A	2010/10/27	HUA REN
Total Metals Analysis by ICPMS	ICP/MS	2313486	N/A	2010/11/01	HUA REN
Ammonia-N	LACH/NH4	2311760	N/A	2010/10/29	ALINA DOBREANU
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	2309646	N/A	2010/10/27	LEYLA SIAHPOOSH
pH	PH	2310988	N/A	2010/10/27	YOGESH PATEL
Phenols (4AAP)	TECH/PHEN	2311195	N/A	2010/10/29	BRAMDEO MOTIRAM
Orthophosphate	AC	2309967	N/A	2010/10/27	DEONARINE RAMNARINE
Sulphide	ISE/S	2314201	N/A	2010/10/29	NARENDRAN PALANI
Total Phosphorus (Colourimetric)	LACH/P	2312352	2010/10/28	2010/10/29	VIORICA ROTARU
Total Suspended Solids	SLDS	2309004	N/A	2010/10/26	JAGJIT DEOL
Turbidity	TURB	2309735	N/A	2010/10/26	KULDIP THAKUR

Test Summary

Maxxam ID HP1807 Dup
Sample ID MW 2 SHALLOW
Matrix Water

Collected 2010/10/22
Shipped
Received 2010/10/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	2310896	N/A	2010/10/27	HUA REN

Package 1	6.0°C
Package 2	4.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Metals: Preserved sample contained visible sediment. Results may be biased high due to analytes leaching from sediment.
rcs

Sample HP1802-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HP1803-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HP1804-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Elevated ion balance was confirmed by re-analysis.

Sample HP1805-01: The result for dissolved cobalt was higher than the result for total cobalt. This was confirmed by re-analysis.

Results relate only to the items tested.

Quality Assurance Report

Maxxam Job Number: MB0F0605

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2309004 JDO	QC Standard	Total Suspended Solids	2010/10/26		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/26	<10		mg/L	
2309127 KTH	QC Standard	Turbidity	2010/10/26		100	%	85 - 115
	Method Blank	Turbidity	2010/10/26	<0.2		NTU	
	RPD	Turbidity	2010/10/26	2.4		%	20
2309646 LS	Matrix Spike [HP1806-01]	Nitrite (N)	2010/10/27		95	%	80 - 120
		Nitrate (N)	2010/10/27		102	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/27		101	%	85 - 115
		Nitrate (N)	2010/10/27		107	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/27	<0.01		mg/L	
		Nitrate (N)	2010/10/27	<0.1		mg/L	
	RPD [HP1806-01]	Nitrite (N)	2010/10/27	NC		%	25
		Nitrate (N)	2010/10/27	NC		%	25
2309735 KTH	QC Standard	Turbidity	2010/10/26		101	%	85 - 115
	Method Blank	Turbidity	2010/10/26	<0.2		NTU	
	RPD	Turbidity	2010/10/26	2.9		%	20
2309753 LS	Matrix Spike	Nitrite (N)	2010/10/27		102	%	80 - 120
		Nitrate (N)	2010/10/27		107	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/27		102	%	85 - 115
		Nitrate (N)	2010/10/27		108	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/27	<0.01		mg/L	
		Nitrate (N)	2010/10/27	<0.1		mg/L	
	RPD	Nitrite (N)	2010/10/27	NC		%	25
		Nitrate (N)	2010/10/27	NC		%	25
2309967 DRM	Matrix Spike [HP1806-01]	Orthophosphate (P)	2010/10/27		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2010/10/27		100	%	80 - 120
	Method Blank	Orthophosphate (P)	2010/10/27	<0.01		mg/L	
	RPD [HP1806-01]	Orthophosphate (P)	2010/10/27	NC		%	25
2309997 FD	Matrix Spike	Dissolved Bromide (Br-)	2010/10/28		99	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/28		102	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/28		99	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/28		101	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2010/10/28	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/28	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/28	<1		mg/L	
	RPD	Dissolved Bromide (Br-)	2010/10/28	NC		%	20
2310392 OK	Matrix Spike	Phenols-4AAP	2010/10/28		102	%	75 - 125
	Spiked Blank	Phenols-4AAP	2010/10/28		104	%	75 - 125
	Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
	RPD	Phenols-4AAP	2010/10/28	NC		%	25
2310410 LCH	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310421 CP	Matrix Spike	Free Cyanide	2010/10/28		116	%	80 - 120
	Spiked Blank	Free Cyanide	2010/10/28		97	%	80 - 120
	Method Blank	Free Cyanide	2010/10/28	<0.002		mg/L	
	RPD	Free Cyanide	2010/10/28	NC		%	25
2310491 LCH	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		93	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310896 HRE	Matrix Spike [HP1807-09]	Dissolved Aluminum (Al)	2010/10/27		94	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310896 HRE	Matrix Spike						
	[HP1807-09]	Dissolved Antimony (Sb)	2010/10/27		104	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		102	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		93	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/27		96	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		96	%	80 - 120
		Dissolved Boron (B)	2010/10/27		NC	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		94	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		91	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		91	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		94	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		93	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		95	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		88	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		100	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		92	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		105	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		93	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		93	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		92	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		102	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		96	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		98	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		96	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		94	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		103	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		103	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		99	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		99	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		99	%	80 - 120
		Dissolved Boron (B)	2010/10/27		107	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		106	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		102	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		97	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		97	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		102	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		103	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		97	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		101	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		105	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		103	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		97	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		105	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310896 HRE	Spiked Blank	Dissolved Strontium (Sr)	2010/10/27		100	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		102	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		103	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		98	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		99	%	80 - 120
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
		Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD [HP1807-09]	Dissolved Aluminum (Al)	2010/10/27	3.5		%	20
		Dissolved Antimony (Sb)	2010/10/27	NC		%	20
		Dissolved Arsenic (As)	2010/10/27	NC		%	20
		Dissolved Barium (Ba)	2010/10/27	NC		%	20
		Dissolved Beryllium (Be)	2010/10/27	NC		%	20
		Dissolved Bismuth (Bi)	2010/10/27	NC		%	20
		Dissolved Boron (B)	2010/10/27	1.4		%	20
		Dissolved Cadmium (Cd)	2010/10/27	NC		%	20
		Dissolved Calcium (Ca)	2010/10/27	2.8		%	20
		Dissolved Chromium (Cr)	2010/10/27	NC		%	20
		Dissolved Cobalt (Co)	2010/10/27	NC		%	20
		Dissolved Copper (Cu)	2010/10/27	NC		%	20
		Dissolved Iron (Fe)	2010/10/27	1.2		%	20
		Dissolved Lead (Pb)	2010/10/27	NC		%	20
		Dissolved Magnesium (Mg)	2010/10/27	0.4		%	20
		Dissolved Manganese (Mn)	2010/10/27	1.7		%	20
		Dissolved Molybdenum (Mo)	2010/10/27	NC		%	20

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310896	HRE	RPD [HP1807-09]	Dissolved Nickel (Ni)	2010/10/27	NC		%	20
			Dissolved Phosphorus (P)	2010/10/27	NC		%	20
			Dissolved Potassium (K)	2010/10/27	1.4		%	20
			Dissolved Selenium (Se)	2010/10/27	NC		%	20
			Dissolved Silicon (Si)	2010/10/27	1.1		%	20
			Dissolved Silver (Ag)	2010/10/27	NC		%	20
			Dissolved Sodium (Na)	2010/10/27	0.8		%	20
			Dissolved Strontium (Sr)	2010/10/27	2.3		%	20
			Dissolved Thallium (Tl)	2010/10/27	NC		%	20
			Dissolved Tin (Sn)	2010/10/27	NC		%	20
			Dissolved Titanium (Ti)	2010/10/27	NC		%	20
			Dissolved Uranium (U)	2010/10/27	0.5		%	20
			Dissolved Vanadium (V)	2010/10/27	NC		%	20
			Dissolved Zinc (Zn)	2010/10/27	NC		%	20
2310916	JBW	Matrix Spike	Dissolved Aluminum (Al)	2010/10/28		101	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/28		107	%	80 - 120
			Dissolved Arsenic (As)	2010/10/28		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/28		95	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/28		96	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/28		91	%	80 - 120
			Dissolved Boron (B)	2010/10/28		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/28		102	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/28		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/28		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/28		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/28		95	%	80 - 120
			Dissolved Iron (Fe)	2010/10/28		100	%	80 - 120
			Dissolved Lead (Pb)	2010/10/28		91	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/28		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/28		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/28		103	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/28		94	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/28		101	%	80 - 120
			Dissolved Potassium (K)	2010/10/28		97	%	80 - 120
			Dissolved Selenium (Se)	2010/10/28		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/28		102	%	80 - 120
			Dissolved Silver (Ag)	2010/10/28		91	%	80 - 120
			Dissolved Sodium (Na)	2010/10/28		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/28		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/28		93	%	80 - 120
			Dissolved Tin (Sn)	2010/10/28		103	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/28		97	%	80 - 120
			Dissolved Uranium (U)	2010/10/28		95	%	80 - 120
			Dissolved Vanadium (V)	2010/10/28		101	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/28		96	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/28		105	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/28		100	%	80 - 120
			Dissolved Arsenic (As)	2010/10/28		96	%	80 - 120
			Dissolved Barium (Ba)	2010/10/28		95	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/28		96	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/28		93	%	80 - 120
			Dissolved Boron (B)	2010/10/28		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/28		99	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/28		100	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/28		98	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310916 JBW	Spiked Blank	Dissolved Cobalt (Co)	2010/10/28		96	%	80 - 120
		Dissolved Copper (Cu)	2010/10/28		96	%	80 - 120
		Dissolved Iron (Fe)	2010/10/28		97	%	80 - 120
		Dissolved Lead (Pb)	2010/10/28		93	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/28		103	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/28		100	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/28		99	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/28		95	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/28		98	%	80 - 120
		Dissolved Potassium (K)	2010/10/28		97	%	80 - 120
		Dissolved Selenium (Se)	2010/10/28		99	%	80 - 120
		Dissolved Silicon (Si)	2010/10/28		103	%	80 - 120
		Dissolved Silver (Ag)	2010/10/28		97	%	80 - 120
		Dissolved Sodium (Na)	2010/10/28		105	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/28		100	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/28		95	%	80 - 120
		Dissolved Tin (Sn)	2010/10/28		98	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/28		96	%	80 - 120
		Dissolved Uranium (U)	2010/10/28		94	%	80 - 120
		Dissolved Vanadium (V)	2010/10/28		99	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/28		96	%	80 - 120
	Method Blank	Dissolved Aluminum (Al)	2010/10/28	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/28	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/28	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/28	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/28	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/28	<1		ug/L	
		Dissolved Boron (B)	2010/10/28	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/28	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/28	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/28	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/28	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/28	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/28	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/28	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/28	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/28	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/28	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/28	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/28	<100		ug/L	
		Dissolved Potassium (K)	2010/10/28	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/28	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/28	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/28	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/28	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/28	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/28	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/28	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/28	<5		ug/L	
		Dissolved Uranium (U)	2010/10/28	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/28	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/28	<5		ug/L	
	RPD	Dissolved Aluminum (Al)	2010/10/28	NC		%	20
		Dissolved Antimony (Sb)	2010/10/28	NC		%	20
		Dissolved Arsenic (As)	2010/10/28	NC		%	20

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Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310916	JBW	RPD	Dissolved Barium (Ba)	2010/10/28	2.7		%	20
			Dissolved Beryllium (Be)	2010/10/28	NC		%	20
			Dissolved Bismuth (Bi)	2010/10/28	NC		%	20
			Dissolved Boron (B)	2010/10/28	NC		%	20
			Dissolved Cadmium (Cd)	2010/10/28	NC		%	20
			Dissolved Calcium (Ca)	2010/10/28	3.0		%	20
			Dissolved Chromium (Cr)	2010/10/28	NC		%	20
			Dissolved Cobalt (Co)	2010/10/28	NC		%	20
			Dissolved Copper (Cu)	2010/10/28	NC		%	20
			Dissolved Iron (Fe)	2010/10/28	NC		%	20
			Dissolved Lead (Pb)	2010/10/28	NC		%	20
			Dissolved Magnesium (Mg)	2010/10/28	0.4		%	20
			Dissolved Manganese (Mn)	2010/10/28	NC		%	20
			Dissolved Molybdenum (Mo)	2010/10/28	NC		%	20
			Dissolved Nickel (Ni)	2010/10/28	NC		%	20
			Dissolved Phosphorus (P)	2010/10/28	NC		%	20
			Dissolved Potassium (K)	2010/10/28	NC		%	20
			Dissolved Selenium (Se)	2010/10/28	NC		%	20
			Dissolved Silicon (Si)	2010/10/28	4.1		%	20
			Dissolved Silver (Ag)	2010/10/28	NC		%	20
			Dissolved Sodium (Na)	2010/10/28	1.9		%	20
			Dissolved Strontium (Sr)	2010/10/28	2.6		%	20
			Dissolved Thallium (Tl)	2010/10/28	NC		%	20
			Dissolved Tin (Sn)	2010/10/28	NC		%	20
			Dissolved Titanium (Ti)	2010/10/28	NC		%	20
			Dissolved Uranium (U)	2010/10/28	0.6		%	20
			Dissolved Vanadium (V)	2010/10/28	NC		%	20
			Dissolved Zinc (Zn)	2010/10/28	NC		%	20
2310982	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/27		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/27	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/27	1.9		%	25
2310990	YPA	Matrix Spike	Fluoride (F-)	2010/10/27		102	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/27		104	%	80 - 120
		Method Blank	Fluoride (F-)	2010/10/27	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/27	0.5		%	20
2311195	BMO	Matrix Spike	Phenols-4AAP	2010/10/29		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/29		102	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/29	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/29	NC		%	25
2311760	ADB	Matrix Spike [HP1800-04]	Total Ammonia-N	2010/10/29		86	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/29		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/29	<0.05		mg/L	
2312352	VRO	Matrix Spike	Total Phosphorus	2010/10/29		100	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/29		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/29		101	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/29	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/29	NC		%	20
2313486	HRE	Matrix Spike [HP1800-03]	Total Aluminum (Al)	2010/10/29		103	%	80 - 120
			Total Antimony (Sb)	2010/10/29		111	%	80 - 120
			Total Arsenic (As)	2010/10/29		104	%	80 - 120
			Total Barium (Ba)	2010/10/29		101	%	80 - 120
			Total Beryllium (Be)	2010/10/29		107	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		105	%	80 - 120

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Matrix Spike						
		[HP1800-03]	Total Boron (B)	2010/10/29		NC	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		109	%	80 - 120
			Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
			Total Chromium (Cr)	2010/10/29		102	%	80 - 120
			Total Cobalt (Co)	2010/10/29		99	%	80 - 120
			Total Copper (Cu)	2010/10/29		98	%	80 - 120
			Total Iron (Fe)	2010/10/29		103	%	80 - 120
			Total Lead (Pb)	2010/10/29		102	%	80 - 120
			Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
			Total Manganese (Mn)	2010/10/29		105	%	80 - 120
			Total Molybdenum (Mo)	2010/10/29		111	%	80 - 120
			Total Nickel (Ni)	2010/10/29		99	%	80 - 120
			Total Phosphorus (P)	2010/10/29		107	%	80 - 120
			Total Potassium (K)	2010/10/29		NC	%	80 - 120
			Total Silicon (Si)	2010/10/29		99	%	80 - 120
			Total Selenium (Se)	2010/10/29		104	%	80 - 120
			Total Silver (Ag)	2010/10/29		102	%	80 - 120
			Total Sodium (Na)	2010/10/29		NC	%	80 - 120
			Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
			Total Thallium (Tl)	2010/10/29		101	%	80 - 120
			Total Tin (Sn)	2010/10/29		109	%	80 - 120
			Total Titanium (Ti)	2010/10/29		103	%	80 - 120
			Total Uranium (U)	2010/10/29		107	%	80 - 120
			Total Vanadium (V)	2010/10/29		104	%	80 - 120
			Total Zinc (Zn)	2010/10/29		99	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/29		104	%	80 - 120
			Total Antimony (Sb)	2010/10/29		101	%	80 - 120
			Total Arsenic (As)	2010/10/29		105	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		106	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		104	%	80 - 120
			Total Boron (B)	2010/10/29		99	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		106	%	80 - 120
			Total Calcium (Ca)	2010/10/29		107	%	80 - 120
			Total Chromium (Cr)	2010/10/29		104	%	80 - 120
			Total Cobalt (Co)	2010/10/29		101	%	80 - 120
			Total Copper (Cu)	2010/10/29		102	%	80 - 120
			Total Iron (Fe)	2010/10/29		105	%	80 - 120
			Total Lead (Pb)	2010/10/29		102	%	80 - 120
			Total Magnesium (Mg)	2010/10/29		104	%	80 - 120
			Total Manganese (Mn)	2010/10/29		105	%	80 - 120
			Total Molybdenum (Mo)	2010/10/29		102	%	80 - 120
			Total Nickel (Ni)	2010/10/29		101	%	80 - 120
			Total Phosphorus (P)	2010/10/29		103	%	80 - 120
			Total Potassium (K)	2010/10/29		105	%	80 - 120
			Total Silicon (Si)	2010/10/29		95	%	80 - 120
			Total Selenium (Se)	2010/10/29		105	%	80 - 120
			Total Silver (Ag)	2010/10/29		103	%	80 - 120
			Total Sodium (Na)	2010/10/29		107	%	80 - 120
			Total Strontium (Sr)	2010/10/29		103	%	80 - 120
			Total Thallium (Tl)	2010/10/29		100	%	80 - 120
			Total Tin (Sn)	2010/10/29		100	%	80 - 120
			Total Titanium (Ti)	2010/10/29		98	%	80 - 120
			Total Uranium (U)	2010/10/29		105	%	80 - 120

