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2009 ANNUAL MONITORING REPORT

Tansley Quarry Hanson Brick Ltd., Burlington, Ontario

Submitted to:
Hanson Brick Ltd.
5155 Dundas Street West
Burlington, Ontario
L7R 3Y2

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 2009 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 between the middle of February and December 2009. Pumping occurred for an average of 5.5 hours per day and daily pumping volumes averaged 386 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 the sump was approximately 10 m long by 10 m wide by 1 m deep. The excavation at the end of 2009 was approximately 170 m long by 110 m wide by 25 m deep with the floor lowered to an elevation of approximately 146 masl. A total of 65,496 metric tonnes of shale was extracted in 2009.

The Certificate of Approval, Industrial Sewage Works No. 4408-7AUL75 (Appendix A) was issued on February 4, 2008. In the first half of 2009, water was pumped from the sump to the remnant woodlot, from which it flowed northeasterly and then south to the water course east of the decant pond. The decant pond which was completed in June 2008 to allow for treatment of the pumped water prior to discharge was not in operation until June 2009. The decant pond discharges to the same watercourse under the conditions given on Certificate of Approval No. 4408-7AUL75.

1.3 Precipitation

Figure 2 shows the monthly precipitation for the Millgrove Station and Hamilton Airport from 2002 to 2009. 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 2009. The water budget assumes a 150 mm holding capacity for fine to sandy loam used 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 was a relatively wet year, with water available for infiltration and runoff during eight out of 12 months of the year.

2.0 GROUNDWATER LEVEL MONITORING

During 2009, groundwater levels were monitored monthly using a network of on and off-site monitoring wells and private wells (see 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 abovementioned 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. 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 and is no longer monitored.

The off-site TW-Series wells (TW-1 and TW-3) were test wells 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 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.

Water level elevations based on manual water level measurements are presented in Table 1. Water level elevations based on manual measurements and logger data is 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 800 m north of the sinking cut. This nest is comprised of an overburden, intermediate shale and deep shale well. The 2009 water levels in the overburden well varied between 163.95 masl and 164.59 masl (see Figure C.1). Groundwater levels in the intermediate well varied between 163.95 masl and 164.58 masl and groundwater levels in the deep bedrock well ranged from 158.84 masl to 159.49 masl. These groundwater levels all occur in the overburden and are indicative of a downward gradient of groundwater flow. Groundwater levels were within the historical range for well nest MW-01. Although groundwater levels show a seasonal trend, the groundwater levels in the intermediate well show consistently elevated water levels that may be impacted by standing water around the well and 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 800 m north of the sinking cut. This nest is comprised of an overburden, intermediate shale and deep shale well. During 2009, water levels in the overburden well ranged between 165.77 masl and 166.38 masl. Groundwater levels in the intermediate shale well varied between 160.82 masl and 161.70 masl while groundwater levels in the deep shale well varied between 152.62 masl and 152.75 masl (see 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 on No. 1 Sideroad and is approximately 800 m northwest of the sinking cut. This nest is comprised of an overburden and deep shale well. In 2009, groundwater levels in the overburden well varied between 163.82 masl and 164.81 masl, and water levels in the deep well fluctuated between 160.24 masl and 161.66 masl (see 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 showed a seasonal fluctuation with the highest water levels measured in April (164.78 masl) and November (164.81 masl). These water levels were slightly higher than historical water levels measured at the well since 2002. Groundwater levels in the deep shale well rose relative to 2008 levels but remained slightly below the average historical levels. Water levels in the deep well have not rebounded to pre-May 2007 levels. The increase in groundwater levels at MW-03 may be related to the cessation of pumping from the nearby Wiggins well in January 2009 (see Figure C.24).

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 450 m from the sinking cut. 2009 groundwater levels varied between 164.60 masl and

165.96 masl in the overburden well. Groundwater levels in the intermediate well varied between 157.17 masl and 159.02 masl whereas groundwater levels in the deep shale varied between 133.80 and 151.94 masl (see 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 (see Figure C.4). The groundwater levels in the deep well have been similar to that in the intermediate well. However, the groundwater levels declined by approximately 25 m following the water quality sampling event of October 2008. Deep well groundwater levels recovered by almost 17 m from approximately 134 masl in January 2009 to approximately 151 masl in July 2009. Groundwater levels continued to rise gradually to 152 masl over the July to December 2009 period, but nonetheless remained approximately 10 m below historical levels. Groundwater levels at MW-04 are indicative of a downward gradient of groundwater flow. Groundwater level recovery from February 2008 onwards appears to be due to surplus water (water available for runoff and infiltration) from February through April and September through December 2008 and March through May 2009.

2.1.5 Well Nest MW-05

Well nest MW-05 is located at the southwestern end of the quarry site and is approximately 180 m southwest of the sinking cut. This well nest is comprised of overburden, straddle, intermediate and deep wells. Groundwater levels in the overburden well ranged between 159.63 masl and 162.47 masl. Groundwater levels in the straddle well ranged between 158.13 masl and 160.31 masl. Groundwater levels in the intermediate well ranged between 147.80 masl and 150.99 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.

In 2009, the groundwater levels in the intermediate well were 10-12 m lower than historical levels (see Figure C.5). Although groundwater levels in the intermediate well have historically been in the overburden/friable shale, during 2008 and 2009 these groundwater levels were within the upper shale bedrock. In mid-2009 the intermediate groundwater levels declined by approximately 3 m to 148 masl. Groundwater level decline was also observed in the shallow and straddle wells and is likely the result of 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 pit floor elevation of approximately 148 masl it would appear that the water level in the intermediate well is being influenced by the dewatering activities at the pit.

During 2009, the groundwater levels in the deep well continued to show an increasing trend following the October 2008 sampling event. This well has a slow recovery due to its low hydraulic conductivity.

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 180 m northeast of the sinking cut. In 2009, groundwater levels in the overburden well ranged between 159.36 masl and 160.52 masl. Groundwater levels in the straddle well were similar to the overburden groundwater levels, ranging between 158.22 masl and 160.18 masl. Groundwater levels in the deep well fluctuated by approximately 9 m, ranging between 151.56 masl and 160.60 masl (see Figure C.6) during the 2009 monitoring period.

In general, the 2009 groundwater levels in well nest MW-06 were below historical levels. Overburden groundwater levels were similar to that observed in late 2008 and showed a seasonal fluctuation. Groundwater levels in the straddle well were also similar to the 2008 levels. The 2008 and 2009 groundwater levels were lower than the water levels observed in 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 straddle well showed a seasonal fluctuation.