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Spiked Blank	Total Vanadium (V)	2010/10/29		103	%	80 - 120
			Total Zinc (Zn)	2010/10/29		104	%	80 - 120
		Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
2314198	PAL	Matrix Spike	Sulphide	2010/10/29		85	%	80 - 120
		Spiked Blank	Sulphide	2010/10/29		88	%	80 - 120
		Method Blank	Sulphide	2010/10/29	<0.02		mg/L	
		RPD	Sulphide	2010/10/29	NC		%	20
2314201	PAL	Matrix Spike	Sulphide	2010/10/29		77	%	80 - 120
		Spiked Blank	Sulphide	2010/10/29		92	%	80 - 120
		Method Blank	Sulphide	2010/10/29	<0.02		mg/L	
		RPD	Sulphide	2010/10/29	NC		%	20
2316529	VIV	Matrix Spike	Total Aluminum (Al)	2010/11/02		NC	%	80 - 120
			Total Antimony (Sb)	2010/11/02		111	%	80 - 120
			Total Arsenic (As)	2010/11/02		104	%	80 - 120
			Total Barium (Ba)	2010/11/02		103	%	80 - 120
			Total Beryllium (Be)	2010/11/02		107	%	80 - 120
			Total Bismuth (Bi)	2010/11/02		102	%	80 - 120
			Total Boron (B)	2010/11/02		100	%	80 - 120
			Total Cadmium (Cd)	2010/11/02		105	%	80 - 120
			Total Calcium (Ca)	2010/11/02		NC	%	80 - 120
			Total Chromium (Cr)	2010/11/02		101	%	80 - 120
			Total Cobalt (Co)	2010/11/02		101	%	80 - 120
			Total Copper (Cu)	2010/11/02		100	%	80 - 120
			Total Iron (Fe)	2010/11/02		102	%	80 - 120
			Total Lead (Pb)	2010/11/02		103	%	80 - 120

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2316529	VIV	Matrix Spike	Total Magnesium (Mg)	2010/11/02		NC	%	80 - 120
			Total Manganese (Mn)	2010/11/02		105	%	80 - 120
			Total Molybdenum (Mo)	2010/11/02		111	%	80 - 120
			Total Nickel (Ni)	2010/11/02		100	%	80 - 120
			Total Phosphorus (P)	2010/11/02		110	%	80 - 120
			Total Potassium (K)	2010/11/02		105	%	80 - 120
			Total Silicon (Si)	2010/11/02		103	%	80 - 120
			Total Selenium (Se)	2010/11/02		106	%	80 - 120
			Total Silver (Ag)	2010/11/02		99	%	80 - 120
			Total Sodium (Na)	2010/11/02		NC	%	80 - 120
			Total Strontium (Sr)	2010/11/02		NC	%	80 - 120
			Total Thallium (Tl)	2010/11/02		103	%	80 - 120
			Total Tin (Sn)	2010/11/02		110	%	80 - 120
			Total Titanium (Ti)	2010/11/02		104	%	80 - 120
			Total Uranium (U)	2010/11/02		104	%	80 - 120
			Total Vanadium (V)	2010/11/02		100	%	80 - 120
			Total Zinc (Zn)	2010/11/02		103	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/11/02		102	%	80 - 120
			Total Antimony (Sb)	2010/11/02		105	%	80 - 120
			Total Arsenic (As)	2010/11/02		102	%	80 - 120
			Total Barium (Ba)	2010/11/02		101	%	80 - 120
			Total Beryllium (Be)	2010/11/02		104	%	80 - 120
			Total Bismuth (Bi)	2010/11/02		99	%	80 - 120
			Total Boron (B)	2010/11/02		100	%	80 - 120
			Total Cadmium (Cd)	2010/11/02		103	%	80 - 120
			Total Calcium (Ca)	2010/11/02		102	%	80 - 120
			Total Chromium (Cr)	2010/11/02		101	%	80 - 120
			Total Cobalt (Co)	2010/11/02		101	%	80 - 120
			Total Copper (Cu)	2010/11/02		101	%	80 - 120
			Total Iron (Fe)	2010/11/02		101	%	80 - 120
			Total Lead (Pb)	2010/11/02		101	%	80 - 120
			Total Magnesium (Mg)	2010/11/02		104	%	80 - 120
			Total Manganese (Mn)	2010/11/02		103	%	80 - 120
			Total Molybdenum (Mo)	2010/11/02		104	%	80 - 120
			Total Nickel (Ni)	2010/11/02		102	%	80 - 120
			Total Phosphorus (P)	2010/11/02		108	%	80 - 120
			Total Potassium (K)	2010/11/02		101	%	80 - 120
			Total Silicon (Si)	2010/11/02		97	%	80 - 120
			Total Selenium (Se)	2010/11/02		105	%	80 - 120
			Total Silver (Ag)	2010/11/02		96	%	80 - 120
			Total Sodium (Na)	2010/11/02		102	%	80 - 120
			Total Strontium (Sr)	2010/11/02		101	%	80 - 120
			Total Thallium (Tl)	2010/11/02		101	%	80 - 120
			Total Tin (Sn)	2010/11/02		103	%	80 - 120
			Total Titanium (Ti)	2010/11/02		100	%	80 - 120
			Total Uranium (U)	2010/11/02		101	%	80 - 120
			Total Vanadium (V)	2010/11/02		100	%	80 - 120
			Total Zinc (Zn)	2010/11/02		104	%	80 - 120
		Method Blank	Total Aluminum (Al)	2010/11/02	9, RDL=5		ug/L	
			Total Antimony (Sb)	2010/11/02	<0.5		ug/L	
			Total Arsenic (As)	2010/11/02	<1		ug/L	
			Total Barium (Ba)	2010/11/02	<5		ug/L	
			Total Beryllium (Be)	2010/11/02	<0.5		ug/L	
			Total Bismuth (Bi)	2010/11/02	<1		ug/L	
			Total Boron (B)	2010/11/02	<10		ug/L	

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2316529 VIV	Method Blank	Total Cadmium (Cd)	2010/11/02	<0.1		ug/L	
		Total Calcium (Ca)	2010/11/02	<200		ug/L	
		Total Chromium (Cr)	2010/11/02	<5		ug/L	
		Total Cobalt (Co)	2010/11/02	<0.5		ug/L	
		Total Copper (Cu)	2010/11/02	<1		ug/L	
		Total Iron (Fe)	2010/11/02	<100		ug/L	
		Total Lead (Pb)	2010/11/02	<0.5		ug/L	
		Total Magnesium (Mg)	2010/11/02	<50		ug/L	
		Total Manganese (Mn)	2010/11/02	<2		ug/L	
		Total Molybdenum (Mo)	2010/11/02	<1		ug/L	
		Total Nickel (Ni)	2010/11/02	<1		ug/L	
		Total Phosphorus (P)	2010/11/02	<100		ug/L	
		Total Potassium (K)	2010/11/02	<200		ug/L	
		Total Silicon (Si)	2010/11/02	<50		ug/L	
		Total Selenium (Se)	2010/11/02	<2		ug/L	
		Total Silver (Ag)	2010/11/02	<0.1		ug/L	
		Total Sodium (Na)	2010/11/02	<100		ug/L	
		Total Strontium (Sr)	2010/11/02	<1		ug/L	
		Total Thallium (Tl)	2010/11/02	<0.05		ug/L	
		Total Tin (Sn)	2010/11/02	<1		ug/L	
		Total Titanium (Ti)	2010/11/02	<5		ug/L	
		Total Uranium (U)	2010/11/02	<0.1		ug/L	
		Total Vanadium (V)	2010/11/02	<1		ug/L	
		Total Zinc (Zn)	2010/11/02	<5		ug/L	
	RPD	Total Aluminum (Al)	2010/11/02	1.2		%	20
		Total Antimony (Sb)	2010/11/02	NC		%	20
		Total Arsenic (As)	2010/11/02	NC		%	20
		Total Barium (Ba)	2010/11/02	4.4		%	20
		Total Beryllium (Be)	2010/11/02	NC		%	20
		Total Bismuth (Bi)	2010/11/02	NC		%	20
		Total Boron (B)	2010/11/02	NC		%	20
		Total Cadmium (Cd)	2010/11/02	NC		%	20
		Total Calcium (Ca)	2010/11/02	1.2		%	20
		Total Chromium (Cr)	2010/11/02	NC		%	20
		Total Cobalt (Co)	2010/11/02	NC		%	20
		Total Copper (Cu)	2010/11/02	14.1		%	20
		Total Iron (Fe)	2010/11/02	2.3		%	20
		Total Lead (Pb)	2010/11/02	NC		%	20
		Total Magnesium (Mg)	2010/11/02	1.5		%	20
		Total Manganese (Mn)	2010/11/02	2.4		%	20
		Total Molybdenum (Mo)	2010/11/02	NC		%	20
		Total Nickel (Ni)	2010/11/02	NC		%	20
		Total Potassium (K)	2010/11/02	2.2		%	20
		Total Silicon (Si)	2010/11/02	6.3		%	20
		Total Selenium (Se)	2010/11/02	NC		%	20
		Total Silver (Ag)	2010/11/02	NC		%	20
		Total Sodium (Na)	2010/11/02	3.2		%	20
		Total Strontium (Sr)	2010/11/02	0.6		%	20
		Total Thallium (Tl)	2010/11/02	NC		%	20
		Total Tin (Sn)	2010/11/02	NC		%	20
		Total Titanium (Ti)	2010/11/02	NC		%	20
		Total Uranium (U)	2010/11/02	9.5		%	20
		Total Vanadium (V)	2010/11/02	NC		%	20
		Total Zinc (Zn)	2010/11/02	NC		%	20
2318318 JBW	Matrix Spike	Dissolved Aluminum (Al)	2010/11/03		109	%	80 - 120

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2318318 JBW	Matrix Spike	Dissolved Antimony (Sb)	2010/11/03		110	%	80 - 120
		Dissolved Arsenic (As)	2010/11/03		107	%	80 - 120
		Dissolved Barium (Ba)	2010/11/03		NC	%	80 - 120
		Dissolved Beryllium (Be)	2010/11/03		107	%	80 - 120
		Dissolved Bismuth (Bi)	2010/11/03		103	%	80 - 120
		Dissolved Boron (B)	2010/11/03		110	%	80 - 120
		Dissolved Cadmium (Cd)	2010/11/03		107	%	80 - 120
		Dissolved Calcium (Ca)	2010/11/03		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/11/03		104	%	80 - 120
		Dissolved Cobalt (Co)	2010/11/03		101	%	80 - 120
		Dissolved Copper (Cu)	2010/11/03		101	%	80 - 120
		Dissolved Iron (Fe)	2010/11/03		102	%	80 - 120
		Dissolved Lead (Pb)	2010/11/03		103	%	80 - 120
		Dissolved Magnesium (Mg)	2010/11/03		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/11/03		101	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/11/03		110	%	80 - 120
		Dissolved Nickel (Ni)	2010/11/03		99	%	80 - 120
		Dissolved Phosphorus (P)	2010/11/03		111	%	80 - 120
		Dissolved Potassium (K)	2010/11/03		104	%	80 - 120
		Dissolved Selenium (Se)	2010/11/03		104	%	80 - 120
		Dissolved Silicon (Si)	2010/11/03		108	%	80 - 120
		Dissolved Silver (Ag)	2010/11/03		104	%	80 - 120
		Dissolved Sodium (Na)	2010/11/03		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/11/03		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/11/03		105	%	80 - 120
		Dissolved Tin (Sn)	2010/11/03		108	%	80 - 120
		Dissolved Titanium (Ti)	2010/11/03		104	%	80 - 120
		Dissolved Uranium (U)	2010/11/03		109	%	80 - 120
		Dissolved Vanadium (V)	2010/11/03		107	%	80 - 120
		Dissolved Zinc (Zn)	2010/11/03		101	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/11/03		101	%	80 - 120
		Dissolved Antimony (Sb)	2010/11/03		101	%	80 - 120
		Dissolved Arsenic (As)	2010/11/03		100	%	80 - 120
		Dissolved Barium (Ba)	2010/11/03		99	%	80 - 120
		Dissolved Beryllium (Be)	2010/11/03		100	%	80 - 120
		Dissolved Bismuth (Bi)	2010/11/03		101	%	80 - 120
		Dissolved Boron (B)	2010/11/03		99	%	80 - 120
		Dissolved Cadmium (Cd)	2010/11/03		102	%	80 - 120
		Dissolved Calcium (Ca)	2010/11/03		102	%	80 - 120
		Dissolved Chromium (Cr)	2010/11/03		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/11/03		99	%	80 - 120
		Dissolved Copper (Cu)	2010/11/03		99	%	80 - 120
		Dissolved Iron (Fe)	2010/11/03		99	%	80 - 120
		Dissolved Lead (Pb)	2010/11/03		99	%	80 - 120
		Dissolved Magnesium (Mg)	2010/11/03		99	%	80 - 120
		Dissolved Manganese (Mn)	2010/11/03		101	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/11/03		101	%	80 - 120
		Dissolved Nickel (Ni)	2010/11/03		97	%	80 - 120
		Dissolved Phosphorus (P)	2010/11/03		101	%	80 - 120
		Dissolved Potassium (K)	2010/11/03		100	%	80 - 120
		Dissolved Selenium (Se)	2010/11/03		100	%	80 - 120
		Dissolved Silicon (Si)	2010/11/03		102	%	80 - 120
		Dissolved Silver (Ag)	2010/11/03		100	%	80 - 120
		Dissolved Sodium (Na)	2010/11/03		100	%	80 - 120
		Dissolved Strontium (Sr)	2010/11/03		100	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2318318	JBW	Spiked Blank	Dissolved Thallium (Tl)	2010/11/03		100	%	80 - 120
			Dissolved Tin (Sn)	2010/11/03		101	%	80 - 120
			Dissolved Titanium (Ti)	2010/11/03		98	%	80 - 120
			Dissolved Uranium (U)	2010/11/03		102	%	80 - 120
			Dissolved Vanadium (V)	2010/11/03		103	%	80 - 120
			Dissolved Zinc (Zn)	2010/11/03		98	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2010/11/03	<5		ug/L	
			Dissolved Antimony (Sb)	2010/11/03	0.6, RDL=0.5		ug/L	
			Dissolved Arsenic (As)	2010/11/03	<1		ug/L	
			Dissolved Barium (Ba)	2010/11/03	<5		ug/L	
			Dissolved Beryllium (Be)	2010/11/03	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/11/03	<1		ug/L	
			Dissolved Boron (B)	2010/11/03	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/11/03	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/11/03	<200		ug/L	
			Dissolved Chromium (Cr)	2010/11/03	<5		ug/L	
			Dissolved Cobalt (Co)	2010/11/03	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/11/03	<1		ug/L	
			Dissolved Iron (Fe)	2010/11/03	<100		ug/L	
			Dissolved Lead (Pb)	2010/11/03	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/11/03	<50		ug/L	
			Dissolved Manganese (Mn)	2010/11/03	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/11/03	<1		ug/L	
			Dissolved Nickel (Ni)	2010/11/03	<1		ug/L	
			Dissolved Phosphorus (P)	2010/11/03	<100		ug/L	
			Dissolved Potassium (K)	2010/11/03	<200		ug/L	
			Dissolved Selenium (Se)	2010/11/03	<2		ug/L	
			Dissolved Silicon (Si)	2010/11/03	<50		ug/L	
			Dissolved Silver (Ag)	2010/11/03	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/11/03	<100		ug/L	
			Dissolved Strontium (Sr)	2010/11/03	<1		ug/L	
			Dissolved Thallium (Tl)	2010/11/03	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/11/03	<1		ug/L	
			Dissolved Titanium (Ti)	2010/11/03	<5		ug/L	
			Dissolved Uranium (U)	2010/11/03	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/11/03	<1		ug/L	
			Dissolved Zinc (Zn)	2010/11/03	<5		ug/L	
		RPD	Dissolved Aluminum (Al)	2010/11/03	14.7		%	20
			Dissolved Antimony (Sb)	2010/11/03	NC		%	20
			Dissolved Arsenic (As)	2010/11/03	NC		%	20
			Dissolved Barium (Ba)	2010/11/03	0.09		%	20
			Dissolved Beryllium (Be)	2010/11/03	NC		%	20
			Dissolved Bismuth (Bi)	2010/11/03	NC		%	20
			Dissolved Boron (B)	2010/11/03	NC		%	20
			Dissolved Cadmium (Cd)	2010/11/03	NC		%	20
			Dissolved Calcium (Ca)	2010/11/03	1.1		%	20
			Dissolved Chromium (Cr)	2010/11/03	NC		%	20
			Dissolved Cobalt (Co)	2010/11/03	1.6		%	20
			Dissolved Copper (Cu)	2010/11/03	NC		%	20
			Dissolved Iron (Fe)	2010/11/03	NC		%	20
			Dissolved Lead (Pb)	2010/11/03	NC		%	20
			Dissolved Magnesium (Mg)	2010/11/03	1.7		%	20
			Dissolved Manganese (Mn)	2010/11/03	2.5		%	20
			Dissolved Molybdenum (Mo)	2010/11/03	NC		%	20
			Dissolved Nickel (Ni)	2010/11/03	NC		%	20

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2318318 JBW	RPD	Dissolved Phosphorus (P)	2010/11/03	NC		%	20
		Dissolved Potassium (K)	2010/11/03	1.5		%	20
		Dissolved Selenium (Se)	2010/11/03	NC		%	20
		Dissolved Silicon (Si)	2010/11/03	0.5		%	20
		Dissolved Silver (Ag)	2010/11/03	NC		%	20
		Dissolved Sodium (Na)	2010/11/03	3.0		%	20
		Dissolved Strontium (Sr)	2010/11/03	1.9		%	20
		Dissolved Thallium (Tl)	2010/11/03	NC		%	20
		Dissolved Tin (Sn)	2010/11/03	NC		%	20
		Dissolved Titanium (Ti)	2010/11/03	NC		%	20
		Dissolved Uranium (U)	2010/11/03	3.1		%	20
		Dissolved Vanadium (V)	2010/11/03	NC		%	20
		Dissolved Zinc (Zn)	2010/11/03	NC		%	20
2318844 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/11/04		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/11/04	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2010/11/04	0.3		%	25
2319861 FD	Matrix Spike	Dissolved Chloride (Cl)	2010/11/04		100	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/11/04		102	%	80 - 120
		Dissolved Bromide (Br-)	2010/11/04		99	%	80 - 120
		Dissolved Sulphate (SO4)	2010/11/04		104	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2010/11/04	<1		mg/L	
		Dissolved Bromide (Br-)	2010/11/04	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/11/04	<1		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/11/04	2.7		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B0F0605

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

Eva

Eva Pranjic

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site: TANSLEY QUARRY
Your C.O.C. #: 21882208, 218822-08-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/02

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0F2272
Received: 2010/10/26, 16:31