In 2009, groundwater levels in the deep well continued to recover from a low of 148.24 masl observed in October 2008. The low groundwater level was due to a combination of rising head tests conducted on January 24, 2008 and a further decline in water levels possibly due to the proximity of the well to the excavation. Groundwater levels recovered to a high of 160.60 masl in April 2009 and have remained similar to the groundwater levels in the shallow overburden and straddle wells, as observed prior to initiation of the sinking cut. The rise in groundwater levels may be a reflection of reduced frequency of sump dewatering and/or increased precipitation. Groundwater levels in the deep well fell by approximately 20 m due to the water quality sampling event in December 2009 and have not yet recovered.

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 550 m north of the sinking cut. This well nest is comprised of an overburden and deep well. The 2009 groundwater levels in the overburden well varied between 163.87 and 164.84 masl (see Figure C.7). Groundwater levels in the deep shale well ranged from 151.95 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 slightly lower than 2008 levels but 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 375 m north of the sinking cut. The well nest is comprised of an overburden, intermediate and deep well. Groundwater levels in the overburden well ranged between 160.13 masl and 160.72 masl. Groundwater levels in the intermediate well ranged between 159.56 masl and 160.19 masl while groundwater levels in the deep well fluctuated between 160.06 masl and 160.71 masl (see Figure C.8). All groundwater levels occur in the overburden and friable shale. Overall, the 2009 groundwater levels were higher than those observed in 2008 but still slightly lower than those observed historically. Groundwater levels are not indicative of a preferred vertical gradient of groundwater flow.

2.1.9 Well Nest MW-09

Well nest MW-09 is located approximately 200 m northwest of the sinking cut. 2009 groundwater levels varied between 154.69 masl and 164.64 masl in the overburden well (see Figure C.9). Groundwater levels in the straddle well varied between 154.77 masl and 161.29 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 were above historically observed levels during the first few months of 2009 but declined by approximately 4 m towards the end of the year. Groundwater levels in the straddle well followed a similar seasonal pattern of water level fluctuation although the magnitude of fluctuation was lower. Groundwater levels in the straddle well appear to be affected by the dewatering of the quarry as they remain over 5 m below those observed prior to the beginning of extraction. The 2009 groundwater levels are within the range historically observed for the well. The deep well groundwater levels have gradually increased through 2009 after being lowered as a result of the October 2008 sampling event. The December 2009 sampling event further lowered groundwater levels in the well by approximately 2 m.

Groundwater levels within the 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 300 m northwest of the sinking cut. In 2009, groundwater levels varied between 162.53 masl and 166.25 masl in the overburden well (see Figure C.10). Groundwater levels in the intermediate well ranged between 159.16 masl and 162.01 masl while groundwater levels in the deep shale well ranged between 134.20 masl and 136.17 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 2009. Water levels rose during the first part of the year and then began to decrease after May 2009. The overburden and intermediate groundwater levels were, overall, slightly higher than levels in 2008. The groundwater levels in the deep well steadily increased through 2009, indicating continued recovery following the October 2008 sampling event.

The 2009 groundwater levels were generally higher than groundwater levels observed in 2008 and are indicative of a downward gradient of groundwater flow.

2.1.11 Well Nest MW-11

Well nest MW-11 is located approximately 400 m northeast of the sinking cut on property adjacent to the quarry and is comprised of an overburden, straddle and deep well. 2009 groundwater levels varied between 163.99 masl and 166.06 masl in the overburden well. Groundwater levels in the straddle well ranged between 164.19 masl and 165.95 masl (see Figure C.11). Groundwater levels in the deep well ranged between 133.51 masl and 134.81 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 slight decline in groundwater levels after May 2009 but, overall, the levels remained similar or slightly higher than 2008 levels. Groundwater levels in the deep well have increased steadily since the October 2008 sampling event. Groundwater levels rose by approximately 2-3 m over the course of 2009.

In general, the 2009 groundwater levels were slightly higher than groundwater levels observed in 2008 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 2009, water levels in TW-1 ranged between 163.89 masl and 165.38 masl and show a seasonal trend (see 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 has been dry since its construction in August 2007 and remained dry in 2009 (see 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. 2009 groundwater levels ranged between 155.91 masl and 156.83 masl (see 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 slightly higher than, or within, the range of historical observations. Groundwater levels were higher in the first part of 2009 following spring melt, and lower for the second half of the year.

Water levels in the Featherstone well showed seasonal fluctuations (see 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 (see 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 and recorded 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 Finucci well (see Figure C.16) was not accessible for downloading until July 2009. During this time the logger stopped recording. Due to a full memory, data was only available for January to March 2009. The logger malfunctioned several times during the remainder of the year and the data was lost. The Finucci logger was subsequently replaced in March 2010.

The groundwater level hydrograph for the Hendervale Main Barn well (see Figure C.17) showed levels and fluctuations similar to those observed historically. The Hendervale Cottage well (see Figure C.18) and Hendervale House well (see Figure C.21) continued to show similar water level trends including a 1 m rise in groundwater levels in September 2009. Groundwater levels in the Hendervale ABC Barn (see Figure C.19) and Hendervale XYZ Barn (see Figure C.20) wells remained steady through 2009 except for a slight decline of less than a metre which occurred in June 2009.

The groundwater levels at the Simms well (see Figure C.22) were close to ground level from January through May 2009 after which they fell steadily by approximately 27 m to the bottom of the well by September 2009. Groundwater levels rebounded by approximately 10 m by the end of 2009. Groundwater level fluctuations of approximately 20 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 may rely primarily on storage with a depth of 27 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 (see Figure C.23). The logger has not been re-installed in the Wettlaufer well to date as the tenants have removed the pump and are no longer using the well.

Water levels in the Wiggins well which ranged between approximately 167 masl and 165 masl in 2009 were slightly higher than water levels observed historically (see Figure C.24). Use of the well as a primary source of domestic water supply was discontinued in January 2009. Hanson installed a cistern on the property in May 2009.

Water levels in the Bekkers well continued to show a pattern indicative of seasonal groundwater fluctuations (see Figure C.25). Groundwater levels were within the historical range with the exception of the period from January to April 2009. There is no data for comparison of this early time data as the logger was installed in April 2008. The logger in the Bekkers' well failed in October 2009 and was subsequently replaced.

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.
- 2009 groundwater levels in the shallow overburden wells ranged between 154.69 masl in well MW-09O and 166.38 masl in well MW-02O.

- Groundwater levels in wells that straddle the overburden/shale interface ranged between 154.77 masl in well MW-09S and 165.95 masl in well MW-11S.

- Groundwater elevations in the intermediate (upper shale) wells ranged between 147.80 masl in well MW-05I to 164.58 masl in well MW-01I.

- Groundwater levels at all monitor well nests and some private wells declined in late 2007 around the time that quarry dewatering was initiated. This decline began prior to quarry dewatering taking place; however some water levels (MW-01D, MW-03D, MW-04I, MW-04D, MW-05I, MW-06O, MW-06S, MW-06D and MW-09S) have not recovered to their previous levels. The site-wide groundwater level decline is therefore likely due to a combination of low recharge due to the drier than average summer of 2007 and the effects of the quarry dewatering.

- Water levels in the overburden, straddle and intermediate wells in monitor well nests MW-09, MW-10 and MW-11 showed an initial decline in water levels ranging from 4 to 8 m, 2 to 4 m and 2 m respectively as a result of sump dewatering but water levels rebounded due to recharge from sump discharge in the nearby forest area in spring and summer, and surplus water (water available for infiltration or runoff) during fall 2008. Discharge to the forested area ceased in June 2009 with the commissioning of the decant pond. The decline in groundwater levels at these wells by approximately 2 to 4 m from June 2009 onwards was possibly due to combined effects of less recharge as water was no longer being pumped to the woodlot and reduced precipitation.

- Groundwater levels in the intermediate wells, in particular wells MW-04I and MW-05I showed the strongest response to dewatering of the excavation. After the initial decline in groundwater levels in wells MW-04I and MW-05I due to the onset of quarry dewatering and low precipitation in 2007 the groundwater levels in the wells showed a rising trend through 2008 and into the beginning of 2009. Groundwater levels subsequently declined by 1 to 2 m around June 2009 and continued a slow decline for the rest of 2009. This trend can be attributed to seasonal fluctuations. Based on the proximity of MW-05I to the quarry pit and the pit floor elevation of approximately 148 masl it would appear that the water level in the well is being influenced by the dewatering activities in the pit. Wells MW-08I, MW-09I and MW-10I had an initial water level decline of approximately 4 m, 6 m and 4 m respectively; however, similar to the pattern observed in MW-04I and MW-05I the water levels recovered through 2008 and into 2009 before declining slightly after June 2009.

- The water levels in the deep shale bedrock wells ranged between 127.61 masl in well MW-09D and 161.66 masl in well MW-03D in 2009. In general, water levels in the deep wells remained relatively unchanged or showed a slight increasing (recovery) trend. Water levels in wells MW-06D and MW-09D were artificially depressed due to the removal of water during the annual groundwater sampling conducted in December 2009. The water level in well MW-06D showed a decline of approximately 6 m following hydraulic conductivity testing of the well in January 2008. The water levels subsequently declined an additional 5 m for a maximum decline of 11 m in 2008.

- With the exception of well nest MW-08 located at the centre of the site, 2009 groundwater levels observed at nested monitoring wells are indicative of a downward component 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 are within the range of historical responses. Some private wells located within 400 to 700 m west of the sump (Hendervale House and Hendervale Cottage) and south west of the sump (Hendervale Main Barn and Hendervale ABC Barns) showed a lowering of groundwater levels (less than 2.5 m) in 2008. 2009 groundwater levels have remained similar to those observed in 2008.

3.0 RESULTS OF GROUNDWATER QUALITY SAMPLING

Groundwater quality sampling of MW-Series monitoring wells and off-site private wells was conducted between November 30 and December 4, 2009. As per previous water quality sampling carried out in November 2002, May 2003, January 2007 and October 2008, 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 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-06S, MW-06D, MW-09D, MW-10D and MW-11D 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, zinc, barium, cadmium, chromium, lead, mercury, selenium, arsenic and boron.

- Aluminum exceeded the ODWS Operational Guidelines (OG) of 0.1 mg/L in all samples with concentrations ranging from 0.41 mg/L to 1800 mg/L;
- Alkalinity (549 mg/L to 695 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 270 mg/L to 31,000 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, turbidity and zinc exceeded the ODWS Aesthetic Objectives (AO). AOs are non health-related criteria that reflect parameters that may impair the colour, smell or taste of water.

- Barium, cadmium, chromium, lead, mercury 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 11 wells installed in the overburden and/or upper shale with a concentration ranging from 2 mg/L to 26 mg/L. The MAC for cadmium (0.005 mg/L) was exceeded in three wells with concentrations ranging between 0.013 mg/L and 0.026 mg/L. Chromium (0.1 mg/L to 4 mg/L) exceeded the MAC of 0.05 mg/L at 15 of the 26 wells sampled whereas lead (0.014 mg/L to 1.1 mg/L) exceeded the MAC of 0.01 mg/L at 17 of the 26 wells sampled. The MAC for mercury (0.001 mg/L) was exceeded at wells MW-07O (0.0022 mg/L) and MW-08O (0.002 mg/L). Selenium (0.021 mg/L) exceeded the MAC of 0.01 mg/L at wells MW-02D (0.06 mg/L), MW-04I (0.012 mg/L) and MW-04D (0.2 mg/L).

- Arsenic exceeded the ODWS Interim Maximum Acceptable Concentration (IMAC) of 0.025 mg/L in 13 of the 26 wells sampled, with concentrations ranging between 0.03 mg/L to 0.59 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 namely MW-01D, MW-02D, MW-04I, MW-04D, MW-07D and MW-08I. 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 2009 analytical results were below the PWQO with the exception of aluminum, antimony, arsenic, boron, cadmium, cobalt, copper, iron, lead, mercury, 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 December 2009, water samples were collected from eight private wells (Finucci, Sicard, Sugiyami, Hendervale House, Hendervale Main Barn, Hendervale Cottage, Simms and Bekkers). Water quality samples were not obtained from:

- The Featherstone and Wiggins wells as cisterns have been installed at those properties and the wells are no longer in use;

- The Hendervale ABC Barn and Hendervale XYZ Barn wells as the pump system was shut down for the winter;
- The Eno/Myers well (previously called Des Roches) as the residents indicated that the well was not in use in 2008;
- The Robinson well which is no longer sampled as it is sometimes filled with municipal water; and
- The 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.15 of Appendix D and Maxxam laboratory certificates provided in Appendix E. Water quality exceedances of ODWS for AO, OGs, IMAC and MAC are summarized in Table 4. The data showed that:

- Groundwater is consistently hard, exceeding the ODWS OG of 80 – 100 mg/L in all cases. Aluminum exceeded the OG (0.1 mg/L) in a water sample taken from the Hendervale Main Barn well (4.4 mg/L). The exceedances of the OGs have been seen historically however the aluminum exceedance was higher than historical results and may be due to the higher turbidity of the sample from the Hendervale Main Barn well. The ODWS OGs are non health-related criteria that may negatively affect the treatment and distribution of water.
- Sulphate, chloride, iron, manganese, sodium and turbidity showed exceedances of the ODWS AO. These exceedances of the AOs have also been observed in historical water quality analysis where available. AOs 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 AO of 200 mg/L for sodium, all wells with the exception of the Hendervale Main Barn well, exceeded the 20 mg/L criterion for notification of the local Medical Officer.
- Boron (6.5 mg/L) exceeded the IMAC of 5 mg/L at the Sicard well. Boron has historically exceeded the ODWS criteria in water samples taken from the Sicard well. Elderly persons, infants, and individuals with kidney diseases are most susceptible to the toxic effects of boron.