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	3	N/A	2010/11/01	CAM SOP-00448	SM 2320B
Anions	3	N/A	2010/11/01	CAM SOP-00435	SM 4110B
Free Cyanide	3	N/A	2010/11/01	Ont SOP-0094	EPA 9012 Modified
Fluoride	3	2010/10/30	2010/11/01	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	3	N/A	2010/11/01	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	3	2010/10/28	2010/10/29	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	3	N/A	2010/11/01	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	3	N/A	2010/11/01	CAM SOP-00447	EPA 6020
Ammonia-N	3	N/A	2010/11/01	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/11/01	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2010/11/02	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	3	N/A	2010/11/01	CAM SOP-00448	SM 4500H
Phenols (4AAP)	3	N/A	2010/10/30	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	3	N/A	2010/11/02	CAM SOP-00461	SM 4500 P-F
Sulphide	3	N/A	2010/10/29	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	3	2010/10/29	2010/11/01	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	3	N/A	2010/10/29	CAM SOP-00428	SM 2540D
Turbidity	3	N/A	2010/10/29	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

Site: TANSLEY QUARRY
Your C.O.C. #: 21882208, 218822-08-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/02

CERTIFICATE OF ANALYSIS

-2-

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: B0F2272
Report Date: 2010/11/02

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HQ0542			HQ0543			HQ0544		
Sampling Date		2010/10/26 09:35			2010/10/26 09:10			2010/10/26 02:15		
COC Number		218822-08-01			218822-08-01			218822-08-01		
	Units	**MW7D**	**RDL**	**QC Batch**	**MW8D**	**RDL**	**QC Batch**	**MW11D**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	10000	1	2311314	18000	1	2311314	21000	1	2311314
Inorganics										
Total Ammonia-N	mg/L	19	0.5	2313553	39	0.5	2313553	31	0.5	2313553
Fluoride (F-)	mg/L	0.2	0.1	2314734	<0.1	0.1	2314734	0.1	0.1	2314734
Free Cyanide	mg/L	<0.002	0.002	2314208	<0.002	0.002	2314208	<0.002	0.002	2314208
Orthophosphate (P)	mg/L	<0.01	0.01	2314494	<0.01	0.01	2314494	<0.01	0.01	2314494
pH	pH	6.97		2314732	6.76		2314732	6.62		2314732
Phenols-4AAP	mg/L	<0.001	0.001	2313430	<0.001	0.001	2313430	<0.001	0.001	2313430
Total Phosphorus	mg/L	<0.2 (1)	0.2	2314209	8	2	2314209	<1 (1)	1	2314209
Total Suspended Solids	mg/L	150	10	2312477	44000	500	2312477	680	10	2312477
Sulphide	mg/L	<0.02	0.02	2313382	0.13	0.02	2313382	0.04	0.02	2313382
Turbidity	NTU	91	0.1	2314184	96000	2.5	2314184	760	0.1	2314184
Alkalinity (Total as CaCO3)	mg/L	32	1	2314729	59	1	2314729	44	1	2314729
Nitrite (N)	mg/L	<0.01	0.01	2314297	0.05	0.01	2314270	<0.01	0.01	2314297
Dissolved Chloride (Cl)	mg/L	16000	200	2314613	48500	500	2314613	35800	500	2314613
Nitrate (N)	mg/L	<0.1	0.1	2314297	<0.1	0.1	2314270	<0.1	0.1	2314297
Nitrate + Nitrite	mg/L	<0.1	0.1	2314297	<0.1	0.1	2314270	<0.1	0.1	2314297
Dissolved Bromide (Br-)	mg/L	182	10	2314613	<500	500	2314613	<500	500	2314613
Dissolved Sulphate (SO4)	mg/L	1620	10	2314613	1180	10	2314613	1390	10	2314613

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to unusual sample matrix, sample required dilution. DL was adjusted accordingly.

Golder Associates Ltd

Maxxam Job #: B0F2272
Report Date: 2010/11/02

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HQ0542		HQ0543		HQ0544		
Sampling Date		2010/10/26 09:35		2010/10/26 09:10		2010/10/26 02:15		
COC Number		218822-08-01		218822-08-01		218822-08-01		
	Units	**MW7D**	**RDL**	**MW8D**	**RDL**	**MW11D**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/L	<0.0001	0.0001	<0.0015 (1)	0.0015	<0.0001	0.0001	2312676
Dissolved Aluminum (Al)	ug/L	<100	100	<300	300	<300	300	2313696
Total Aluminum (Al)	ug/L	440	100	670000	300	17000	300	2314187
Dissolved Antimony (Sb)	ug/L	<10	10	<30	30	<30	30	2313696
Total Antimony (Sb)	ug/L	<10	10	<30	30	<30	30	2314187
Dissolved Arsenic (As)	ug/L	<20	20	<50	50	<50	50	2313696
Total Arsenic (As)	ug/L	23	20	390	50	61	50	2314187
Dissolved Barium (Ba)	ug/L	<100	100	<300	300	<300	300	2313696
Total Barium (Ba)	ug/L	<100	100	5000	300	<300	300	2314187
Dissolved Beryllium (Be)	ug/L	<10	10	<30	30	<30	30	2313696
Total Beryllium (Be)	ug/L	<10	10	32	30	<30	30	2314187
Dissolved Bismuth (Bi)	ug/L	<20	20	<50	50	<50	50	2313696
Total Bismuth (Bi)	ug/L	<20	20	<50	50	<50	50	2314187
Dissolved Boron (B)	ug/L	6300	200	4700	500	4800	500	2313696
Total Boron (B)	ug/L	7000	200	6800	500	4800	500	2314187
Dissolved Cadmium (Cd)	ug/L	<2	2	<5	5	19	5	2313696
Total Cadmium (Cd)	ug/L	<2	2	26	5	13	5	2314187
Dissolved Calcium (Ca)	ug/L	2900000	4000	5300000	10000	6300000	10000	2313696
Total Calcium (Ca)	ug/L	3300000	4000	11000000	10000	6700000	10000	2314187
Dissolved Chromium (Cr)	ug/L	<100	100	<300	300	<300	300	2313696
Total Chromium (Cr)	ug/L	<100	100	1300	300	<300	300	2314187
Dissolved Cobalt (Co)	ug/L	<10	10	<30	30	<30	30	2313696
Total Cobalt (Co)	ug/L	<10	10	630	30	<30	30	2314187
Dissolved Copper (Cu)	ug/L	<20	20	<50	50	<50	50	2313696
Total Copper (Cu)	ug/L	<20	20	1100	50	96	50	2314187
Dissolved Iron (Fe)	ug/L	5100	2000	8000	5000	21000	5000	2313696
Total Iron (Fe)	ug/L	7200	2000	1300000	5000	67000	5000	2314187
Dissolved Lead (Pb)	ug/L	<10	10	<30	30	<30	30	2313696
Total Lead (Pb)	ug/L	<10	10	330	30	<30	30	2314187
Dissolved Magnesium (Mg)	ug/L	750000	1000	1200000	3000	1400000	3000	2313696
Total Magnesium (Mg)	ug/L	810000	1000	2400000	3000	1500000	3000	2314187

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HQ0542		HQ0543		HQ0544		
Sampling Date		2010/10/26 09:35		2010/10/26 09:10		2010/10/26 02:15		
COC Number		218822-08-01		218822-08-01		218822-08-01		
	Units	**MW7D**	**RDL**	**MW8D**	**RDL**	**MW11D**	**RDL**	**QC Batch**
Dissolved Manganese (Mn)	ug/L	1400	40	2600	100	3100	100	2313696
Total Manganese (Mn)	ug/L	1600	40	31000	100	4200	100	2314187
Dissolved Molybdenum (Mo)	ug/L	<20	20	<50	50	<50	50	2313696
Total Molybdenum (Mo)	ug/L	<20	20	140	50	<50	50	2314187
Dissolved Nickel (Ni)	ug/L	<20	20	<50	50	<50	50	2313696
Total Nickel (Ni)	ug/L	<20	20	1400	50	<50	50	2314187
Dissolved Phosphorus (P)	ug/L	<2000	2000	<5000	5000	<5000	5000	2313696
Total Phosphorus (P)	ug/L	<2000	2000	26000	5000	<5000	5000	2314187
Dissolved Potassium (K)	ug/L	140000	4000	190000	10000	250000	10000	2313696
Total Potassium (K)	ug/L	160000	4000	450000	10000	260000	10000	2314187
Dissolved Selenium (Se)	ug/L	<40	40	140	100	170	100	2313696
Total Selenium (Se)	ug/L	45	40	<100	100	<100	100	2314187
Dissolved Silicon (Si)	ug/L	5500	1000	<3000	3000	<3000	3000	2313696
Total Silicon (Si)	ug/L	6300	1000	700000	3000	25000	3000	2314187
Dissolved Silver (Ag)	ug/L	<2	2	<5	5	<5	5	2313696
Total Silver (Ag)	ug/L	<2	2	<5	5	<5	5	2314187
Dissolved Sodium (Na)	ug/L	6600000	2000	10000000	5000	13000000	5000	2313696
Total Sodium (Na)	ug/L	7200000	2000	18000000	5000	14000000	5000	2314187
Dissolved Strontium (Sr)	ug/L	60000	20	110000	50	130000	50	2313696
Total Strontium (Sr)	ug/L	66000	20	200000	50	130000	50	2314187
Dissolved Thallium (Tl)	ug/L	<1	1	<3	3	<3	3	2313696
Total Thallium (Tl)	ug/L	<1	1	5	3	<3	3	2314187
Dissolved Tin (Sn)	ug/L	<20	20	<50	50	<50	50	2313696
Total Tin (Sn)	ug/L	<20	20	110	50	<50	50	2314187
Dissolved Titanium (Ti)	ug/L	<100	100	<300	300	<300	300	2313696
Total Titanium (Ti)	ug/L	<100	100	7500	300	<300	300	2314187
Dissolved Uranium (U)	ug/L	<2	2	<5	5	24	5	2313696
Total Uranium (U)	ug/L	<2	2	37	5	11	5	2314187
Dissolved Vanadium (V)	ug/L	<20	20	140	50	110	50	2313696
Total Vanadium (V)	ug/L	33	20	1300	50	140	50	2314187
Dissolved Zinc (Zn)	ug/L	<100	100	<300	300	<300	300	2313696
Total Zinc (Zn)	ug/L	<100	100	3900	300	790	300	2314187

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	3.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Anions Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HQ0542-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HQ0543-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HQ0544-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0F2272

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2312477	JDO	QC Standard	Total Suspended Solids	2010/10/29		99	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/29	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/29	NC		%	25
2312676	MC	Matrix Spike	Mercury (Hg)	2010/10/29		109	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/29		105	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/29	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/29	NC		%	25
2313382	PAL	Matrix Spike	Sulphide	2010/10/29		NC (1)	%	75 - 125
		Spiked Blank	Sulphide	2010/10/29		88	%	85 - 115
		Method Blank	Sulphide	2010/10/29	<0.02		mg/L	
		RPD	Sulphide	2010/10/29	3.5		%	25
2313430	BMO	Matrix Spike	Phenols-4AAP	2010/10/30		98	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/30		100	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/30	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/30	NC		%	25
2313553	ADB	Matrix Spike	Total Ammonia-N	2010/11/01		103	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/11/01		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/11/01	<0.05		mg/L	
		RPD	Total Ammonia-N	2010/11/01	0.7		%	25
2313696	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/29		98	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/29		103	%	80 - 120
			Dissolved Arsenic (As)	2010/10/29		100	%	80 - 120
			Dissolved Barium (Ba)	2010/10/29		99	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/29		102	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/29		97	%	80 - 120
			Dissolved Boron (B)	2010/10/29		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/29		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/29		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/29		98	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/29		96	%	80 - 120
			Dissolved Copper (Cu)	2010/10/29		95	%	80 - 120
			Dissolved Iron (Fe)	2010/10/29		98	%	80 - 120
			Dissolved Lead (Pb)	2010/10/29		96	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/29		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/29		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/29		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/29		94	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/29		101	%	80 - 120
			Dissolved Potassium (K)	2010/10/29		98	%	80 - 120
			Dissolved Selenium (Se)	2010/10/29		100	%	80 - 120
			Dissolved Silicon (Si)	2010/10/29		101	%	80 - 120
			Dissolved Silver (Ag)	2010/10/29		99	%	80 - 120
			Dissolved Sodium (Na)	2010/10/29		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/29		97	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/29		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/29		101	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/29		100	%	80 - 120
			Dissolved Uranium (U)	2010/10/29		99	%	80 - 120
			Dissolved Vanadium (V)	2010/10/29		99	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/29		96	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/29		107	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/29		105	%	90 - 110
			Dissolved Arsenic (As)	2010/10/29		101	%	90 - 110
			Dissolved Barium (Ba)	2010/10/29		99	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/29		102	%	90 - 110

Validation Signature Page

Maxxam Job #: B0F2272

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F2272

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313696 HRE	Spiked Blank	Dissolved Bismuth (Bi)	2010/10/29		102	%	90 - 110
		Dissolved Boron (B)	2010/10/29		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/29		103	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/29		105	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/29		100	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/29		99	%	90 - 110
		Dissolved Copper (Cu)	2010/10/29		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/29		102	%	90 - 110
		Dissolved Lead (Pb)	2010/10/29		100	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/29		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/29		103	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/29		106	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/29		99	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/29		101	%	90 - 110
		Dissolved Potassium (K)	2010/10/29		103	%	90 - 110
		Dissolved Selenium (Se)	2010/10/29		101	%	90 - 110
		Dissolved Silicon (Si)	2010/10/29		104	%	90 - 110
		Dissolved Silver (Ag)	2010/10/29		101	%	90 - 110
		Dissolved Sodium (Na)	2010/10/29		105	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/29		100	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/29		98	%	90 - 110
		Dissolved Tin (Sn)	2010/10/29		104	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/29		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/29		101	%	90 - 110
		Dissolved Vanadium (V)	2010/10/29		101	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/29		102	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/29	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/29	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/29	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/29	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/29	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/29	<1		ug/L	
		Dissolved Boron (B)	2010/10/29	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/29	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/29	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/29	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/29	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/29	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/29	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/29	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/29	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/29	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/29	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/29	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/29	<100		ug/L	
		Dissolved Potassium (K)	2010/10/29	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/29	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/29	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/29	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/29	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/29	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/29	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/29	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/29	<5		ug/L	
		Dissolved Uranium (U)	2010/10/29	<0.1		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F2272

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313696 HRE	Method Blank	Dissolved Vanadium (V)	2010/10/29	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/29	<5		ug/L	
	RPD	Dissolved Barium (Ba)	2010/10/29	0.08		%	25
2314184 KTH	QC Standard	Turbidity	2010/10/29		101	%	85 - 115
	Method Blank	Turbidity	2010/10/29	<0.1		NTU	
	RPD [HQ0542-01]	Turbidity	2010/10/29	1.1		%	25
2314187 HRE	Matrix Spike	Total Aluminum (Al)	2010/11/01		101	%	80 - 120
		Total Antimony (Sb)	2010/11/01		102	%	80 - 120
		Total Arsenic (As)	2010/11/01		105	%	80 - 120
		Total Barium (Ba)	2010/11/01		98	%	80 - 120
		Total Beryllium (Be)	2010/11/01		100	%	80 - 120
		Total Bismuth (Bi)	2010/11/01		98	%	80 - 120
		Total Boron (B)	2010/11/01		95	%	80 - 120
		Total Cadmium (Cd)	2010/11/01		102	%	80 - 120
		Total Calcium (Ca)	2010/11/01		NC	%	80 - 120
		Total Chromium (Cr)	2010/11/01		98	%	80 - 120
		Total Cobalt (Co)	2010/11/01		97	%	80 - 120
		Total Copper (Cu)	2010/11/01		NC	%	80 - 120
		Total Iron (Fe)	2010/11/01		102	%	80 - 120
		Total Lead (Pb)	2010/11/01		97	%	80 - 120
		Total Magnesium (Mg)	2010/11/01		NC	%	80 - 120
		Total Manganese (Mn)	2010/11/01		98	%	80 - 120
		Total Molybdenum (Mo)	2010/11/01		105	%	80 - 120
		Total Nickel (Ni)	2010/11/01		95	%	80 - 120
		Total Phosphorus (P)	2010/11/01		100	%	80 - 120
		Total Potassium (K)	2010/11/01		98	%	80 - 120
		Total Selenium (Se)	2010/11/01		99	%	80 - 120
		Total Silicon (Si)	2010/11/01		91	%	80 - 120
		Total Silver (Ag)	2010/11/01		95	%	80 - 120
		Total Sodium (Na)	2010/11/01		NC	%	80 - 120
		Total Strontium (Sr)	2010/11/01		NC	%	80 - 120
		Total Thallium (Tl)	2010/11/01		97	%	80 - 120
		Total Tin (Sn)	2010/11/01		99	%	80 - 120
		Total Titanium (Ti)	2010/11/01		100	%	80 - 120
		Total Uranium (U)	2010/11/01		99	%	80 - 120
		Total Vanadium (V)	2010/11/01		98	%	80 - 120
		Total Zinc (Zn)	2010/11/01		95	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/11/01		100	%	85 - 115
		Total Antimony (Sb)	2010/11/01		104	%	85 - 115
		Total Arsenic (As)	2010/11/01		104	%	85 - 115
		Total Barium (Ba)	2010/11/01		102	%	85 - 115
		Total Beryllium (Be)	2010/11/01		102	%	85 - 115
		Total Bismuth (Bi)	2010/11/01		103	%	85 - 115
		Total Boron (B)	2010/11/01		99	%	85 - 115
		Total Cadmium (Cd)	2010/11/01		105	%	85 - 116
		Total Calcium (Ca)	2010/11/01		106	%	85 - 115
		Total Chromium (Cr)	2010/11/01		101	%	85 - 115
		Total Cobalt (Co)	2010/11/01		100	%	85 - 115
		Total Copper (Cu)	2010/11/01		101	%	85 - 115
		Total Iron (Fe)	2010/11/01		105	%	85 - 115
		Total Lead (Pb)	2010/11/01		101	%	85 - 115
		Total Magnesium (Mg)	2010/11/01		103	%	85 - 115
		Total Manganese (Mn)	2010/11/01		102	%	85 - 115
		Total Molybdenum (Mo)	2010/11/01		104	%	85 - 115
		Total Nickel (Ni)	2010/11/01		99	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F2272

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2314187	HRE	Spiked Blank	Total Phosphorus (P)	2010/11/01		103	%	85 - 115
			Total Potassium (K)	2010/11/01		104	%	85 - 115
			Total Selenium (Se)	2010/11/01		103	%	85 - 115
			Total Silicon (Si)	2010/11/01		97	%	85 - 115
			Total Silver (Ag)	2010/11/01		98	%	85 - 115
			Total Sodium (Na)	2010/11/01		104	%	85 - 115
			Total Strontium (Sr)	2010/11/01		99	%	85 - 115
			Total Thallium (Tl)	2010/11/01		100	%	85 - 115
			Total Tin (Sn)	2010/11/01		103	%	85 - 115
			Total Titanium (Ti)	2010/11/01		103	%	85 - 115
			Total Uranium (U)	2010/11/01		102	%	85 - 115
			Total Vanadium (V)	2010/11/01		101	%	85 - 115
			Total Zinc (Zn)	2010/11/01		100	%	85 - 115
		Method Blank	Total Aluminum (Al)	2010/11/01	<5		ug/L	
			Total Antimony (Sb)	2010/11/01	<0.5		ug/L	
			Total Arsenic (As)	2010/11/01	<1		ug/L	
			Total Barium (Ba)	2010/11/01	<5		ug/L	
			Total Beryllium (Be)	2010/11/01	<0.5		ug/L	
			Total Bismuth (Bi)	2010/11/01	<1		ug/L	
			Total Boron (B)	2010/11/01	<10		ug/L	
			Total Cadmium (Cd)	2010/11/01	<0.1		ug/L	
			Total Calcium (Ca)	2010/11/01	<200		ug/L	
			Total Chromium (Cr)	2010/11/01	<5		ug/L	
			Total Cobalt (Co)	2010/11/01	<0.5		ug/L	
			Total Copper (Cu)	2010/11/01	<1		ug/L	
			Total Iron (Fe)	2010/11/01	<100		ug/L	
			Total Lead (Pb)	2010/11/01	<0.5		ug/L	
			Total Magnesium (Mg)	2010/11/01	<50		ug/L	
			Total Manganese (Mn)	2010/11/01	<2		ug/L	
			Total Molybdenum (Mo)	2010/11/01	<1		ug/L	
			Total Nickel (Ni)	2010/11/01	<1		ug/L	
			Total Phosphorus (P)	2010/11/01	<100		ug/L	
			Total Potassium (K)	2010/11/01	<200		ug/L	
			Total Selenium (Se)	2010/11/01	<2		ug/L	
			Total Silicon (Si)	2010/11/01	<50		ug/L	
			Total Silver (Ag)	2010/11/01	<0.1		ug/L	
			Total Sodium (Na)	2010/11/01	<100		ug/L	
			Total Strontium (Sr)	2010/11/01	<1		ug/L	
			Total Thallium (Tl)	2010/11/01	<0.05		ug/L	
			Total Tin (Sn)	2010/11/01	<1		ug/L	
			Total Titanium (Ti)	2010/11/01	<5		ug/L	
			Total Uranium (U)	2010/11/01	<0.1		ug/L	
			Total Vanadium (V)	2010/11/01	<1		ug/L	
			Total Zinc (Zn)	2010/11/01	<5		ug/L	
		RPD	Total Lead (Pb)	2010/11/01	NC		%	25
2314208	CP	Matrix Spike	Free Cyanide	2010/11/01		106	%	80 - 120
		Spiked Blank	Free Cyanide	2010/11/01		102	%	80 - 120
		Method Blank	Free Cyanide	2010/11/01	<0.002		mg/L	
		RPD	Free Cyanide	2010/11/01	NC		%	25
2314209	VRO	Matrix Spike	Total Phosphorus	2010/11/01		98	%	80 - 120
		QC Standard	Total Phosphorus	2010/11/01		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/11/01		104	%	85 - 115
		Method Blank	Total Phosphorus	2010/11/01	<0.02		mg/L	
		RPD	Total Phosphorus	2010/11/01	0.5		%	20
2314270	C_N	Matrix Spike	Nitrite (N)	2010/11/01		106	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F2272

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2314270	C_N	Matrix Spike	Nitrate (N)	2010/11/01		101	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/11/01		106	%	85 - 115
			Nitrate (N)	2010/11/01		103	%	85 - 115
		Method Blank	Nitrite (N)	2010/11/01	<0.01		mg/L	
			Nitrate (N)	2010/11/01	<0.1		mg/L	
			Nitrate + Nitrite	2010/11/01	<0.1		mg/L	
		RPD	Nitrite (N)	2010/11/01	NC		%	25
			Nitrate (N)	2010/11/01	NC		%	25
			Nitrate + Nitrite	2010/11/01	NC		%	25
2314297	C_N	Matrix Spike	Nitrite (N)	2010/11/02		108	%	80 - 120
			Nitrate (N)	2010/11/02		NC	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/11/02		106	%	85 - 115
			Nitrate (N)	2010/11/02		107	%	85 - 115
		Method Blank	Nitrite (N)	2010/11/02	<0.01		mg/L	
			Nitrate (N)	2010/11/02	<0.1		mg/L	
			Nitrate + Nitrite	2010/11/02	<0.1		mg/L	
		RPD	Nitrite (N)	2010/11/02	NC		%	25
			Nitrate (N)	2010/11/02	0.7		%	25
			Nitrate + Nitrite	2010/11/02	0.7		%	25
2314494	DRM	Matrix Spike	Orthophosphate (P)	2010/11/02		102	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/11/02		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/11/02	<0.01		mg/L	
		RPD	Orthophosphate (P)	2010/11/02	NC		%	25
2314613	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/11/01		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/11/01		104	%	80 - 120
			Dissolved Sulphate (SO4)	2010/11/01		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/11/01		100	%	85 - 115
			Dissolved Bromide (Br-)	2010/11/01		97	%	85 - 115
			Dissolved Sulphate (SO4)	2010/11/01		102	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/11/01	<1		mg/L	
			Dissolved Bromide (Br-)	2010/11/01	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/11/01	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/11/01	4.6		%	25
			Dissolved Bromide (Br-)	2010/11/01	NC		%	25
			Dissolved Sulphate (SO4)	2010/11/01	5.1		%	25
2314729	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/11/01		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/11/01	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/11/01	0.4		%	25
2314734	YPA	Matrix Spike	Fluoride (F-)	2010/11/01		98	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/11/01		101	%	85 - 115
		Method Blank	Fluoride (F-)	2010/11/01	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/11/01	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

BEKKERS

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/26	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/25	2010/10/26	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/26	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/28	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/25	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7340		
Sampling Date		2010/10/21 09:35		
COC Number		218822-06-01		
	Units	**3466 BURNHAMTHORPE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	810	1	2306386
Inorganics				
Total Ammonia-N	mg/L	0.84	0.05	2309117
Fluoride (F-)	mg/L	0.2	0.1	2308317
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	<0.01	0.01	2307096
pH	pH	7.91		2308316
Phenols-4AAP	mg/L	<0.001	0.001	2312742
Total Phosphorus	mg/L	<0.002	0.002	2310544
Total Suspended Solids	mg/L	<10	10	2306994
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	0.3	0.1	2307794
Alkalinity (Total as CaCO3)	mg/L	295	1	2308315
Nitrite (N)	mg/L	0.06	0.01	2307099
Dissolved Chloride (Cl)	mg/L	118	1	2306882
Nitrate (N)	mg/L	2.4	0.1	2307099
Nitrate + Nitrite	mg/L	2.5	0.1	2307099
Dissolved Bromide (Br-)	mg/L	1	1	2306882
Dissolved Sulphate (SO4)	mg/L	617	5	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7340		
Sampling Date		2010/10/21 09:35		
COC Number		218822-06-01		
	Units	**3466 BURNHAMTHORPE ROAD**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337
Total Aluminum (Al)	ug/L	15	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	<1	1	2311988
Total Barium (Ba)	ug/L	15	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	1500	10	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	190000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	5	1	2311988
Total Iron (Fe)	ug/L	<100	100	2311988
Total Lead (Pb)	ug/L	1.4	0.5	2311988
Total Magnesium (Mg)	ug/L	96000	50	2311988
Total Manganese (Mn)	ug/L	100	2	2311988
Total Molybdenum (Mo)	ug/L	16	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	17000	200	2311988
Total Silicon (Si)	ug/L	4500	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	260000	100	2311988
Total Strontium (Sr)	ug/L	12000	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	1.7	0.1	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7340		
Sampling Date		2010/10/21 09:35		
COC Number		218822-06-01		
	Units	**3466 BURNHAMTHORPE ROAD**	**RDL**	**QC Batch**
Total Vanadium (V)	ug/L	<1	1	2311988
Total Zinc (Zn)	ug/L	17	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537 CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
	Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
	Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
	RPD	Free Cyanide	2010/10/27	NC		%	25
2306734 KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
	Method Blank	Turbidity	2010/10/22	<0.1		NTU	
	RPD	Turbidity	2010/10/22	0.8		%	25
2306880 C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
		Nitrate (N)	2010/10/23		92	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
		Nitrate (N)	2010/10/23		101	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
		Nitrate (N)	2010/10/23	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
	RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882 FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
	Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
		Dissolved Bromide (Br-)	2010/10/27	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096 DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
	Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
	RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099 C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
		Nitrate (N)	2010/10/25		94	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
		Nitrate (N)	2010/10/25		104	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
		Nitrate (N)	2010/10/25	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
	RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
		Nitrate (N)	2010/10/25	0.5		%	25
		Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256 FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
			Dissolved Bromide (Br-)	2010/10/26	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	25
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.1		NTU	
		RPD	Turbidity	2010/10/25	NC		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
			Dissolved Boron (B)	2010/10/27		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
			Dissolved Boron (B)	2010/10/27		101	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike [HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
		Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
		Total Arsenic (As)	2010/10/29	<1		ug/L	
		Total Barium (Ba)	2010/10/29	<5		ug/L	
		Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
		Total Bismuth (Bi)	2010/10/29	<1		ug/L	
		Total Boron (B)	2010/10/29	<10		ug/L	
		Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
		Total Calcium (Ca)	2010/10/29	<200		ug/L	
		Total Chromium (Cr)	2010/10/29	<5		ug/L	
		Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
		Total Copper (Cu)	2010/10/29	<1		ug/L	
		Total Iron (Fe)	2010/10/29	<100		ug/L	
		Total Lead (Pb)	2010/10/29	<0.5		ug/L	
		Total Magnesium (Mg)	2010/10/29	<50		ug/L	
		Total Manganese (Mn)	2010/10/29	<2		ug/L	
		Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
		Total Nickel (Ni)	2010/10/29	<1		ug/L	
		Total Phosphorus (P)	2010/10/29	<100		ug/L	
		Total Potassium (K)	2010/10/29	<200		ug/L	
		Total Silicon (Si)	2010/10/29	<50		ug/L	
		Total Selenium (Se)	2010/10/29	<2		ug/L	
		Total Silver (Ag)	2010/10/29	<0.1		ug/L	
		Total Sodium (Na)	2010/10/29	<100		ug/L	
		Total Strontium (Sr)	2010/10/29	<1		ug/L	
		Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
		Total Tin (Sn)	2010/10/29	<1		ug/L	
		Total Titanium (Ti)	2010/10/29	<5		ug/L	
		Total Uranium (U)	2010/10/29	<0.1		ug/L	
		Total Vanadium (V)	2010/10/29	<1		ug/L	
		Total Zinc (Zn)	2010/10/29	<5		ug/L	
	RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
		Total Antimony (Sb)	2010/10/29	NC		%	25
		Total Arsenic (As)	2010/10/29	NC		%	25
		Total Barium (Ba)	2010/10/29	1		%	25
		Total Beryllium (Be)	2010/10/29	NC		%	25
		Total Bismuth (Bi)	2010/10/29	NC		%	25
		Total Boron (B)	2010/10/29	0.1		%	25
		Total Cadmium (Cd)	2010/10/29	NC		%	25
		Total Calcium (Ca)	2010/10/29	1.9		%	25
		Total Chromium (Cr)	2010/10/29	NC		%	25
		Total Cobalt (Co)	2010/10/29	NC		%	25
		Total Copper (Cu)	2010/10/29	NC		%	25
		Total Iron (Fe)	2010/10/29	NC		%	25
		Total Lead (Pb)	2010/10/29	NC		%	25
		Total Magnesium (Mg)	2010/10/29	1		%	25
		Total Manganese (Mn)	2010/10/29	0.01		%	25
		Total Molybdenum (Mo)	2010/10/29	NC		%	25
		Total Nickel (Ni)	2010/10/29	NC		%	25
		Total Phosphorus (P)	2010/10/29	NC		%	25
		Total Potassium (K)	2010/10/29	0.4		%	25
		Total Silicon (Si)	2010/10/29	0.4		%	25
		Total Selenium (Se)	2010/10/29	NC		%	25
		Total Silver (Ag)	2010/10/29	NC		%	25
		Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init		QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

FINUCCI

Site: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0F0605
Received: 2010/10/22, 18:42

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/27	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/28	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/28	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/27	2010/10/27	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/29	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/27	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/27	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/28	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/27	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/29	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/28	2010/10/29	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/26	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/26	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section

Site: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HP1800		
Sampling Date		2010/10/22 09:35		
COC Number		218822-07-01		
	Units	**5300 1 SIDE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	520	1	2307681
Inorganics				
Total Ammonia-N	mg/L	1.2	0.05	2311760
Fluoride (F-)	mg/L	0.3	0.1	2310990
Free Cyanide	mg/L	<0.002	0.002	2310421
Orthophosphate (P)	mg/L	<0.01	0.01	2309967
pH	pH	7.97		2310988
Phenols-4AAP	mg/L	<0.001	0.001	2310392
Total Phosphorus	mg/L	<0.02	0.02	2312352
Total Suspended Solids	mg/L	<10	10	2309004
Sulphide	mg/L	<0.02	0.02	2314201
Turbidity	NTU	1.3	0.1	2309735
Alkalinity (Total as CaCO3)	mg/L	405	1	2310982
Nitrite (N)	mg/L	<0.01	0.01	2309646
Dissolved Chloride (Cl)	mg/L	20	1	2309997
Nitrate (N)	mg/L	0.7	0.1	2309646
Nitrate + Nitrite	mg/L	0.7	0.1	2309646
Dissolved Bromide (Br-)	mg/L	<1	1	2309997
Dissolved Sulphate (SO4)	mg/L	354	1	2309997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1800		
Sampling Date		2010/10/22 09:35		
COC Number		218822-07-01		
	Units	**5300 1 SIDE ROAD**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410
Total Aluminum (Al)	ug/L	<5	5	2313486
Total Antimony (Sb)	ug/L	<0.5	0.5	2313486
Total Arsenic (As)	ug/L	<1	1	2313486
Total Barium (Ba)	ug/L	14	5	2313486
Total Beryllium (Be)	ug/L	<0.5	0.5	2313486
Total Bismuth (Bi)	ug/L	<1	1	2313486
Total Boron (B)	ug/L	3000	10	2313486
Total Cadmium (Cd)	ug/L	<0.1	0.1	2313486
Total Calcium (Ca)	ug/L	98000	200	2313486
Total Chromium (Cr)	ug/L	<5	5	2313486
Total Cobalt (Co)	ug/L	<0.5	0.5	2313486
Total Copper (Cu)	ug/L	10	1	2313486
Total Iron (Fe)	ug/L	<100	100	2313486
Total Lead (Pb)	ug/L	1.3	0.5	2313486
Total Magnesium (Mg)	ug/L	77000	50	2313486
Total Manganese (Mn)	ug/L	13	2	2313486
Total Molybdenum (Mo)	ug/L	3	1	2313486
Total Nickel (Ni)	ug/L	<1	1	2313486
Total Phosphorus (P)	ug/L	<100	100	2313486
Total Potassium (K)	ug/L	27000	200	2313486
Total Silicon (Si)	ug/L	5900	50	2313486
Total Selenium (Se)	ug/L	<2	2	2313486
Total Silver (Ag)	ug/L	<0.1	0.1	2313486
Total Sodium (Na)	ug/L	110000	100	2313486
Total Strontium (Sr)	ug/L	16000	1	2313486
Total Thallium (Tl)	ug/L	<0.05	0.05	2313486
Total Tin (Sn)	ug/L	<1	1	2313486
Total Titanium (Ti)	ug/L	<5	5	2313486
Total Uranium (U)	ug/L	0.2	0.1	2313486
Total Vanadium (V)	ug/L	<1	1	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1800		
Sampling Date		2010/10/22 09:35		
COC Number		218822-07-01		
	Units	**5300 1 SIDE ROAD**	**RDL**	**QC Batch**
Total Zinc (Zn)	ug/L	34	5	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	4.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Metals: Preserved sample contained visible sediment. Results may be biased high due to analytes leaching from sediment.
rcs

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2309004	JDO	QC Standard	Total Suspended Solids	2010/10/26		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/26	<10		mg/L	
		RPD [HP1800-02]	Total Suspended Solids	2010/10/26	NC		%	25
2309646	LS	Matrix Spike [HP1806-01]	Nitrite (N)	2010/10/27		95	%	80 - 120
			Nitrate (N)	2010/10/27		102	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/27		101	%	85 - 115
			Nitrate (N)	2010/10/27		107	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/27	<0.01		mg/L	
			Nitrate (N)	2010/10/27	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/27	<0.1		mg/L	
2309735	KTH	QC Standard	Turbidity	2010/10/26		101	%	85 - 115
		Method Blank	Turbidity	2010/10/26	<0.1		NTU	
		RPD	Turbidity	2010/10/26	2.9		%	25
2309967	DRM	Matrix Spike [HP1806-01]	Orthophosphate (P)	2010/10/27		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/27		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/27	<0.01		mg/L	
2309997	FD	Matrix Spike	Dissolved Bromide (Br-)	2010/10/28		99	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/28		102	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/28		99	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/28		101	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/28	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/28	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/28	<1		mg/L	
		RPD	Dissolved Bromide (Br-)	2010/10/28	NC		%	25
2310392	OK	Matrix Spike	Phenols-4AAP	2010/10/28		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25
2310410	LCH	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310421	CP	Matrix Spike	Free Cyanide	2010/10/28		116	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/28		97	%	80 - 120
		Method Blank	Free Cyanide	2010/10/28	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/28	NC		%	25
2310982	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/27		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/27	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/27	1.9		%	25
2310990	YPA	Matrix Spike	Fluoride (F-)	2010/10/27		102	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/27		104	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/27	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/27	0.5		%	25
2311760	ADB	Matrix Spike [HP1800-04]	Total Ammonia-N	2010/10/29		86	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/29		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/29	<0.05		mg/L	
		RPD [HP1800-04]	Total Ammonia-N	2010/10/29	0.4		%	25
2312352	VRO	Matrix Spike	Total Phosphorus	2010/10/29		100	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/29		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/29		101	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/29	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/29	NC		%	20