4.0 QUARRY PUMPING RATES

According to Hanson, during the first half of 2009, the quarry sump was actively dewatered by pumping from the sump northward to a remnant woodlot, from which the discharge flowed northeasterly and then south to the watercourse east of the decant pond. The decant pond was commissioned in early June 2009 and subsequent dewatering discharge was directed into the decant pond.

The 2009 records of sump discharge were provided by Hanson and are presented in Table 5 and summarized on Figure 4A. The discharge volumes prior to the use of the decant pond were calculated based on duration of pumping and an average 285 USGM (1078.84 L/min) flow rate for the current sump pump as there was no flow meter attached to the discharge line. Following the commissioning of the decant pond pumping volumes were calculated based on the water level rise in the decant pond and the known geometry of the pond. Based on these rates, in virtually all instances of pumping during 2009 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 2010, 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 2009 was 53,333,350 litres based on daily pumping volumes as determined above. 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 2009 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.

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 2009. 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 2009, the logger was not replaced in this well and the well 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 2009, 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	●	

Well		**Logger Installed**	
		Yes	**No**
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.

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

Although 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 in the vicinity of the Tansley Quarry, 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. Due to quarry dewatering practices by Hanson in 2008 and 2009 the radius of influence on groundwater cannot yet be determined. It should be noted that, as of June 2009, Hanson discharges sump water to the decant pond. Two consecutive years of monitoring data from June 2009 to at least June 2011 will be required to determine radius of influence of excavation and dewatering.

It should be noted that wells MW-04, MW-05 and MW-11 will act as sentinel wells for the Hendervale and Finucci wells, well MW-03 as sentinel well for Wiggins well and wells MW-01 and MW-02 will act as sentinel wells for the private wells located to the north of the site. Well 5 (Simms) and 19 (Bekkers) provide additional data for determining the potential effects of quarry dewatering in the upper shale and overburden at distances between 0.20 km and 1.0 km of the quarry boundary. Wells TW-1, TW-2 and TW-3 will act as sentinels for wells located within 0.5 to 1.0 km of the property.

Annual water quality collection with comparison to historical data will also be used to determine if there are changes in water quality as a result of quarry activities.

Based on the analysis of these data, the radius of influence would be delineated. A number of wells will be selected as trigger wells which would indicate that the radius of influence is expanding within the vicinity of the private wells and prompt a proactive response by Hanson. In the interim, the following procedure will be used by Hanson to handle water well complaints, as per Section 6.0 of the AMP:

1) If an Eligible Property as defined by Section 1.3 of the AMP experiences a loss of their water supply, they may contact Hanson directly. Hanson will have its designated well contractor install a cistern upon request as indicated in Section 6.2 of the AMP.

2) The Eligible Property may also contact the well contractor directly if they feel that their water quality or quantity has been affected as per Section 6.5 of the AMP.

3) The well contractor will provide a temporary water supply for the residence within 24 hours of receiving the water well complaint as per Section 6.6. of the AMP.

4) In response to the complaint, the contractor will conduct a site visit in order to identify the potential cause of the water supply problem and take steps to rectify the problem as soon as possible. The contractor will determine if the loss of water supply is as a result of pump failure, overuse of the well or lowering of water levels in the well from quarry activities.

5) The findings of the well interference investigation and the steps taken to rectify the water supply problem will be forwarded to Hanson.

7.0 CONCLUSIONS

- The groundwater levels in the shallow monitoring wells ranged from 154.69 masl to 166.38 masl. The groundwater levels in wells straddling the overburden/shale contact ranged from 154.77 masl to 165.95 masl. The groundwater levels in the intermediate monitoring wells installed in the upper shale horizons ranged from 147.80 masl to 164.58 masl. The groundwater levels in the deep shale monitoring wells ranged from 127.61 masl to 161.66 masl.

- A response to excavation dewatering and low precipitation in 2007 was observed in all on-site well nests. Of these, the groundwater levels in wells MW-01D, MW-03D, MW-04I, MW-04D, MW-05I, MW-06O, MW-06S, MW-06D and MW-09S did not fully recover to pre-2007 levels with the increased precipitation in 2008 and 2009. Groundwater levels in these likely reflect the impacts of the quarry dewatering on the local groundwater levels.

- Intermediate and deep shale monitoring wells located closest to the sump showed the largest response to pumping at the sump. Well MW-05I located 180 m south east of the sump showed a decline in water levels of approximately 10 m. Groundwater levels remained depressed through 2008 near the bottom of the excavation at approximately 149 masl. Water levels further declined in 2009 to approximately 148 masl which was the approximate elevation of the base of the sump in 2009.

- Water levels in the overburden, straddle and intermediate wells in monitor well nests MW-09, MW-10 and MW-11 showed an initial decline in water levels ranging from 4 to 8 m, 2 to 4 m and 2 m respectively as a result of sump dewatering and low precipitation in 2007 but water levels rebounded due to recharge from sump discharge in the nearby forest area in spring and summer, and surplus water (water available for infiltration or runoff) during fall 2008. Discharge to the forested area ceased in June 2009 with the commissioning of the decant pond. The subsequent decline in water levels in these wells was possibly due to the combined effects of lower recharge (since water was no longer being discharged to the woodlot) and reduced precipitation.

- Some private wells located within 400 to 700 m west of the sump (Hendervale House and Hendervale Cottage) and south west of the sump (Hendervale Main Barn and Hendervale ABC Barns) continued to show lowered water levels in response to pumping of the sump (less than approximately 2.5 m).

- The analytical 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, zinc, barium, cadmium, chromium, lead, mercury, 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, antimony, arsenic, boron, cadmium, cobalt, copper, iron, lead, mercury, molybdenum, nickel, silver, thallium, uranium, vanadium and zinc. These exceedances are considered to be naturally occurring in groundwater in the shale bedrock.

- Private wells had non health-related ODWS exceedances of hardness, aluminum, sulphate, chloride, iron, manganese, sodium and turbidity. In all but one instance, sodium exceeded the 20 mg/L limit above which the local Medical Officer should be notified. Boron exceeded the IMAC at the Sicard well.
- During 2009, 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 2010;
- Water quality sampling should be conducted annually at MW-Series well nests and private wells; and
- Hanson should apply for a Permit to Take Water for its discharge from the sump.

Report Signature Page

GOLDER ASSOCIATES LTD.

Phyllis McCrindle

Sharon Wood, M.Sc., P.Geo.
Hydrogeologist

Phyllis McCrindle, M.Sc., P.Geo.
Senior Hydrogeologist, Associate

MB/SW/PMMC/wlm

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TABLES

Table 1
Groundwater Level Elevations
September 30, 2002 to November 30, 2009
Tansley Quarry - Hanson Brick Ltd.