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Matrix Spike [HP1800-03]	Total Aluminum (Al)	2010/10/29		103	%	80 - 120
			Total Antimony (Sb)	2010/10/29		111	%	80 - 120
			Total Arsenic (As)	2010/10/29		104	%	80 - 120
			Total Barium (Ba)	2010/10/29		101	%	80 - 120
			Total Beryllium (Be)	2010/10/29		107	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		105	%	80 - 120
			Total Boron (B)	2010/10/29		NC	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		109	%	80 - 120
			Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
			Total Chromium (Cr)	2010/10/29		102	%	80 - 120
			Total Cobalt (Co)	2010/10/29		99	%	80 - 120
			Total Copper (Cu)	2010/10/29		98	%	80 - 120
			Total Iron (Fe)	2010/10/29		103	%	80 - 120
			Total Lead (Pb)	2010/10/29		102	%	80 - 120
			Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
			Total Manganese (Mn)	2010/10/29		105	%	80 - 120
			Total Molybdenum (Mo)	2010/10/29		111	%	80 - 120
			Total Nickel (Ni)	2010/10/29		99	%	80 - 120
			Total Phosphorus (P)	2010/10/29		107	%	80 - 120
			Total Potassium (K)	2010/10/29		NC	%	80 - 120
			Total Silicon (Si)	2010/10/29		99	%	80 - 120
			Total Selenium (Se)	2010/10/29		104	%	80 - 120
			Total Silver (Ag)	2010/10/29		102	%	80 - 120
			Total Sodium (Na)	2010/10/29		NC	%	80 - 120
			Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
			Total Thallium (Tl)	2010/10/29		101	%	80 - 120
			Total Tin (Sn)	2010/10/29		109	%	80 - 120
			Total Titanium (Ti)	2010/10/29		103	%	80 - 120
			Total Uranium (U)	2010/10/29		107	%	80 - 120
			Total Vanadium (V)	2010/10/29		104	%	80 - 120
			Total Zinc (Zn)	2010/10/29		99	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/29		104	%	85 - 115
			Total Antimony (Sb)	2010/10/29		101	%	85 - 115
			Total Arsenic (As)	2010/10/29		105	%	85 - 115
			Total Barium (Ba)	2010/10/29		102	%	85 - 115
			Total Beryllium (Be)	2010/10/29		106	%	85 - 115
			Total Bismuth (Bi)	2010/10/29		104	%	85 - 115
			Total Boron (B)	2010/10/29		99	%	85 - 115
			Total Cadmium (Cd)	2010/10/29		106	%	85 - 116
			Total Calcium (Ca)	2010/10/29		107	%	85 - 115
			Total Chromium (Cr)	2010/10/29		104	%	85 - 115
			Total Cobalt (Co)	2010/10/29		101	%	85 - 115
			Total Copper (Cu)	2010/10/29		102	%	85 - 115
			Total Iron (Fe)	2010/10/29		105	%	85 - 115
			Total Lead (Pb)	2010/10/29		102	%	85 - 115
			Total Magnesium (Mg)	2010/10/29		104	%	85 - 115
			Total Manganese (Mn)	2010/10/29		105	%	85 - 115
			Total Molybdenum (Mo)	2010/10/29		102	%	85 - 115
			Total Nickel (Ni)	2010/10/29		101	%	85 - 115
			Total Phosphorus (P)	2010/10/29		103	%	85 - 115
			Total Potassium (K)	2010/10/29		105	%	85 - 115
			Total Silicon (Si)	2010/10/29		95	%	85 - 115
			Total Selenium (Se)	2010/10/29		105	%	85 - 115
			Total Silver (Ag)	2010/10/29		103	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Spiked Blank	Total Sodium (Na)	2010/10/29		107	%	85 - 115
			Total Strontium (Sr)	2010/10/29		103	%	85 - 115
			Total Thallium (Tl)	2010/10/29		100	%	85 - 115
			Total Tin (Sn)	2010/10/29		100	%	85 - 115
			Total Titanium (Ti)	2010/10/29		98	%	85 - 115
			Total Uranium (U)	2010/10/29		105	%	85 - 115
			Total Vanadium (V)	2010/10/29		103	%	85 - 115
			Total Zinc (Zn)	2010/10/29		104	%	85 - 115
		Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HP1800-03]	Total Aluminum (Al)	2010/10/29	NC		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	NC		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	3.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	3.6		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	2.3		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	2.1		%	25
			Total Manganese (Mn)	2010/10/29	1.9		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	RPD [HP1800-03]	Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	3.4		%	25
			Total Silicon (Si)	2010/10/29	2.9		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	2.6		%	25
			Total Strontium (Sr)	2010/10/29	2.9		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	91.8 (1)		%	25
2314201	PAL	Matrix Spike	Sulphide	2010/10/29		77	%	80 - 120
		Spiked Blank	Sulphide	2010/10/29		92	%	85 - 115
		Method Blank	Sulphide	2010/10/29	<0.02		mg/L	
		RPD	Sulphide	2010/10/29	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0F0605

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

Eva P

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

HENDERVALE ABC BARN

HENDERVALE MAIN BARN

HENDERVALE COTTAGE

HENDERVALE MAIN HOUSE

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/26	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/25	2010/10/26	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/26	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/22	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7345		
Sampling Date		2010/10/21 11:10		
COC Number		218822-06-01		
	Units	**ABC BARN**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	57	1	2306386
Inorganics				
Total Ammonia-N	mg/L	<0.05	0.05	2309117
Fluoride (F-)	mg/L	<0.1	0.1	2308317
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.01	0.01	2307096
pH	pH	7.64		2308316
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.018	0.002	2310544
Total Suspended Solids	mg/L	<10	10	2306994
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	1.6	0.1	2306734
Alkalinity (Total as CaCO3)	mg/L	54	1	2308315
Nitrite (N)	mg/L	<0.01	0.01	2306880
Dissolved Chloride (Cl)	mg/L	2	1	2306882
Nitrate (N)	mg/L	0.8	0.1	2306880
Nitrate + Nitrite	mg/L	0.8	0.1	2306880
Dissolved Bromide (Br-)	mg/L	<1	1	2306882
Dissolved Sulphate (SO4)	mg/L	6	1	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7345		
Sampling Date		2010/10/21 11:10		
COC Number		218822-06-01		
	Units	**ABC BARN**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337
Total Aluminum (Al)	ug/L	83	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	<1	1	2311988
Total Barium (Ba)	ug/L	14	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	30	10	2311988
Total Cadmium (Cd)	ug/L	0.1	0.1	2311988
Total Calcium (Ca)	ug/L	19000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	3	1	2311988
Total Iron (Fe)	ug/L	<100	100	2311988
Total Lead (Pb)	ug/L	<0.5	0.5	2311988
Total Magnesium (Mg)	ug/L	3500	50	2311988
Total Manganese (Mn)	ug/L	6	2	2311988
Total Molybdenum (Mo)	ug/L	<1	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	1700	200	2311988
Total Silicon (Si)	ug/L	960	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	3300	100	2311988
Total Strontium (Sr)	ug/L	170	1	2311988
Total Thallium (Tl)	ug/L	0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	0.1	0.1	2311988
Total Vanadium (V)	ug/L	1	1	2311988
Total Zinc (Zn)	ug/L	11	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537 CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
	Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
	Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
	RPD	Free Cyanide	2010/10/27	NC		%	25
2306734 KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
	Method Blank	Turbidity	2010/10/22	<0.1		NTU	
	RPD	Turbidity	2010/10/22	0.8		%	25
2306880 C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
		Nitrate (N)	2010/10/23		92	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
		Nitrate (N)	2010/10/23		101	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
		Nitrate (N)	2010/10/23	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
	RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882 FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
	Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
		Dissolved Bromide (Br-)	2010/10/27	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096 DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
	Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
	RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099 C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
		Nitrate (N)	2010/10/25		94	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
		Nitrate (N)	2010/10/25		104	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
		Nitrate (N)	2010/10/25	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
	RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
		Nitrate (N)	2010/10/25	0.5		%	25
		Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256 FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
			Dissolved Bromide (Br-)	2010/10/26	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	25
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.1		NTU	
		RPD	Turbidity	2010/10/25	NC		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
			Dissolved Boron (B)	2010/10/27		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
			Dissolved Boron (B)	2010/10/27		101	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike [HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	1		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	0.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	1.9		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	NC		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	1		%	25
			Total Manganese (Mn)	2010/10/29	0.01		%	25
			Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	0.4		%	25
			Total Silicon (Si)	2010/10/29	0.4		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/25	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/23	2010/10/25	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/25	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/22	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7344		
Sampling Date		2010/10/21 10:50		
COC Number		218822-06-01		
	Units	**MAIN BARN**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	280	1	2306386
Inorganics				
Total Ammonia-N	mg/L	0.18	0.05	2309117
Fluoride (F-)	mg/L	0.1	0.1	2307258
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.03	0.01	2307096
pH	pH	7.78		2307263
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.067	0.002	2310544
Total Suspended Solids	mg/L	10	10	2306994
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	130	0.1	2306734
Alkalinity (Total as CaCO3)	mg/L	238	1	2307261
Nitrite (N)	mg/L	0.03	0.01	2306880
Dissolved Chloride (Cl)	mg/L	12	1	2306882
Nitrate (N)	mg/L	0.6	0.1	2306880
Nitrate + Nitrite	mg/L	0.6	0.1	2306880
Dissolved Bromide (Br-)	mg/L	<1	1	2306882
Dissolved Sulphate (SO4)	mg/L	53	1	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7344		
Sampling Date		2010/10/21 10:50		
COC Number		218822-06-01		
	Units	**MAIN BARN**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337
Total Aluminum (Al)	ug/L	70	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	5	1	2311988
Total Barium (Ba)	ug/L	27	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	170	10	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	67000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	2	1	2311988
Total Iron (Fe)	ug/L	470	100	2311988
Total Lead (Pb)	ug/L	2.2	0.5	2311988
Total Magnesium (Mg)	ug/L	34000	50	2311988
Total Manganese (Mn)	ug/L	74	2	2311988
Total Molybdenum (Mo)	ug/L	<1	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	140	100	2311988
Total Potassium (K)	ug/L	6000	200	2311988
Total Silicon (Si)	ug/L	7300	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	13000	100	2311988
Total Strontium (Sr)	ug/L	1400	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	0.4	0.1	2311988
Total Vanadium (V)	ug/L	<1	1	2311988
Total Zinc (Zn)	ug/L	70	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2306734	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	0.8		%	25
2306880	C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
			Nitrate (N)	2010/10/23		92	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
			Dissolved Bromide (Br-)	2010/10/27	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096	DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099	C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
			Nitrate (N)	2010/10/25		94	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
		RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
			Nitrate (N)	2010/10/25	0.5		%	25
			Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256	FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256 FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
	RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
		Dissolved Bromide (Br-)	2010/10/26	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258 YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
	RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332 OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
	Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
	Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
	RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657 PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
	Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
	Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
	RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659 SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
	Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
	Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
	RPD	Sulphide	2010/10/25	NC		%	25
2307794 KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
	Method Blank	Turbidity	2010/10/25	<0.1		NTU	
	RPD	Turbidity	2010/10/25	NC		%	25
2308237 HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
		Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
		Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
		Dissolved Boron (B)	2010/10/26		96	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
		Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
		Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
		Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
		Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
		Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
		Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
		Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237	HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
			Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
			Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
			Dissolved Boron (B)	2010/10/27		105	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
			Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
			Dissolved Boron (B)	2010/10/27		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
			Dissolved Boron (B)	2010/10/27		101	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike [HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	1		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	0.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	1.9		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	NC		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	1		%	25
			Total Manganese (Mn)	2010/10/29	0.01		%	25
			Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	0.4		%	25
			Total Silicon (Si)	2010/10/29	0.4		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

Eva Pranjic

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/25	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/23	2010/10/25	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/25	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/25	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7342		
Sampling Date		2010/10/21 10:15		
COC Number		218822-06-01		
	Units	**COTTAGE**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	560	1	2306386
Inorganics				
Total Ammonia-N	mg/L	0.36	0.05	2309117
Fluoride (F-)	mg/L	0.2	0.1	2307258
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.01	0.01	2307096
pH	pH	7.80		2307263
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	0.002	0.002	2310544
Total Suspended Solids	mg/L	10	10	2306994
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	8.5	0.1	2307794
Alkalinity (Total as CaCO3)	mg/L	360	1	2307261
Nitrite (N)	mg/L	<0.01	0.01	2307099
Dissolved Chloride (Cl)	mg/L	135	1	2306882
Nitrate (N)	mg/L	<0.1	0.1	2307099
Nitrate + Nitrite	mg/L	<0.1	0.1	2307099
Dissolved Bromide (Br-)	mg/L	<1	1	2306882
Dissolved Sulphate (SO4)	mg/L	133	1	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7342		
Sampling Date		2010/10/21 10:15		
COC Number		218822-06-01		
	Units	**COTTAGE**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410
Total Aluminum (Al)	ug/L	7	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	10	1	2311988
Total Barium (Ba)	ug/L	30	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	400	10	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	100000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	<1	1	2311988
Total Iron (Fe)	ug/L	1100	100	2311988
Total Lead (Pb)	ug/L	<0.5	0.5	2311988
Total Magnesium (Mg)	ug/L	86000	50	2311988
Total Manganese (Mn)	ug/L	32	2	2311988
Total Molybdenum (Mo)	ug/L	2	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	8000	200	2311988
Total Silicon (Si)	ug/L	11000	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	52000	100	2311988
Total Strontium (Sr)	ug/L	4600	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	1.2	0.1	2311988
Total Vanadium (V)	ug/L	<1	1	2311988
Total Zinc (Zn)	ug/L	9	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2306734	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	0.8		%	25
2306880	C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
			Nitrate (N)	2010/10/23		92	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
			Dissolved Bromide (Br-)	2010/10/27	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096	DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099	C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
			Nitrate (N)	2010/10/25		94	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
		RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
			Nitrate (N)	2010/10/25	0.5		%	25
			Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256	FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
			Dissolved Bromide (Br-)	2010/10/26	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	25
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.1		NTU	
		RPD	Turbidity	2010/10/25	NC		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237	HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
			Dissolved Boron (B)	2010/10/26	NC		%	25
			Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
			Dissolved Calcium (Ca)	2010/10/26	NC		%	25
			Dissolved Chromium (Cr)	2010/10/26	NC		%	25
			Dissolved Copper (Cu)	2010/10/26	NC		%	25
			Dissolved Iron (Fe)	2010/10/26	NC		%	25
			Dissolved Lead (Pb)	2010/10/26	NC		%	25
			Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
			Dissolved Manganese (Mn)	2010/10/26	NC		%	25
			Dissolved Nickel (Ni)	2010/10/26	NC		%	25
			Dissolved Potassium (K)	2010/10/26	NC		%	25
			Dissolved Sodium (Na)	2010/10/26	NC		%	25
			Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
		RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317	YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
		RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117	ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
		RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386	LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337	MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410	LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428	VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
			Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
			Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
			Dissolved Boron (B)	2010/10/27		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
			Dissolved Boron (B)	2010/10/27		101	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Matrix Spike						
		[HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
			Total Chromium (Cr)	2010/10/29		106	%	80 - 120
			Total Cobalt (Co)	2010/10/29		103	%	80 - 120
			Total Copper (Cu)	2010/10/29		102	%	80 - 120
			Total Iron (Fe)	2010/10/29		106	%	80 - 120
			Total Lead (Pb)	2010/10/29		100	%	80 - 120
			Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
			Total Manganese (Mn)	2010/10/29		107	%	80 - 120
			Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
			Total Nickel (Ni)	2010/10/29		104	%	80 - 120
			Total Phosphorus (P)	2010/10/29		116	%	80 - 120
			Total Potassium (K)	2010/10/29		106	%	80 - 120
			Total Silicon (Si)	2010/10/29		103	%	80 - 120
			Total Selenium (Se)	2010/10/29		104	%	80 - 120
			Total Silver (Ag)	2010/10/29		98	%	80 - 120
			Total Sodium (Na)	2010/10/29		105	%	80 - 120
			Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
			Total Thallium (Tl)	2010/10/29		99	%	80 - 120
			Total Tin (Sn)	2010/10/29		109	%	80 - 120
			Total Titanium (Ti)	2010/10/29		109	%	80 - 120
			Total Uranium (U)	2010/10/29		103	%	80 - 120
			Total Vanadium (V)	2010/10/29		106	%	80 - 120
			Total Zinc (Zn)	2010/10/29		105	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
			Total Antimony (Sb)	2010/10/29		110	%	85 - 115
			Total Arsenic (As)	2010/10/29		103	%	85 - 115
			Total Barium (Ba)	2010/10/29		101	%	85 - 115
			Total Beryllium (Be)	2010/10/29		103	%	85 - 115
			Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
			Total Boron (B)	2010/10/29		110	%	85 - 115
			Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
			Total Calcium (Ca)	2010/10/29		109	%	85 - 115
			Total Chromium (Cr)	2010/10/29		105	%	85 - 115
			Total Cobalt (Co)	2010/10/29		103	%	85 - 115
			Total Copper (Cu)	2010/10/29		103	%	85 - 115
			Total Iron (Fe)	2010/10/29		106	%	85 - 115
			Total Lead (Pb)	2010/10/29		100	%	85 - 115
			Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
			Total Manganese (Mn)	2010/10/29		108	%	85 - 115
			Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
			Total Nickel (Ni)	2010/10/29		104	%	85 - 115
			Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
			Total Potassium (K)	2010/10/29		105	%	85 - 115
			Total Silicon (Si)	2010/10/29		103	%	85 - 115
			Total Selenium (Se)	2010/10/29		106	%	85 - 115
			Total Silver (Ag)	2010/10/29		97	%	85 - 115
			Total Sodium (Na)	2010/10/29		106	%	85 - 115
			Total Strontium (Sr)	2010/10/29		105	%	85 - 115
			Total Thallium (Tl)	2010/10/29		99	%	85 - 115
			Total Tin (Sn)	2010/10/29		107	%	85 - 115
			Total Titanium (Ti)	2010/10/29		110	%	85 - 115
			Total Uranium (U)	2010/10/29		101	%	85 - 115
			Total Vanadium (V)	2010/10/29		105	%	85 - 115
			Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	1		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	0.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	1.9		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	NC		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	1		%	25
			Total Manganese (Mn)	2010/10/29	0.01		%	25
			Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	0.4		%	25
			Total Silicon (Si)	2010/10/29	0.4		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/26	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/25	2010/10/26	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/26	2010/10/26	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/23	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/26	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/22	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7341		
Sampling Date		2010/10/21 09:55		
COC Number		218822-06-01		
	Units	**MAIN HOUSE**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	570	1	2306386
Inorganics				
Total Ammonia-N	mg/L	0.36	0.05	2309117
Fluoride (F-)	mg/L	0.2	0.1	2308317
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	<0.01	0.01	2307096
pH	pH	7.97		2308316
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	<0.002	0.002	2310544
Total Suspended Solids	mg/L	<10	10	2307063
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	3.6	0.1	2306734
Alkalinity (Total as CaCO3)	mg/L	356	1	2308315
Nitrite (N)	mg/L	<0.01	0.01	2306880
Dissolved Chloride (Cl)	mg/L	113	1	2306882
Nitrate (N)	mg/L	0.2	0.1	2306880
Nitrate + Nitrite	mg/L	0.2	0.1	2306880
Dissolved Bromide (Br-)	mg/L	<1	1	2306882
Dissolved Sulphate (SO4)	mg/L	197	1	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7341		
Sampling Date		2010/10/21 09:55		
COC Number		218822-06-01		
	Units	**MAIN HOUSE**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2309386
Total Aluminum (Al)	ug/L	18	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	8	1	2311988
Total Barium (Ba)	ug/L	25	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	700	10	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	94000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	30	1	2311988
Total Iron (Fe)	ug/L	440	100	2311988
Total Lead (Pb)	ug/L	<0.5	0.5	2311988
Total Magnesium (Mg)	ug/L	90000	50	2311988
Total Manganese (Mn)	ug/L	34	2	2311988
Total Molybdenum (Mo)	ug/L	4	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	10000	200	2311988
Total Silicon (Si)	ug/L	9800	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	70000	100	2311988
Total Strontium (Sr)	ug/L	6300	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	1.1	0.1	2311988
Total Vanadium (V)	ug/L	<1	1	2311988
Total Zinc (Zn)	ug/L	16	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537 CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
	Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
	Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
	RPD	Free Cyanide	2010/10/27	NC		%	25
2306734 KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
	Method Blank	Turbidity	2010/10/22	<0.1		NTU	
	RPD	Turbidity	2010/10/22	0.8		%	25
2306880 C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
		Nitrate (N)	2010/10/23		92	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
		Nitrate (N)	2010/10/23		101	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
		Nitrate (N)	2010/10/23	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
	RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882 FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
	Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
	RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
		Dissolved Bromide (Br-)	2010/10/27	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063 JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
	Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
	RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096 DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
	Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
	RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099 C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
		Nitrate (N)	2010/10/25		94	%	80 - 120
	Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
		Nitrate (N)	2010/10/25		104	%	85 - 115
	Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
		Nitrate (N)	2010/10/25	<0.1		mg/L	
		Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
	RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
		Nitrate (N)	2010/10/25	0.5		%	25
		Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256 FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
		Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
		Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
		Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
		Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
			Dissolved Bromide (Br-)	2010/10/26	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	25
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.1		NTU	
		RPD	Turbidity	2010/10/25	NC		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428 VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
		Dissolved Boron (B)	2010/10/27		100	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
		Dissolved Boron (B)	2010/10/27		101	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike						
	[HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	1		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	0.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	1.9		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	NC		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	1		%	25
			Total Manganese (Mn)	2010/10/29	0.01		%	25
			Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	0.4		%	25
			Total Silicon (Si)	2010/10/29	0.4		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva P

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

===

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

SICARD

Site: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0F0605
Received: 2010/10/22, 18:42

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/27	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/28	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/28	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/27	2010/10/27	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/29	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/27	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/27	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/28	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/27	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/29	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/28	2010/10/29	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/26	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/26	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section

Site: TANSLEY QUARRY
Your C.O.C. #: 21882207, 218822-07-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

RESULTS OF ANALYSES OF WATER

Maxxam ID		HP1801		
Sampling Date		2010/10/22 10:35		
COC Number		218822-07-01		
	Units	**3278 TREMINE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	860	1	2307681
Inorganics				
Total Ammonia-N	mg/L	2.5	0.05	2311760
Fluoride (F-)	mg/L	0.6	0.1	2310990
Free Cyanide	mg/L	<0.002	0.002	2310421
Orthophosphate (P)	mg/L	<0.01	0.01	2309967
pH	pH	7.76		2310988
Phenols-4AAP	mg/L	<0.001	0.001	2310392
Total Phosphorus	mg/L	0.02	0.02	2312352
Total Suspended Solids	mg/L	10	10	2309004
Sulphide	mg/L	<0.02	0.02	2314201
Turbidity	NTU	11	0.1	2309127
Alkalinity (Total as CaCO3)	mg/L	148	1	2310982
Nitrite (N)	mg/L	0.02	0.01	2309646
Dissolved Chloride (Cl)	mg/L	955	10	2309997
Nitrate (N)	mg/L	0.2	0.1	2309646
Nitrate + Nitrite	mg/L	0.2	0.1	2309646
Dissolved Bromide (Br-)	mg/L	12	1	2309997
Dissolved Sulphate (SO4)	mg/L	952	10	2309997

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0F0605
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1801		
Sampling Date		2010/10/22 10:35		
COC Number		218822-07-01		
	Units	**3278 TREMINE ROAD**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310410
Total Aluminum (Al)	ug/L	6	5	2313486
Total Antimony (Sb)	ug/L	<0.5	0.5	2313486
Total Arsenic (As)	ug/L	2	1	2313486
Total Barium (Ba)	ug/L	9	5	2313486
Total Beryllium (Be)	ug/L	<0.5	0.5	2313486
Total Bismuth (Bi)	ug/L	<1	1	2313486
Total Boron (B)	ug/L	6900	10	2313486
Total Cadmium (Cd)	ug/L	<0.1	0.1	2313486
Total Calcium (Ca)	ug/L	240000	200	2313486
Total Chromium (Cr)	ug/L	<5	5	2313486
Total Cobalt (Co)	ug/L	<0.5	0.5	2313486
Total Copper (Cu)	ug/L	25	1	2313486
Total Iron (Fe)	ug/L	1600	100	2313486
Total Lead (Pb)	ug/L	0.6	0.5	2313486
Total Magnesium (Mg)	ug/L	73000	50	2313486
Total Manganese (Mn)	ug/L	73	2	2313486
Total Molybdenum (Mo)	ug/L	10	1	2313486
Total Nickel (Ni)	ug/L	<1	1	2313486
Total Phosphorus (P)	ug/L	<100	100	2313486
Total Potassium (K)	ug/L	33000	200	2313486
Total Silicon (Si)	ug/L	4000	50	2313486
Total Selenium (Se)	ug/L	<2	2	2313486
Total Silver (Ag)	ug/L	<0.1	0.1	2313486
Total Sodium (Na)	ug/L	760000	1000	2313486
Total Strontium (Sr)	ug/L	9600	1	2313486
Total Thallium (Tl)	ug/L	<0.05	0.05	2313486
Total Tin (Sn)	ug/L	<1	1	2313486
Total Titanium (Ti)	ug/L	<5	5	2313486
Total Uranium (U)	ug/L	0.7	0.1	2313486
Total Vanadium (V)	ug/L	<1	1	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HP1801		
Sampling Date		2010/10/22 10:35		
COC Number		218822-07-01		
	Units	**3278 TREMINE ROAD**	**RDL**	**QC Batch**
Total Zinc (Zn)	ug/L	32	5	2313486

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	4.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Metals: Preserved sample contained visible sediment. Results may be biased high due to analytes leaching from sediment.
rcs

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2309004	JDO	QC Standard	Total Suspended Solids	2010/10/26		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/26	<10		mg/L	
2309127	KTH	QC Standard	Turbidity	2010/10/26		100	%	85 - 115
		Method Blank	Turbidity	2010/10/26	<0.1		NTU	
		RPD	Turbidity	2010/10/26	2.4		%	25
2309646	LS	Matrix Spike [HP1806-01]	Nitrite (N)	2010/10/27		95	%	80 - 120
			Nitrate (N)	2010/10/27		102	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/27		101	%	85 - 115
			Nitrate (N)	2010/10/27		107	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/27	<0.01		mg/L	
			Nitrate (N)	2010/10/27	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/27	<0.1		mg/L	
2309967	DRM	Matrix Spike [HP1806-01]	Orthophosphate (P)	2010/10/27		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/27		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/27	<0.01		mg/L	
2309997	FD	Matrix Spike	Dissolved Bromide (Br-)	2010/10/28		99	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/28		102	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/28		99	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/28		101	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/28	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/28	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/28	<1		mg/L	
		RPD	Dissolved Bromide (Br-)	2010/10/28	NC		%	25
2310392	OK	Matrix Spike	Phenols-4AAP	2010/10/28		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25
2310410	LCH	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310421	CP	Matrix Spike	Free Cyanide	2010/10/28		116	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/28		97	%	80 - 120
		Method Blank	Free Cyanide	2010/10/28	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/28	NC		%	25
2310982	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/27		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/27	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/27	1.9		%	25
2310990	YPA	Matrix Spike	Fluoride (F-)	2010/10/27		102	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/27		104	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/27	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/27	0.5		%	25
2311760	ADB	Matrix Spike [HP1800-04]	Total Ammonia-N	2010/10/29		86	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/29		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/29	<0.05		mg/L	
2312352	VRO	Matrix Spike	Total Phosphorus	2010/10/29		100	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/29		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/29		101	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/29	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/29	NC		%	20
2313486	HRE	Matrix Spike [HP1800-03]	Total Aluminum (Al)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Matrix Spike						
		[HP1800-03]	Total Antimony (Sb)	2010/10/29		111	%	80 - 120
			Total Arsenic (As)	2010/10/29		104	%	80 - 120
			Total Barium (Ba)	2010/10/29		101	%	80 - 120
			Total Beryllium (Be)	2010/10/29		107	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		105	%	80 - 120
			Total Boron (B)	2010/10/29		NC	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		109	%	80 - 120
			Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
			Total Chromium (Cr)	2010/10/29		102	%	80 - 120
			Total Cobalt (Co)	2010/10/29		99	%	80 - 120
			Total Copper (Cu)	2010/10/29		98	%	80 - 120
			Total Iron (Fe)	2010/10/29		103	%	80 - 120
			Total Lead (Pb)	2010/10/29		102	%	80 - 120
			Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
			Total Manganese (Mn)	2010/10/29		105	%	80 - 120
			Total Molybdenum (Mo)	2010/10/29		111	%	80 - 120
			Total Nickel (Ni)	2010/10/29		99	%	80 - 120
			Total Phosphorus (P)	2010/10/29		107	%	80 - 120
			Total Potassium (K)	2010/10/29		NC	%	80 - 120
			Total Silicon (Si)	2010/10/29		99	%	80 - 120
			Total Selenium (Se)	2010/10/29		104	%	80 - 120
			Total Silver (Ag)	2010/10/29		102	%	80 - 120
			Total Sodium (Na)	2010/10/29		NC	%	80 - 120
			Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
			Total Thallium (Tl)	2010/10/29		101	%	80 - 120
			Total Tin (Sn)	2010/10/29		109	%	80 - 120
			Total Titanium (Ti)	2010/10/29		103	%	80 - 120
			Total Uranium (U)	2010/10/29		107	%	80 - 120
			Total Vanadium (V)	2010/10/29		104	%	80 - 120
			Total Zinc (Zn)	2010/10/29		99	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2010/10/29		104	%	85 - 115
			Total Antimony (Sb)	2010/10/29		101	%	85 - 115
			Total Arsenic (As)	2010/10/29		105	%	85 - 115
			Total Barium (Ba)	2010/10/29		102	%	85 - 115
			Total Beryllium (Be)	2010/10/29		106	%	85 - 115
			Total Bismuth (Bi)	2010/10/29		104	%	85 - 115
			Total Boron (B)	2010/10/29		99	%	85 - 115
			Total Cadmium (Cd)	2010/10/29		106	%	85 - 116
			Total Calcium (Ca)	2010/10/29		107	%	85 - 115
			Total Chromium (Cr)	2010/10/29		104	%	85 - 115
			Total Cobalt (Co)	2010/10/29		101	%	85 - 115
			Total Copper (Cu)	2010/10/29		102	%	85 - 115
			Total Iron (Fe)	2010/10/29		105	%	85 - 115
			Total Lead (Pb)	2010/10/29		102	%	85 - 115
			Total Magnesium (Mg)	2010/10/29		104	%	85 - 115
			Total Manganese (Mn)	2010/10/29		105	%	85 - 115
			Total Molybdenum (Mo)	2010/10/29		102	%	85 - 115
			Total Nickel (Ni)	2010/10/29		101	%	85 - 115
			Total Phosphorus (P)	2010/10/29		103	%	85 - 115
			Total Potassium (K)	2010/10/29		105	%	85 - 115
			Total Silicon (Si)	2010/10/29		95	%	85 - 115
			Total Selenium (Se)	2010/10/29		105	%	85 - 115
			Total Silver (Ag)	2010/10/29		103	%	85 - 115
			Total Sodium (Na)	2010/10/29		107	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0F0605

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2313486	HRE	Spiked Blank	Total Strontium (Sr)	2010/10/29		103	%	85 - 115
			Total Thallium (Tl)	2010/10/29		100	%	85 - 115
			Total Tin (Sn)	2010/10/29		100	%	85 - 115
			Total Titanium (Ti)	2010/10/29		98	%	85 - 115
			Total Uranium (U)	2010/10/29		105	%	85 - 115
			Total Vanadium (V)	2010/10/29		103	%	85 - 115
			Total Zinc (Zn)	2010/10/29		104	%	85 - 115
		Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
2314201	PAL	Matrix Spike	Sulphide	2010/10/29		77	%	80 - 120
		Spiked Blank	Sulphide	2010/10/29		92	%	85 - 115
		Method Blank	Sulphide	2010/10/29	<0.02		mg/L	
		RPD	Sulphide	2010/10/29	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B0F0605

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

Eva

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

SIMMS

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/25	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/26	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/23	2010/10/25	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/25	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/25	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7346		
Sampling Date		2010/10/21 11:35		
COC Number		218822-06-01		
	Units	**5400 N°2 SIDE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	500	1	2306386
Inorganics				
Total Ammonia-N	mg/L	<0.05	0.05	2309117
Fluoride (F-)	mg/L	0.2	0.1	2307258
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	<0.01	0.01	2307096
pH	pH	7.95		2307263
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	<0.002	0.002	2310544
Total Suspended Solids	mg/L	<10	10	2306994
Sulphide	mg/L	<0.02	0.02	2307659
Turbidity	NTU	0.3	0.1	2307794
Alkalinity (Total as CaCO3)	mg/L	244	1	2307261
Nitrite (N)	mg/L	<0.01	0.01	2307099
Dissolved Chloride (Cl)	mg/L	6	1	2307256
Nitrate (N)	mg/L	1.7	0.1	2307099
Nitrate + Nitrite	mg/L	1.7	0.1	2307099
Dissolved Bromide (Br-)	mg/L	<1	1	2307256
Dissolved Sulphate (SO4)	mg/L	295	1	2307256

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7346		
Sampling Date		2010/10/21 11:35		
COC Number		218822-06-01		
	Units	**5400 N°2 SIDE ROAD**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337
Total Aluminum (Al)	ug/L	8	5	2311988
Total Antimony (Sb)	ug/L	0.8	0.5	2311988
Total Arsenic (As)	ug/L	<1	1	2311988
Total Barium (Ba)	ug/L	62	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	190	10	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	120000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<0.5	0.5	2311988
Total Copper (Cu)	ug/L	7	1	2311988
Total Iron (Fe)	ug/L	<100	100	2311988
Total Lead (Pb)	ug/L	0.5	0.5	2311988
Total Magnesium (Mg)	ug/L	55000	50	2311988
Total Manganese (Mn)	ug/L	3	2	2311988
Total Molybdenum (Mo)	ug/L	3	1	2311988
Total Nickel (Ni)	ug/L	<1	1	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	6900	200	2311988
Total Silicon (Si)	ug/L	4100	50	2311988
Total Selenium (Se)	ug/L	<2	2	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	37000	100	2311988
Total Strontium (Sr)	ug/L	3400	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	3.3	0.1	2311988
Total Vanadium (V)	ug/L	<1	1	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7346		
Sampling Date		2010/10/21 11:35		
COC Number		218822-06-01		
	Units	**5400 N°2 SIDE ROAD**	**RDL**	**QC Batch**
Total Zinc (Zn)	ug/L	1400	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2306734	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	0.8		%	25
2306880	C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
			Nitrate (N)	2010/10/23		92	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
			Dissolved Bromide (Br-)	2010/10/27	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096	DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099	C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
			Nitrate (N)	2010/10/25		94	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
		RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
			Nitrate (N)	2010/10/25	0.5		%	25
			Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256	FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

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2307256 FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
		Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
		Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
	RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
		Dissolved Bromide (Br-)	2010/10/26	NC		%	25
		Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258 YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
	RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332 OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
	Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
	Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
	RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657 PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
	Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
	Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
	RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659 SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
	Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
	Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
	RPD	Sulphide	2010/10/25	NC		%	25
2307794 KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
	Method Blank	Turbidity	2010/10/25	<0.1		NTU	
	RPD	Turbidity	2010/10/25	NC		%	25
2308237 HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
		Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
		Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
		Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
		Dissolved Boron (B)	2010/10/26		96	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
		Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
		Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
		Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
		Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
		Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
		Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
		Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

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2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

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2308237 HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
		Dissolved Boron (B)	2010/10/26	NC		%	25
		Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
		Dissolved Calcium (Ca)	2010/10/26	NC		%	25
		Dissolved Chromium (Cr)	2010/10/26	NC		%	25
		Dissolved Copper (Cu)	2010/10/26	NC		%	25
		Dissolved Iron (Fe)	2010/10/26	NC		%	25
		Dissolved Lead (Pb)	2010/10/26	NC		%	25
		Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
		Dissolved Manganese (Mn)	2010/10/26	NC		%	25
		Dissolved Nickel (Ni)	2010/10/26	NC		%	25
		Dissolved Potassium (K)	2010/10/26	NC		%	25
		Dissolved Sodium (Na)	2010/10/26	NC		%	25
		Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315 YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
	RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317 YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
	Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
	Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
	RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117 ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
	Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
	Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
	RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386 LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337 MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410 LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
	Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
	Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
	RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428 VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
		Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
		Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
		Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