Hole	Piezometer	Location		Ground Elev (masl)	Stick-up (m)	Top of pipe	30-Sep-02	7-Oct-02	10-Oct-02	25-Oct-02	31-Oct-02	17-Dec-02	7-Jan-03	14-Feb-03	20-Mar-03	21-Apr-03	5-May-03	16-Jun-03	14-Jul-03	31-Oct-03
		Easting (m)	Northing (m)			elevation (masl)														
MW-01	Overburden	596394.89	4809596.55	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	596248.08	4809618.11	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	596107.90	4809606.26	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	595911.22	4809069.74	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	596135.32	4808767.64	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	596134.16	4808768.89	167.03	0.95	167.98														
MW-06	Overburden	596354.91	4808895.90	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	596350.68	4808892.14	166.05	0.84	166.89														
MW-07	Overburden	596099.36	4809348.39	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	596294.67	4809189.57	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	596165.75	4809014.33	165.53	0.76	166.29														
	Straddle	596165.75	4809014.34		0.82	166.35														
	Deep	596164.09	4809011.72		1.06	166.59														
MW-10	Overburden	596044.98	4809001.82	166.77	0.88	167.65														
	Intermediate	596045.04	4809001.93		0.94	167.71														
	Deep	596046.16	4809003.41		0.83	167.60														
MW-11	Overburden	595869.49	4808946.17	168.31	1.01	169.32														
	Straddle	595869.51	4808946.11		1.04	169.35														
	Deep	595870.68	4808947.78		1.12	169.42														
TW-1		595580.63	4808945.63	167.64	0.88	168.52														
TW-2		595620.87	4810361.35	176.33	0.82	177.15														
TW-3		596411.25	4810002.94	166.85	0.70	167.55														

Notes:
1. Shallow wells have screened intervals no deeper than 30' (9 m) below ground, completed in overburden.
   This 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 are nested well screen intervals at depths between 100' and 150' below ground, (30 m to 50 m).

Table 1
Groundwater Level Elevations
September 30, 2002 to November 30, 2009
Tansley Quarry - Hanson Brick Ltd.

Hole	Piezometer	Location		Ground Elev (masl)	Stick-up (m)	Top of pipe elevation (masl)	12-Jan-04	5-Apr-04	15-Jul-04	15-Oct-04	28-Jan-05	3-May-05	31-Aug-05	24-Mar-06	16-Jun-06	10-Aug-06	9-Jan-07	30-Apr-07	27-Jun-07
		Easting (m)	Northing (m)																
MW-01	Overburden	596394.89	4809596.55	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	596248.08	4809618.11	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	596107.90	4809606.26	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	595911.22	4809069.74	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	596135.32	4808767.64	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
	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
	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
	Straddle	596134.16	4808768.89	167.03	0.95	167.98													
MW-06	Overburden	596354.91	4808895.90	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
	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
	Straddle	596350.68	4808892.14	166.05	0.84	166.89													
MW-07	Overburden	596099.36	4809348.39	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	596294.67	4809189.57	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	596165.75	4809014.33	165.53	0.76	166.29													
	Straddle	596165.75	4809014.34		0.82	166.35													
	Deep	596164.09	4809011.72		1.06	166.59													
MW-10	Overburden	596044.98	4809001.82	166.77	0.88	167.65													
	Intermediate	596045.04	4809001.93		0.94	167.71													
	Deep	596046.16	4809003.41		0.83	167.60													
MW-11	Overburden	595869.49	4808946.17	168.31	1.01	169.32													
	Straddle	595869.51	4808946.11		1.04	169.35													
	Deep	595870.68	4808947.78		1.12	169.42													
TW-1		595580.63	4808945.63	167.64	0.88	168.52													
TW-2		595620.87	4810361.35	176.33	0.82	177.15													
TW-3		596411.25	4810002.94	166.85	0.70	167.55													

Notes:
1. Shallow wells have screened intervals no deeper than 30' (9 m) below ground, completed in overburden.
This overburden ranged from 7 m to 9 m thick in the boreholes on-site.
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Table 1
Groundwater Level Elevations
September 30, 2002 to November 30, 2009
Tansley Quarry - Hanson Brick Ltd.

Hole	Piezometer	Location		Ground Elev (masl)	Stick-up (m)	Top of pipe elevation (masl)	7-Aug-07	9-Aug-07	30-Aug-07	6-Dec-07	7-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
		Easting (m)	Northing (m)												AFTER TEST					
MW-01	Overburden	596394.89	4809596.55	164.78	0.76	165.54		165.54	165.54	165.54		163.73				163.48	164.40	164.46	164.10	164.00
	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
	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
MW-02	Overburden	596248.08	4809618.11	166.58	0.78	167.36		165.11	164.94	165.33		166.08				165.85	166.19	166.38	166.12	166.06
	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
	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
MW-03	Overburden	596107.90	4809606.26	169.31	0.81	170.12		162.49	161.92	161.10		161.20				161.17	161.86	161.81	162.05	160.92
	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
MW-04	Overburden	595911.22	4809069.74	167.85	0.97	168.82		163.79	163.60	162.48		162.97				163.19	163.88	164.48	164.65	164.64
	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
	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
MW-05	Overburden	596135.32	4808767.64	166.88	0.88	167.76	160.98	160.92	160.63		159.88	159.70		159.72		159.69	159.82	160.36	161.93	161.32
	Intermediate			166.88	0.84	167.72	160.17	159.91	159.69		153.55	150.23		149.45		149.40	150.21	149.40	149.60	149.88
	Deep			166.88	0.81	167.69	135.69	135.06	135.13		146.46	146.38		146.32		146.31	146.34	146.31	146.29	146.28
	Straddle	596134.16	4808768.89	167.03	0.95	167.98	160.66	160.62	160.35		158.56	157.58		157.44	157.46	157.36	157.72	158.23	159.06	158.58
MW-06	Overburden	596354.91	4808895.90	165.97	0.98	166.95	163.79	163.78	163.68	163.07		162.77		162.69	161.26	161.24	161.17	161.09	161.03	160.95
	Deep			165.97	0.90	166.87	162.07	162.05	161.70	159.37		158.96		159.20	152.91	152.63	151.60	150.65	149.95	149.17
	Straddle	596350.68	4808892.14	166.05	0.84	166.89	161.91	161.84	161.46	158.77		159.44		159.55	159.56	159.56	159.52	159.54	159.97	159.86
MW-07	Overburden	596099.36	4809348.39	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
	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
MW-08	Overburden	596294.67	4809189.57	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
	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
	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
MW-09	Overburden	596165.75	4809014.33	165.53	0.76	166.29	163.42	163.31	162.70	160.50		160.04	159.97		159.94	159.81	159.96	161.40	162.54	162.80
	Straddle	596165.75	4809014.34		0.82	166.35	161.86	161.83	161.43	156.77		154.32	154.38	154.35	154.44	154.31	154.76	154.91	155.01	155.02
	Deep	596164.09	4809011.72		1.06	166.59	125.54	125.38	125.44	125.53		125.54	125.51		151.51	151.33	151.18	151.00	150.93	150.85
MW-10	Overburden	596044.98	4809001.82	166.77	0.88	167.65	163.88	163.79	163.16	160.89		160.22	160.17		160.42	160.20	160.68	162.86	164.21	164.33
	Intermediate	596045.04	4809001.93		0.94	167.71	162.36	162.31	161.91	159.06		157.81	157.85		157.55	157.55	157.99	159.15	160.02	160.31
	Deep	596046.16	4809003.41		0.83	167.60	125.09	124.88	125.03	125.25		125.30	125.30		158.38	156.90	155.94	155.43	155.10	154.82
MW-11	Overburden	595869.49	4808946.17	168.31	1.01	169.32	163.42	163.37	163.14		162.41	163.03		163.44	163.47	163.37	164.25	164.84	164.99	164.66
	Straddle	595869.51	4808946.11		1.04	169.35	163.58	163.58	163.61		162.48	163.20		163.42	163.43	163.28	164.05	164.63	164.81	164.46
	Deep	595870.68	4808947.78		1.12	169.42	126.30	125.19	125.32		125.51	125.58		125.55	153.89	153.67	151.94	151.75	151.68	151.64
TW-1		595580.63	4808945.63	167.64	0.88	168.52						162.58					163.77	164.12	164.26	163.77
TW-2		595620.87	4810361.35	176.33	0.82	177.15						Dry					Dry	Dry	Dry	Dry
TW-3		596411.25	4810002.94	166.85	0.70	167.55						155.11					155.95	156.09	155.14	155.09

Notes:
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Groundwater Level Elevations
September 30, 2002 to November 30, 2009
Tansley Quarry - Hanson Brick Ltd.

Hole	Piezometer	Location		Ground Elev (masl)	Stick-up (m)	Top of pipe elevation (masl)	26-Jun-08	28-Jul-08	27-Aug-08	29-Sep-08	7-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
		Easting (m)	Northing (m)																
MW-01	Overburden	596394.89	4809596.55	164.78	0.76	165.54	163.99	164.25	164.11	163.99	164.17	164.33	164.38	164.44	164.46	164.59	163.95	164.29	164.36
	Intermediate			164.78	0.80	165.58	164.02	164.24	164.11	164.00	164.18	164.27	164.39	164.45	164.46	164.58	163.95	164.29	164.35
	Deep			164.78	0.75	165.53	158.27	158.39	158.63	158.75	158.77	158.81	158.86	159.19	159.27	159.49	158.84	158.91	159.02
MW-02	Overburden	596248.08	4809618.11	166.58	0.78	167.36	165.98	166.22	166.15	166.06	166.09	165.96	166.15	166.43	166.13	166.38	165.77	165.87	165.95
	Intermediate			166.58	0.76	167.34	160.03	159.96	159.96	160.07	160.11	160.63	160.79	161.15	161.35	161.70	160.82	160.93	161.07
	Deep			166.58	0.74	167.32	152.81	152.81	152.74	152.73	152.73	152.52	152.55	152.59	152.66	152.69	152.75	152.62	152.64
MW-03	Overburden	596107.90	4809606.26	169.31	0.81	170.12	160.60	159.88	161.12	162.90	163.00	162.75	162.90	163.35	163.82	164.78	163.95	163.86	164.81
	Deep			169.31	0.75	170.06	159.46	159.41	159.74	160.44	160.50	160.50	160.56	160.98	161.36	161.66	160.52	160.27	160.24
MW-04	Overburden	595911.22	4809069.74	167.85	0.97	168.82	164.50	164.55	164.97	164.97	164.71	164.68	164.63	165.16	165.37	165.96	164.72	164.60	164.78
	Intermediate			167.85	0.94	168.79	156.91	157.07	157.54	157.89	157.92	157.95	157.96	158.43	158.88	159.02	157.56	157.24	157.17
	Deep			167.85	0.87	168.72	157.04	157.14	157.70	158.10	157.95	132.85	133.12	133.43	133.80	144.65	151.33	151.83	151.94
MW-05	Overburden	596135.32	4808767.64	166.88	0.88	167.76	160.58	160.17	160.61	160.42	160.34	159.91	159.89	160.09	160.78	162.47	160.57	159.82	159.63
	Intermediate			166.88	0.84	167.72	149.16	149.64	150.00	150.29	150.16	150.21	149.99	150.39	150.99	150.39	147.96	147.89	147.80
	Deep			166.88	0.81	167.69	146.27	146.23	146.20	146.19	146.17	133.08	133.13	133.18	133.33	133.49	133.70	133.81	133.88
	Straddle	596134.16	4808768.89	167.03	0.95	167.98	157.80	157.52	158.03	157.92	157.86	157.75	157.67	158.17	158.93	160.31	158.69	158.25	158.13
MW-06	Overburden	596354.91	4808895.90	165.97	0.98	166.95	160.90	160.82	160.75	160.71	160.69	159.56	159.46	160.02	160.08	160.52	159.64	159.37	159.36
	Deep			165.97	0.90	166.87	148.65	148.28	148.17	148.22	148.24	152.06	152.94	152.05	151.56	160.60	159.21	159.34	159.19
	Straddle	596350.68	4808892.14	166.05	0.84	166.89	159.54	159.52	160.00	159.81	159.76	159.65	159.59	160.12	160.18	158.22	159.74	159.46	159.33
MW-07	Overburden	596099.36	4809348.39	166.89	0.85	167.74	163.13	163.11	163.88	164.01	163.97	164.14	164.13	164.55	164.59	164.84	163.87	163.92	164.03
	Deep			166.89	0.87	167.76	152.29	152.27	152.18	152.19	152.08	151.90	151.91	151.89	152.06	152.03	152.06	151.95	152.05
MW-08	Overburden	596294.67	4809189.57	162.79	0.87	163.66	159.26	159.39	159.65	159.74	159.77	159.85	159.94	160.28	160.40	160.72		160.13	160.22
	Intermediate			162.79	0.84	163.63	158.81	159.01	159.28	159.41	159.42	159.45	159.50	159.77	159.94	160.19		159.56	159.71
	Deep			162.79	0.82	163.61	159.22	159.38	159.63	159.74	159.77	159.83	159.94	160.28	160.39	160.71		160.06	160.15
MW-09	Overburden	596165.75	4809014.33	165.53	0.76	166.29	162.27	162.26	163.54	162.88	162.63	162.40	162.16	163.89	164.14	164.64	162.43	154.69	161.18
	Straddle	596165.75	4809014.34		0.82	166.35	154.90	155.19	155.63	155.82	155.81	155.89	155.77	156.10	156.40	156.30	155.08	161.29	154.77
	Deep	596164.09	4809011.72		1.06	166.59	150.78	150.72	150.63	150.57	150.53	127.40	127.44	127.45	127.61	127.86	128.19	128.48	128.65
MW-10	Overburden	596044.98	4809001.82	166.77	0.88	167.65	163.62	163.62	164.65	164.15	163.90	163.56	163.34	164.93	165.45	166.25	163.53	162.53	162.62
	Intermediate	596045.04	4809001.93		0.94	167.71	159.82	159.97	161.01	161.07	161.02	160.40	160.40	161.42	161.84	162.01	159.90	159.21	159.16
	Deep	596046.16	4809003.41		0.83	167.60	154.59	154.37	154.17	153.99	154.03	133.52	133.73	133.96	134.20	134.89	135.58	136.00	136.17
MW-11	Overburden	595869.49	4808946.17	168.31	1.01	169.32	164.37	164.68	165.03	164.72	164.61	164.33	164.48	165.21	165.21	166.06	164.15	163.99	164.04
	Straddle	595869.51	4808946.11		1.04	169.35	164.45	164.48	164.80	164.78	164.61	164.39	164.47	165.08	165.18	165.95	164.40	164.19	164.32
	Deep	595870.68	4808947.78		1.12	169.42	151.58	151.53	151.48	151.45	151.39	132.63	132.70	132.82	133.04	133.51	134.11	134.60	134.81
TW-1		595580.63	4808945.63	167.64	0.88	168.52	163.26	163.84	164.52	164.10		163.69	163.86	164.71	164.69	165.38		163.89	
TW-2		595620.87	4810361.35	176.33	0.82	177.15	Dry	Dry	Dry	Dry		Dry	Dry	Dry	Dry	Dry		Dry	
TW-3		596411.25	4810002.94	166.85	0.70	167.55	155.28	154.67	154.70	154.73		155.66	162.98	156.66	156.83	156.55		155.91	