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2310428	VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
			Dissolved Boron (B)	2010/10/27		100	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
			Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
			Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
			Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
			Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
			Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
			Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
			Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
			Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
			Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
			Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
			Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
			Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
			Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
			Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
			Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
			Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
			Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
			Dissolved Boron (B)	2010/10/27		101	%	90 - 110
			Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
			Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
			Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
			Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
			Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
			Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
			Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
			Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
			Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
			Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
			Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
			Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
			Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
			Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
			Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
			Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
			Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
			Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
			Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
			Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
			Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

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2310428 VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
		Dissolved Potassium (K)	2010/10/27	<200		ug/L	
		Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
		Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
		Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
		Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
		Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
		Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
		Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
		Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
		Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
		Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
		Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
	RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544 VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
	QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
	Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
	Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
	RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823 VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
	QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
	Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
	Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
	RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988 VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
		Total Antimony (Sb)	2010/10/29		112	%	80 - 120
		Total Arsenic (As)	2010/10/29		103	%	80 - 120
		Total Barium (Ba)	2010/10/29		102	%	80 - 120
		Total Beryllium (Be)	2010/10/29		104	%	80 - 120
		Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
		Total Boron (B)	2010/10/29		112	%	80 - 120
		Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike						
	[HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
		Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
		Total Arsenic (As)	2010/10/29	<1		ug/L	
		Total Barium (Ba)	2010/10/29	<5		ug/L	
		Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
		Total Bismuth (Bi)	2010/10/29	<1		ug/L	
		Total Boron (B)	2010/10/29	<10		ug/L	
		Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
		Total Calcium (Ca)	2010/10/29	<200		ug/L	
		Total Chromium (Cr)	2010/10/29	<5		ug/L	
		Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
		Total Copper (Cu)	2010/10/29	<1		ug/L	
		Total Iron (Fe)	2010/10/29	<100		ug/L	
		Total Lead (Pb)	2010/10/29	<0.5		ug/L	
		Total Magnesium (Mg)	2010/10/29	<50		ug/L	
		Total Manganese (Mn)	2010/10/29	<2		ug/L	
		Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
		Total Nickel (Ni)	2010/10/29	<1		ug/L	
		Total Phosphorus (P)	2010/10/29	<100		ug/L	
		Total Potassium (K)	2010/10/29	<200		ug/L	
		Total Silicon (Si)	2010/10/29	<50		ug/L	
		Total Selenium (Se)	2010/10/29	<2		ug/L	
		Total Silver (Ag)	2010/10/29	<0.1		ug/L	
		Total Sodium (Na)	2010/10/29	<100		ug/L	
		Total Strontium (Sr)	2010/10/29	<1		ug/L	
		Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
		Total Tin (Sn)	2010/10/29	<1		ug/L	
		Total Titanium (Ti)	2010/10/29	<5		ug/L	
		Total Uranium (U)	2010/10/29	<0.1		ug/L	
		Total Vanadium (V)	2010/10/29	<1		ug/L	
		Total Zinc (Zn)	2010/10/29	<5		ug/L	
	RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
		Total Antimony (Sb)	2010/10/29	NC		%	25
		Total Arsenic (As)	2010/10/29	NC		%	25
		Total Barium (Ba)	2010/10/29	1		%	25
		Total Beryllium (Be)	2010/10/29	NC		%	25
		Total Bismuth (Bi)	2010/10/29	NC		%	25
		Total Boron (B)	2010/10/29	0.1		%	25
		Total Cadmium (Cd)	2010/10/29	NC		%	25
		Total Calcium (Ca)	2010/10/29	1.9		%	25
		Total Chromium (Cr)	2010/10/29	NC		%	25
		Total Cobalt (Co)	2010/10/29	NC		%	25
		Total Copper (Cu)	2010/10/29	NC		%	25
		Total Iron (Fe)	2010/10/29	NC		%	25
		Total Lead (Pb)	2010/10/29	NC		%	25
		Total Magnesium (Mg)	2010/10/29	1		%	25
		Total Manganese (Mn)	2010/10/29	0.01		%	25
		Total Molybdenum (Mo)	2010/10/29	NC		%	25
		Total Nickel (Ni)	2010/10/29	NC		%	25
		Total Phosphorus (P)	2010/10/29	NC		%	25
		Total Potassium (K)	2010/10/29	0.4		%	25
		Total Silicon (Si)	2010/10/29	0.4		%	25
		Total Selenium (Se)	2010/10/29	NC		%	25
		Total Silver (Ag)	2010/10/29	NC		%	25
		Total Sodium (Na)	2010/10/29	0.6		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

SUGIYAMA

Site: TANSLEY QUARRY
Your C.O.C. #: 21882206, 218822-06-01

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/11/29
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0E9751
Received: 2010/10/21, 18:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2010/10/26	CAM SOP-00448	SM 2320B
Anions	1	N/A	2010/10/27	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2010/10/27	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2010/10/25	2010/10/26	CAM SOP-00448	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2010/10/28	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2010/10/27	2010/10/27	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2010/10/29	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2010/10/28	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2010/10/25	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2010/10/26	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2010/10/27	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2010/10/26	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2010/10/25	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2010/10/27	2010/10/28	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2010/10/25	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2010/10/25	CAM SOP-00417	APHA 2130B

(1) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Total cover pages: 1

Golder Associates Ltd

Maxxam Job #: B0E9751
Report Date: 2010/11/29

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		HO7343		
Sampling Date		2010/10/21 10:35		
COC Number		218822-06-01		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	1400	1	2306386
Inorganics				
Total Ammonia-N	mg/L	2.1	0.05	2309117
Fluoride (F-)	mg/L	0.4	0.1	2308317
Free Cyanide	mg/L	<0.002	0.002	2305537
Orthophosphate (P)	mg/L	0.01	0.01	2307096
pH	pH	7.69		2308316
Phenols-4AAP	mg/L	<0.001	0.001	2307332
Total Phosphorus	mg/L	<0.002	0.002	2310544
Total Suspended Solids	mg/L	14	10	2307063
Sulphide	mg/L	<0.02	0.02	2307657
Turbidity	NTU	1.5	0.1	2307794
Alkalinity (Total as CaCO3)	mg/L	160	1	2308315
Nitrite (N)	mg/L	0.02	0.01	2307099
Dissolved Chloride (Cl)	mg/L	1780	10	2306882
Nitrate (N)	mg/L	1.7	0.1	2307099
Nitrate + Nitrite	mg/L	1.8	0.1	2307099
Dissolved Bromide (Br-)	mg/L	15	1	2306882
Dissolved Sulphate (SO4)	mg/L	1010	10	2306882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7343		
Sampling Date		2010/10/21 10:35		
COC Number		218822-06-01		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2310337
Total Aluminum (Al)	ug/L	12	5	2311988
Total Antimony (Sb)	ug/L	<0.5	0.5	2311988
Total Arsenic (As)	ug/L	<5 (1)	5	2311988
Total Barium (Ba)	ug/L	13	5	2311988
Total Beryllium (Be)	ug/L	<0.5	0.5	2311988
Total Bismuth (Bi)	ug/L	<1	1	2311988
Total Boron (B)	ug/L	5300	100	2311988
Total Cadmium (Cd)	ug/L	<0.1	0.1	2311988
Total Calcium (Ca)	ug/L	420000	200	2311988
Total Chromium (Cr)	ug/L	<5	5	2311988
Total Cobalt (Co)	ug/L	<3	3	2311988
Total Copper (Cu)	ug/L	18	5	2311988
Total Iron (Fe)	ug/L	270	100	2311988
Total Lead (Pb)	ug/L	<0.5	0.5	2311988
Total Magnesium (Mg)	ug/L	150000	50	2311988
Total Manganese (Mn)	ug/L	120	2	2311988
Total Molybdenum (Mo)	ug/L	7	1	2311988
Total Nickel (Ni)	ug/L	<5 (1)	5	2311988
Total Phosphorus (P)	ug/L	<100	100	2311988
Total Potassium (K)	ug/L	44000	200	2311988
Total Silicon (Si)	ug/L	4300	50	2311988
Total Selenium (Se)	ug/L	<10 (1)	10	2311988
Total Silver (Ag)	ug/L	<0.1	0.1	2311988
Total Sodium (Na)	ug/L	960000	1000	2311988
Total Strontium (Sr)	ug/L	24000	1	2311988
Total Thallium (Tl)	ug/L	<0.05	0.05	2311988
Total Tin (Sn)	ug/L	<1	1	2311988
Total Titanium (Ti)	ug/L	<5	5	2311988
Total Uranium (U)	ug/L	<0.1	0.1	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		HO7343		
Sampling Date		2010/10/21 10:35		
COC Number		218822-06-01		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**
Total Vanadium (V)	ug/L	<5 (1)	5	2311988
Total Zinc (Zn)	ug/L	41	5	2311988

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	6.0°C
Package 2	0.3°C
Package 3	1.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample HO7339-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7342-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7343-01: Total Phosphorus < Orthophosphate: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample HO7347-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample HO7348-01: Metals Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample HO7350-01: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2305537	CP	Matrix Spike	Free Cyanide	2010/10/27		115	%	80 - 120
		Spiked Blank	Free Cyanide	2010/10/27		102	%	80 - 120
		Method Blank	Free Cyanide	2010/10/27	<0.002		mg/L	
		RPD	Free Cyanide	2010/10/27	NC		%	25
2306734	KTH	QC Standard	Turbidity	2010/10/22		99	%	85 - 115
		Method Blank	Turbidity	2010/10/22	<0.1		NTU	
		RPD	Turbidity	2010/10/22	0.8		%	25
2306880	C_N	Matrix Spike	Nitrite (N)	2010/10/23		102	%	80 - 120
			Nitrate (N)	2010/10/23		92	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/23		103	%	85 - 115
			Nitrate (N)	2010/10/23		101	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/23	<0.01		mg/L	
			Nitrate (N)	2010/10/23	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/23	<0.1		mg/L	
		RPD	Nitrate (N)	2010/10/23	0.3		%	25
2306882	FD	Matrix Spike	Dissolved Chloride (Cl)	2010/10/27		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/27		110	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/27		114	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/27		101	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/27		94	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/27		99	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2010/10/27	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/27	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/27	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2010/10/27	1.9		%	25
			Dissolved Bromide (Br-)	2010/10/27	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/27	2.1		%	25
2306994	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307063	JDO	QC Standard	Total Suspended Solids	2010/10/25		98	%	85 - 115
		Method Blank	Total Suspended Solids	2010/10/25	<10		mg/L	
		RPD	Total Suspended Solids	2010/10/25	NC		%	25
2307096	DRM	Matrix Spike	Orthophosphate (P)	2010/10/26		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2010/10/26		106	%	80 - 120
		Method Blank	Orthophosphate (P)	2010/10/26	0.01, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2010/10/26	NC		%	25
2307099	C_N	Matrix Spike [HO7346-01]	Nitrite (N)	2010/10/25		110	%	80 - 120
			Nitrate (N)	2010/10/25		94	%	80 - 120
		Spiked Blank	Nitrite (N)	2010/10/25		102	%	85 - 115
			Nitrate (N)	2010/10/25		104	%	85 - 115
		Method Blank	Nitrite (N)	2010/10/25	<0.01		mg/L	
			Nitrate (N)	2010/10/25	<0.1		mg/L	
			Nitrate + Nitrite	2010/10/25	<0.1		mg/L	
		RPD [HO7346-01]	Nitrite (N)	2010/10/25	NC		%	25
			Nitrate (N)	2010/10/25	0.5		%	25
			Nitrate + Nitrite	2010/10/25	0.5		%	25
2307256	FD	Matrix Spike [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26		NC	%	80 - 120
			Dissolved Bromide (Br-)	2010/10/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2010/10/26		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2010/10/26		98	%	85 - 115
			Dissolved Bromide (Br-)	2010/10/26		98	%	85 - 115
			Dissolved Sulphate (SO4)	2010/10/26		97	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2307256	FD	Method Blank	Dissolved Chloride (Cl)	2010/10/26	<1		mg/L	
			Dissolved Bromide (Br-)	2010/10/26	<1		mg/L	
			Dissolved Sulphate (SO4)	2010/10/26	<1		mg/L	
		RPD [HO7349-01]	Dissolved Chloride (Cl)	2010/10/26	0.9		%	25
			Dissolved Bromide (Br-)	2010/10/26	NC		%	25
			Dissolved Sulphate (SO4)	2010/10/26	0.6		%	25
2307258	YPA	Matrix Spike	Fluoride (F-)	2010/10/25		91	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/25		96	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/25	<0.1		mg/L	
		RPD	Fluoride (F-)	2010/10/25	NC		%	25
2307261	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/25		100	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/25	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2010/10/25	2.5		%	25
2307332	OK	Matrix Spike	Phenols-4AAP	2010/10/27		102	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/27		104	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/27	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/27	NC		%	25
2307657	PAL	Matrix Spike [HO7342-06]	Sulphide	2010/10/25		96	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		96	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD [HO7342-06]	Sulphide	2010/10/25	NC		%	25
2307659	SAU	Matrix Spike	Sulphide	2010/10/25		87	%	80 - 120
		Spiked Blank	Sulphide	2010/10/25		93	%	85 - 115
		Method Blank	Sulphide	2010/10/25	<0.02		mg/L	
		RPD	Sulphide	2010/10/25	NC		%	25
2307794	KTH	QC Standard	Turbidity	2010/10/25		100	%	85 - 115
		Method Blank	Turbidity	2010/10/25	<0.1		NTU	
		RPD	Turbidity	2010/10/25	NC		%	25
2308237	HRE	Matrix Spike	Dissolved Aluminum (Al)	2010/10/26		102	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/26		96	%	80 - 120
			Dissolved Arsenic (As)	2010/10/26		99	%	80 - 120
			Dissolved Barium (Ba)	2010/10/26		96	%	80 - 120
			Dissolved Beryllium (Be)	2010/10/26		97	%	80 - 120
			Dissolved Bismuth (Bi)	2010/10/26		105	%	80 - 120
			Dissolved Boron (B)	2010/10/26		96	%	80 - 120
			Dissolved Cadmium (Cd)	2010/10/26		97	%	80 - 120
			Dissolved Calcium (Ca)	2010/10/26		103	%	80 - 120
			Dissolved Chromium (Cr)	2010/10/26		101	%	80 - 120
			Dissolved Cobalt (Co)	2010/10/26		100	%	80 - 120
			Dissolved Copper (Cu)	2010/10/26		99	%	80 - 120
			Dissolved Iron (Fe)	2010/10/26		103	%	80 - 120
			Dissolved Lead (Pb)	2010/10/26		101	%	80 - 120
			Dissolved Magnesium (Mg)	2010/10/26		98	%	80 - 120
			Dissolved Manganese (Mn)	2010/10/26		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2010/10/26		100	%	80 - 120
			Dissolved Nickel (Ni)	2010/10/26		102	%	80 - 120
			Dissolved Phosphorus (P)	2010/10/26		100	%	80 - 120
			Dissolved Potassium (K)	2010/10/26		102	%	80 - 120
			Dissolved Selenium (Se)	2010/10/26		98	%	80 - 120
			Dissolved Silicon (Si)	2010/10/26		103	%	80 - 120
			Dissolved Silver (Ag)	2010/10/26		95	%	80 - 120
			Dissolved Sodium (Na)	2010/10/26		102	%	80 - 120
			Dissolved Strontium (Sr)	2010/10/26		93	%	80 - 120
			Dissolved Thallium (Tl)	2010/10/26		99	%	80 - 120

Quality Assurance Report (Continued)

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237 HRE	Matrix Spike	Dissolved Tin (Sn)	2010/10/26		94	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/26		101	%	80 - 120
		Dissolved Uranium (U)	2010/10/26		108	%	80 - 120
		Dissolved Vanadium (V)	2010/10/26		101	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/26		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		100	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		102	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		101	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		100	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		100	%	90 - 110
		Dissolved Boron (B)	2010/10/27		105	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		100	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		103	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		98	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		97	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		99	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		98	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		97	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		101	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		105	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		96	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		97	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		101	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		98	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		103	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		96	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		101	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110
		Dissolved Uranium (U)	2010/10/27		100	%	90 - 110
		Dissolved Vanadium (V)	2010/10/27		99	%	90 - 110
		Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
		Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
		Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
		Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
		Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
		Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
		Dissolved Boron (B)	2010/10/27	<10		ug/L	
		Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
		Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
		Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
		Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
		Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
		Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
		Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
		Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
		Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
		Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
		Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
		Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2308237	HRE	Method Blank	Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	2, RDL=2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	<1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Arsenic (As)	2010/10/26	NC		%	25
			Dissolved Boron (B)	2010/10/26	NC		%	25
			Dissolved Cadmium (Cd)	2010/10/26	NC		%	25
			Dissolved Calcium (Ca)	2010/10/26	NC		%	25
			Dissolved Chromium (Cr)	2010/10/26	NC		%	25
			Dissolved Copper (Cu)	2010/10/26	NC		%	25
			Dissolved Iron (Fe)	2010/10/26	NC		%	25
			Dissolved Lead (Pb)	2010/10/26	NC		%	25
			Dissolved Magnesium (Mg)	2010/10/26	NC		%	25
			Dissolved Manganese (Mn)	2010/10/26	NC		%	25
			Dissolved Nickel (Ni)	2010/10/26	NC		%	25
			Dissolved Potassium (K)	2010/10/26	NC		%	25
			Dissolved Sodium (Na)	2010/10/26	NC		%	25
			Dissolved Zinc (Zn)	2010/10/26	NC		%	25
2308315	YPA	QC Standard	Alkalinity (Total as CaCO3)	2010/10/26		99	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2010/10/26	<1		mg/L	
		RPD [HO7350-01]	Alkalinity (Total as CaCO3)	2010/10/26	0.5		%	25
2308317	YPA	Matrix Spike [HO7350-01]	Fluoride (F-)	2010/10/26		95	%	80 - 120
		Spiked Blank	Fluoride (F-)	2010/10/26		101	%	85 - 115
		Method Blank	Fluoride (F-)	2010/10/26	<0.1		mg/L	
		RPD [HO7350-01]	Fluoride (F-)	2010/10/26	NC		%	25
2309117	ADB	Matrix Spike	Total Ammonia-N	2010/10/28		103	%	80 - 120
		Spiked Blank	Total Ammonia-N	2010/10/28		99	%	85 - 115
		Method Blank	Total Ammonia-N	2010/10/28	<0.05		mg/L	
		RPD	Total Ammonia-N	2010/10/28	NC		%	25
2309386	LCH	Matrix Spike	Mercury (Hg)	2010/10/26		107	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/26		104	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/26	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/26	NC		%	25
2310337	MC	Matrix Spike	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD	Mercury (Hg)	2010/10/27	NC		%	25
2310410	LCH	Matrix Spike [HO7342-07]	Mercury (Hg)	2010/10/27		98	%	75 - 125
		Spiked Blank	Mercury (Hg)	2010/10/27		97	%	80 - 120
		Method Blank	Mercury (Hg)	2010/10/27	<0.0001		mg/L	
		RPD [HO7342-07]	Mercury (Hg)	2010/10/27	NC		%	25
2310428	VIV	Matrix Spike	Dissolved Aluminum (Al)	2010/10/27		98	%	80 - 120
			Dissolved Antimony (Sb)	2010/10/27		106	%	80 - 120
			Dissolved Arsenic (As)	2010/10/27		100	%	80 - 120
			Dissolved Barium (Ba)	2010/10/27		NC	%	80 - 120

Golder Associates Ltd
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Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

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2310428 VIV	Matrix Spike	Dissolved Beryllium (Be)	2010/10/27		100	%	80 - 120
		Dissolved Bismuth (Bi)	2010/10/27		95	%	80 - 120
		Dissolved Boron (B)	2010/10/27		100	%	80 - 120
		Dissolved Cadmium (Cd)	2010/10/27		101	%	80 - 120
		Dissolved Calcium (Ca)	2010/10/27		NC	%	80 - 120
		Dissolved Chromium (Cr)	2010/10/27		101	%	80 - 120
		Dissolved Cobalt (Co)	2010/10/27		98	%	80 - 120
		Dissolved Copper (Cu)	2010/10/27		98	%	80 - 120
		Dissolved Iron (Fe)	2010/10/27		99	%	80 - 120
		Dissolved Lead (Pb)	2010/10/27		95	%	80 - 120
		Dissolved Magnesium (Mg)	2010/10/27		NC	%	80 - 120
		Dissolved Manganese (Mn)	2010/10/27		NC	%	80 - 120
		Dissolved Molybdenum (Mo)	2010/10/27		104	%	80 - 120
		Dissolved Nickel (Ni)	2010/10/27		98	%	80 - 120
		Dissolved Phosphorus (P)	2010/10/27		109	%	80 - 120
		Dissolved Potassium (K)	2010/10/27		101	%	80 - 120
		Dissolved Selenium (Se)	2010/10/27		99	%	80 - 120
		Dissolved Silicon (Si)	2010/10/27		104	%	80 - 120
		Dissolved Silver (Ag)	2010/10/27		95	%	80 - 120
		Dissolved Sodium (Na)	2010/10/27		NC	%	80 - 120
		Dissolved Strontium (Sr)	2010/10/27		NC	%	80 - 120
		Dissolved Thallium (Tl)	2010/10/27		94	%	80 - 120
		Dissolved Tin (Sn)	2010/10/27		105	%	80 - 120
		Dissolved Titanium (Ti)	2010/10/27		102	%	80 - 120
		Dissolved Uranium (U)	2010/10/27		101	%	80 - 120
		Dissolved Vanadium (V)	2010/10/27		102	%	80 - 120
		Dissolved Zinc (Zn)	2010/10/27		97	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2010/10/27		98	%	90 - 110
		Dissolved Antimony (Sb)	2010/10/27		104	%	90 - 110
		Dissolved Arsenic (As)	2010/10/27		98	%	90 - 110
		Dissolved Barium (Ba)	2010/10/27		100	%	90 - 110
		Dissolved Beryllium (Be)	2010/10/27		99	%	90 - 110
		Dissolved Bismuth (Bi)	2010/10/27		96	%	90 - 110
		Dissolved Boron (B)	2010/10/27		101	%	90 - 110
		Dissolved Cadmium (Cd)	2010/10/27		102	%	90 - 110
		Dissolved Calcium (Ca)	2010/10/27		102	%	90 - 110
		Dissolved Chromium (Cr)	2010/10/27		100	%	90 - 110
		Dissolved Cobalt (Co)	2010/10/27		100	%	90 - 110
		Dissolved Copper (Cu)	2010/10/27		100	%	90 - 110
		Dissolved Iron (Fe)	2010/10/27		100	%	90 - 110
		Dissolved Lead (Pb)	2010/10/27		98	%	90 - 110
		Dissolved Magnesium (Mg)	2010/10/27		99	%	90 - 110
		Dissolved Manganese (Mn)	2010/10/27		102	%	90 - 110
		Dissolved Molybdenum (Mo)	2010/10/27		102	%	90 - 110
		Dissolved Nickel (Ni)	2010/10/27		100	%	90 - 110
		Dissolved Phosphorus (P)	2010/10/27		102	%	90 - 110
		Dissolved Potassium (K)	2010/10/27		104	%	90 - 110
		Dissolved Selenium (Se)	2010/10/27		100	%	90 - 110
		Dissolved Silicon (Si)	2010/10/27		102	%	90 - 110
		Dissolved Silver (Ag)	2010/10/27		99	%	90 - 110
		Dissolved Sodium (Na)	2010/10/27		98	%	90 - 110
		Dissolved Strontium (Sr)	2010/10/27		99	%	90 - 110
		Dissolved Thallium (Tl)	2010/10/27		97	%	90 - 110
		Dissolved Tin (Sn)	2010/10/27		106	%	90 - 110
		Dissolved Titanium (Ti)	2010/10/27		102	%	90 - 110

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2310428	VIV	Spiked Blank	Dissolved Uranium (U)	2010/10/27		101	%	90 - 110
			Dissolved Vanadium (V)	2010/10/27		101	%	90 - 110
			Dissolved Zinc (Zn)	2010/10/27		99	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2010/10/27	<5		ug/L	
			Dissolved Antimony (Sb)	2010/10/27	<0.5		ug/L	
			Dissolved Arsenic (As)	2010/10/27	<1		ug/L	
			Dissolved Barium (Ba)	2010/10/27	<5		ug/L	
			Dissolved Beryllium (Be)	2010/10/27	<0.5		ug/L	
			Dissolved Bismuth (Bi)	2010/10/27	<1		ug/L	
			Dissolved Boron (B)	2010/10/27	<10		ug/L	
			Dissolved Cadmium (Cd)	2010/10/27	<0.1		ug/L	
			Dissolved Calcium (Ca)	2010/10/27	<200		ug/L	
			Dissolved Chromium (Cr)	2010/10/27	<5		ug/L	
			Dissolved Cobalt (Co)	2010/10/27	<0.5		ug/L	
			Dissolved Copper (Cu)	2010/10/27	<1		ug/L	
			Dissolved Iron (Fe)	2010/10/27	<100		ug/L	
			Dissolved Lead (Pb)	2010/10/27	<0.5		ug/L	
			Dissolved Magnesium (Mg)	2010/10/27	<50		ug/L	
			Dissolved Manganese (Mn)	2010/10/27	<2		ug/L	
			Dissolved Molybdenum (Mo)	2010/10/27	<1		ug/L	
			Dissolved Nickel (Ni)	2010/10/27	<1		ug/L	
			Dissolved Phosphorus (P)	2010/10/27	<100		ug/L	
			Dissolved Potassium (K)	2010/10/27	<200		ug/L	
			Dissolved Selenium (Se)	2010/10/27	<2		ug/L	
			Dissolved Silicon (Si)	2010/10/27	<50		ug/L	
			Dissolved Silver (Ag)	2010/10/27	<0.1		ug/L	
			Dissolved Sodium (Na)	2010/10/27	<100		ug/L	
			Dissolved Strontium (Sr)	2010/10/27	1, RDL=1		ug/L	
			Dissolved Thallium (Tl)	2010/10/27	<0.05		ug/L	
			Dissolved Tin (Sn)	2010/10/27	<1		ug/L	
			Dissolved Titanium (Ti)	2010/10/27	<5		ug/L	
			Dissolved Uranium (U)	2010/10/27	<0.1		ug/L	
			Dissolved Vanadium (V)	2010/10/27	<1		ug/L	
			Dissolved Zinc (Zn)	2010/10/27	<5		ug/L	
		RPD	Dissolved Lead (Pb)	2010/10/27	0.2		%	25
2310544	VRO	Matrix Spike [HO7340-04]	Total Phosphorus	2010/10/28		90	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		101	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		95	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.002		mg/L	
		RPD [HO7340-04]	Total Phosphorus	2010/10/28	NC		%	20
2310823	VRO	Matrix Spike	Total Phosphorus	2010/10/28		NC	%	80 - 120
		QC Standard	Total Phosphorus	2010/10/28		102	%	85 - 115
		Spiked Blank	Total Phosphorus	2010/10/28		100	%	85 - 115
		Method Blank	Total Phosphorus	2010/10/28	<0.02		mg/L	
		RPD	Total Phosphorus	2010/10/28	0.9		%	20
2311988	VIV	Matrix Spike [HO7344-03]	Total Aluminum (Al)	2010/10/29		110	%	80 - 120
			Total Antimony (Sb)	2010/10/29		112	%	80 - 120
			Total Arsenic (As)	2010/10/29		103	%	80 - 120
			Total Barium (Ba)	2010/10/29		102	%	80 - 120
			Total Beryllium (Be)	2010/10/29		104	%	80 - 120
			Total Bismuth (Bi)	2010/10/29		100	%	80 - 120
			Total Boron (B)	2010/10/29		112	%	80 - 120
			Total Cadmium (Cd)	2010/10/29		103	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988 VIV	Matrix Spike						
	[HO7344-03]	Total Calcium (Ca)	2010/10/29		NC	%	80 - 120
		Total Chromium (Cr)	2010/10/29		106	%	80 - 120
		Total Cobalt (Co)	2010/10/29		103	%	80 - 120
		Total Copper (Cu)	2010/10/29		102	%	80 - 120
		Total Iron (Fe)	2010/10/29		106	%	80 - 120
		Total Lead (Pb)	2010/10/29		100	%	80 - 120
		Total Magnesium (Mg)	2010/10/29		NC	%	80 - 120
		Total Manganese (Mn)	2010/10/29		107	%	80 - 120
		Total Molybdenum (Mo)	2010/10/29		110	%	80 - 120
		Total Nickel (Ni)	2010/10/29		104	%	80 - 120
		Total Phosphorus (P)	2010/10/29		116	%	80 - 120
		Total Potassium (K)	2010/10/29		106	%	80 - 120
		Total Silicon (Si)	2010/10/29		103	%	80 - 120
		Total Selenium (Se)	2010/10/29		104	%	80 - 120
		Total Silver (Ag)	2010/10/29		98	%	80 - 120
		Total Sodium (Na)	2010/10/29		105	%	80 - 120
		Total Strontium (Sr)	2010/10/29		NC	%	80 - 120
		Total Thallium (Tl)	2010/10/29		99	%	80 - 120
		Total Tin (Sn)	2010/10/29		109	%	80 - 120
		Total Titanium (Ti)	2010/10/29		109	%	80 - 120
		Total Uranium (U)	2010/10/29		103	%	80 - 120
		Total Vanadium (V)	2010/10/29		106	%	80 - 120
		Total Zinc (Zn)	2010/10/29		105	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2010/10/29		107	%	85 - 115
		Total Antimony (Sb)	2010/10/29		110	%	85 - 115
		Total Arsenic (As)	2010/10/29		103	%	85 - 115
		Total Barium (Ba)	2010/10/29		101	%	85 - 115
		Total Beryllium (Be)	2010/10/29		103	%	85 - 115
		Total Bismuth (Bi)	2010/10/29		100	%	85 - 115
		Total Boron (B)	2010/10/29		110	%	85 - 115
		Total Cadmium (Cd)	2010/10/29		101	%	85 - 116
		Total Calcium (Ca)	2010/10/29		109	%	85 - 115
		Total Chromium (Cr)	2010/10/29		105	%	85 - 115
		Total Cobalt (Co)	2010/10/29		103	%	85 - 115
		Total Copper (Cu)	2010/10/29		103	%	85 - 115
		Total Iron (Fe)	2010/10/29		106	%	85 - 115
		Total Lead (Pb)	2010/10/29		100	%	85 - 115
		Total Magnesium (Mg)	2010/10/29		108	%	85 - 115
		Total Manganese (Mn)	2010/10/29		108	%	85 - 115
		Total Molybdenum (Mo)	2010/10/29		107	%	85 - 115
		Total Nickel (Ni)	2010/10/29		104	%	85 - 115
		Total Phosphorus (P)	2010/10/29		119 (1)	%	85 - 115
		Total Potassium (K)	2010/10/29		105	%	85 - 115
		Total Silicon (Si)	2010/10/29		103	%	85 - 115
		Total Selenium (Se)	2010/10/29		106	%	85 - 115
		Total Silver (Ag)	2010/10/29		97	%	85 - 115
		Total Sodium (Na)	2010/10/29		106	%	85 - 115
		Total Strontium (Sr)	2010/10/29		105	%	85 - 115
		Total Thallium (Tl)	2010/10/29		99	%	85 - 115
		Total Tin (Sn)	2010/10/29		107	%	85 - 115
		Total Titanium (Ti)	2010/10/29		110	%	85 - 115
		Total Uranium (U)	2010/10/29		101	%	85 - 115
		Total Vanadium (V)	2010/10/29		105	%	85 - 115
		Total Zinc (Zn)	2010/10/29		107	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MB0E9751

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	Method Blank	Total Aluminum (Al)	2010/10/29	<5		ug/L	
			Total Antimony (Sb)	2010/10/29	<0.5		ug/L	
			Total Arsenic (As)	2010/10/29	<1		ug/L	
			Total Barium (Ba)	2010/10/29	<5		ug/L	
			Total Beryllium (Be)	2010/10/29	<0.5		ug/L	
			Total Bismuth (Bi)	2010/10/29	<1		ug/L	
			Total Boron (B)	2010/10/29	<10		ug/L	
			Total Cadmium (Cd)	2010/10/29	<0.1		ug/L	
			Total Calcium (Ca)	2010/10/29	<200		ug/L	
			Total Chromium (Cr)	2010/10/29	<5		ug/L	
			Total Cobalt (Co)	2010/10/29	<0.5		ug/L	
			Total Copper (Cu)	2010/10/29	<1		ug/L	
			Total Iron (Fe)	2010/10/29	<100		ug/L	
			Total Lead (Pb)	2010/10/29	<0.5		ug/L	
			Total Magnesium (Mg)	2010/10/29	<50		ug/L	
			Total Manganese (Mn)	2010/10/29	<2		ug/L	
			Total Molybdenum (Mo)	2010/10/29	<1		ug/L	
			Total Nickel (Ni)	2010/10/29	<1		ug/L	
			Total Phosphorus (P)	2010/10/29	<100		ug/L	
			Total Potassium (K)	2010/10/29	<200		ug/L	
			Total Silicon (Si)	2010/10/29	<50		ug/L	
			Total Selenium (Se)	2010/10/29	<2		ug/L	
			Total Silver (Ag)	2010/10/29	<0.1		ug/L	
			Total Sodium (Na)	2010/10/29	<100		ug/L	
			Total Strontium (Sr)	2010/10/29	<1		ug/L	
			Total Thallium (Tl)	2010/10/29	<0.05		ug/L	
			Total Tin (Sn)	2010/10/29	<1		ug/L	
			Total Titanium (Ti)	2010/10/29	<5		ug/L	
			Total Uranium (U)	2010/10/29	<0.1		ug/L	
			Total Vanadium (V)	2010/10/29	<1		ug/L	
			Total Zinc (Zn)	2010/10/29	<5		ug/L	
		RPD [HO7344-03]	Total Aluminum (Al)	2010/10/29	10.3		%	25
			Total Antimony (Sb)	2010/10/29	NC		%	25
			Total Arsenic (As)	2010/10/29	NC		%	25
			Total Barium (Ba)	2010/10/29	1		%	25
			Total Beryllium (Be)	2010/10/29	NC		%	25
			Total Bismuth (Bi)	2010/10/29	NC		%	25
			Total Boron (B)	2010/10/29	0.1		%	25
			Total Cadmium (Cd)	2010/10/29	NC		%	25
			Total Calcium (Ca)	2010/10/29	1.9		%	25
			Total Chromium (Cr)	2010/10/29	NC		%	25
			Total Cobalt (Co)	2010/10/29	NC		%	25
			Total Copper (Cu)	2010/10/29	NC		%	25
			Total Iron (Fe)	2010/10/29	NC		%	25
			Total Lead (Pb)	2010/10/29	NC		%	25
			Total Magnesium (Mg)	2010/10/29	1		%	25
			Total Manganese (Mn)	2010/10/29	0.01		%	25
			Total Molybdenum (Mo)	2010/10/29	NC		%	25
			Total Nickel (Ni)	2010/10/29	NC		%	25
			Total Phosphorus (P)	2010/10/29	NC		%	25
			Total Potassium (K)	2010/10/29	0.4		%	25
			Total Silicon (Si)	2010/10/29	0.4		%	25
			Total Selenium (Se)	2010/10/29	NC		%	25
			Total Silver (Ag)	2010/10/29	NC		%	25
			Total Sodium (Na)	2010/10/29	0.6		%	25

Golder Associates Ltd
Attention: Sharon Wood
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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2311988	VIV	RPD [HO7344-03]	Total Strontium (Sr)	2010/10/29	0.05		%	25
			Total Thallium (Tl)	2010/10/29	NC		%	25
			Total Tin (Sn)	2010/10/29	NC		%	25
			Total Titanium (Ti)	2010/10/29	NC		%	25
			Total Uranium (U)	2010/10/29	NC		%	25
			Total Vanadium (V)	2010/10/29	NC		%	25
			Total Zinc (Zn)	2010/10/29	0.09		%	25
2312742	OK	Matrix Spike	Phenols-4AAP	2010/10/28		104	%	75 - 125
		Spiked Blank	Phenols-4AAP	2010/10/28		105	%	75 - 125
		Method Blank	Phenols-4AAP	2010/10/28	<0.001		mg/L	
		RPD	Phenols-4AAP	2010/10/28	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B0E9751

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eva

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

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