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Table 2
Summary of 2009 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	Zinc	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Arsenic	Boron
ODWS	0.1	30-500	80-100	250	500	0.05	1	200	0.05	0.3	5	5	1	0.005	0.05	0.01	0.001	0.01	0.025	5
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	OG	OG	OG	AO	AO	AO	AO	AO	AO	AO	AO	AO	MAC	MAC	MAC	MAC	MAC	MAC	IMAC	IMAC
MW-01O	Not sampled: Blocked																			
MW-01I	360		1100						16	660	16000		2.8		0.6	0.29				
MW-01D	6		8400	16700	1890			6900	1.6	18	280									5.7
MW-02O	85	695	2200		1410		0.2		5	180	31000				0.2	0.07			0.03	
MW-02I	57		1000		1080				4	120	7800				0.11	0.05			0.03	
MW-02D	12		7100					5600	1.8	29								0.06		6.1
MW-03O	50		1000	518	953				7.8	110	14000				0.11	0.054			0.038	
MW-03D	0.59		1800	2440	1260			1500	0.26	2	66									
MW-04O	230		460			0.06			13	470	31000		2.1		0.4	0.28				
MW-04I	10		1900	1800	1870			1100	1	20	1100					0.014		0.012		6.5
MW-04D	41		18000	32700	1340			14000	6.5	110	4600					0.06		0.2		5.4
MW-05O	53		430						16	110	3900				0.1	0.08			0.032	
MW-05S	300		320						37	590	13000		3.5		0.61	0.25			0.23	
MW-05I	2		270						0.13	5.8	96									
MW-05D	14		31000	50200	1260	0.06		18000	5	49	530									
MW-06O	Not sampled: Insufficient water																			
MW-06S	330		350						22	530	23000		5.5		0.48	0.16			0.11	
MW-06D	Not sampled: Insufficient water																			
MW-07O	1200	559	630			0.08	2.3		67	2400	100000		11	0.026	2	1.1	0.0022		0.48	
MW-07D	2		10000	17800	1550			6700	1.5	9	210			0.013						6.6
MW-08O	1300	549	940		631	0.31	2.3		82	2500	140000	7	13	0.017	2.1	1	0.002		0.5	
MW-08I	1		1700	2100	1040			1200	0.2	2	48									6.1
MW-08D	0.41		1300		522			620	0.16	1.3	25									
MW-09O	160		420					310	7.1	290	2400		2		0.41	0.09			0.13	
MW-09S	310		390			0.06			18	410	20000		4		0.52	0.2			0.1	
MW-09D	Not sampled: Insufficient water																			
MW-10O	1800		510			0.19	2.5		150	3200	87000	9.6	26		4	1			0.59	
MW-10I	200		310						12	280	7500		3		0.28	0.09			0.06	
MW-10D	Not sampled: Insufficient water																			
MW-11O	880		450			0.16	2.3		82	1600	130000		18		2.9	0.66			0.4	
MW-11S	5		430						0.6	11	520									
MW-11D	Not sampled: Insufficient water																			

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 2009 Groundwater Quality Exceedances of PWQO
MW Series Monitoring Wells
Tansley Quarry - Hanson Brick Ltd.

Parameter	Aluminum	Antimony	Arsenic	Boron	Cadmium	Cobalt	Copper	Iron	Lead	Mercury	Molybdenum	Nickel	Silver	Thallium	Uranium	Vanadium	Zinc
PWQO	0.075 mg/L	0.02 mg/L	0.005 mg/L	0.2 mg/L	0.0002 mg/L	0.0009 mg/L	0.005 mg/L	0.3 mg/L	0.003 mg/L	0.0002 mg/L	0.04 mg/L	0.025 mg/L	0.0001 mg/L	0.0003 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			0.14	0.6	0.004	0.29	0.58	660	0.29			0.7	0.002	0.0041	0.043	0.7	2
MW-01D				5.7			0.05	18									
MW-02O	0.079		0.03	0.4		0.08		180	0.07			0.2		0.0009	0.027	0.18	0.49
MW-02I	0.27	0.03		1.8		0.061	0.11	120	0.05			0.13		0.0007	0.007	0.1	0.37
MW-02D				6.1		0.01	0.04	29	0.01			0.05				0.05	0.1
MW-03O	0.14		0.038	1.2	0.001	0.049	0.14	110	0.054			0.1		0.0004		0.1	0.35
MW-03D				4.8		0.0037		2									0.034
MW-04O	0.32		0.12	0.5	0.004	0.24	0.42	470	0.28			0.48	0.001	0.0029	0.032	0.48	1.4
MW-04I	0.14			6.5		0.01	0.03	20	0.014							0.02	0.1
MW-04D	0.5			6			0.8	110	0.06								0.6
MW-05O			0.032		0.002	0.1	0.35	110	0.08			0.15		0.0006		0.1	0.4
MW-05S	0.32		0.23	2.1	0.009	0.3	0.87	590	0.25			0.63	0.005	0.0033	0.02	0.57	2.1
MW-05I				3		0.0014	0.01	5.8									
MW-05D		0.07		5	0.01		0.1	49									
MW-06O	Not sampled: Insufficient water																
MW-06S	0.71		0.11	0.9	0.005	0.32	0.5	530	0.16			0.73		0.0031	0.017	0.57	1.7
MW-06D	Not sampled: Insufficient water																
MW-07O	0.38		0.48	6.9	0.026	1.1	2.3	2400	1.1	0.0022	0.08	2.5		0.012	0.14	2.2	6.1
MW-07D				6.6	0.013		0.06	9	0.01								0.1
MW-08O	0.24		0.5	3.7	0.017	1.3	2.3	2500	1	0.002	0.07	2.8		0.01	0.08	2.2	7
MW-08I				6.2		0.0077		2					0.0003				
MW-08D				4.6		0.0016		1.3									
MW-09O			0.13	4	0.005	0.16	0.17	290	0.09		0.08	0.3		0.0015	0.042	0.32	1.3
MW-09S	0.61		0.1	5.2	0.003	0.26	0.2	410	0.2		0.05	0.6	0.002	0.0026	0.02	0.52	1.3
MW-09D	Not sampled: Insufficient water																
MW-10O	0.66		0.59	3.1	0.019	2	2.5	3200	1			4.1	0.005	0.012	0.13	2.7	9.6
MW-10I	0.41		0.06	3.5	0.002	0.19	0.16	280	0.09			0.4		0.002	0.01	0.33	0.9
MW-10D	Not sampled: Insufficient water																
MW-11O	0.36		0.4	1.3	0.01	0.85	2.3	1600	0.66	0.0003		1.8		0.007	0.066	1.6	4.4
MW-11S	0.13		0.015	1.7		0.007	0.011	11								0.011	0.03
MW-11D	Not sampled: Insufficient water																

Note:

PWQO: Provincial Water Quality Objectives, July 1994

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**	**Aluminum**	**Sulphate**	**Chloride**	**Iron**	**Manganese**	**Sodium**	**Turbidity**	**Boron**
ODWS	80-100 mg/L	0.1 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	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	
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	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
No pumping recorded between Jan. 1 and Feb. 16, 2009			
17-Feb-09	7	452.9	64.7
18-Feb-09	7	452.9	64.7
19-Feb-09	6.5	420.6	64.7
20-Feb-09			
21-Feb-09			
22-Feb-09			
23-Feb-09	7	452.9	64.7
24-Feb-09	7	452.9	64.7
25-Feb-09	6.5	420.6	64.7
26-Feb-09	6.5	420.6	64.7
27-Feb-09	7	452.9	64.7
28-Feb-09			
1-Mar-09			
2-Mar-09			
3-Mar-09			
4-Mar-09			
5-Mar-09			
6-Mar-09			
7-Mar-09			
8-Mar-09			
9-Mar-09	7	452.9	64.7
10-Mar-09	7	452.9	64.7
11-Mar-09	6.5	420.6	64.7
12-Mar-09	6.5	420.6	64.7
13-Mar-09	5.5	355.9	64.7
14-Mar-09			
15-Mar-09			
16-Mar-09	7	452.9	64.7
17-Mar-09	4.5	291.2	64.7
18-Mar-09	8	517.6	64.7
19-Mar-09	6	388.2	64.7
20-Mar-09	7.5	485.3	64.7
21-Mar-09			
22-Mar-09			
23-Mar-09	4	258.8	64.7
24-Mar-09	7.5	485.3	64.7
25-Mar-09	6	388.2	64.7
26-Mar-09	7	452.9	64.7
27-Mar-09	7	452.9	64.7
28-Mar-09			
29-Mar-09			
30-Mar-09			
31-Mar-09			
1-Apr-09	6.75	436.7	64.7
2-Apr-09	6.5	420.6	64.7
3-Apr-09	5	323.5	64.7
4-Apr-09			
5-Apr-09			
6-Apr-09	6	388.2	64.7
7-Apr-09			
8-Apr-09			
9-Apr-09	5	323.5	64.7
10-Apr-09			
11-Apr-09			
12-Apr-09			

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

Date	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
13-Apr-09			
14-Apr-09	7	452.9	64.7
15-Apr-09	7	452.9	64.7
16-Apr-09			
17-Apr-09			
18-Apr-09			
19-Apr-09			
20-Apr-09			
21-Apr-09			
22-Apr-09	7	452.9	64.7
23-Apr-09	6.5	420.6	64.7
24-Apr-09			
25-Apr-09			
26-Apr-09			
27-Apr-09			
28-Apr-09	3	194.1	64.7
29-Apr-09	7	452.9	64.7
30-Apr-09	3	194.1	64.7
1-May-09			
2-May-09			
3-May-09			
4-May-09	6.75	436.7	64.7
5-May-09	7.25	469.1	64.7
6-May-09	2	129.4	64.7
7-May-09			
8-May-09			
9-May-09			
10-May-09			
11-May-09	6.25	404.4	64.7
12-May-09	2	129.4	64.7
13-May-09	2	129.4	64.7
14-May-09	3	194.1	64.7
15-May-09			
16-May-09			
17-May-09			
18-May-09			
19-May-09	6.5	420.6	64.7
20-May-09	5.5	355.9	64.7
21-May-09	2.5	161.8	64.7
22-May-09			
23-May-09			
24-May-09			
25-May-09	6.5	420.6	64.7
26-May-09	2	129.4	64.7
27-May-09	2	129.4	64.7
28-May-09	2.5	161.8	64.7
29-May-09	4.5	291.2	64.7
30-May-09			
31-May-09			
1-Jun-09	5.5	355.9	64.7
2-Jun-09			
3-Jun-09			
4-Jun-09			
5-Jun-09	5.5	355.9	64.7
6-Jun-09			
7-Jun-09			

Table 5

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

Date	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
8-Jun-09	5	333	66.6
9-Jun-09	4.5	244	54.3
10-Jun-09	1.5	125	83.2
11-Jun-09			
12-Jun-09	3.5	280	80.0
13-Jun-09			
14-Jun-09			
15-Jun-09	4	260	65.0
16-Jun-09	2	159	79.3
17-Jun-09	1.75	107	61.1
18-Jun-09			
19-Jun-09	3.5	410	117.0
20-Jun-09			
21-Jun-09			
22-Jun-09	6.5	503	77.4
23-Jun-09	2.5	129	51.7
24-Jun-09	1	104	104.4
25-Jun-09	1.5	79	52.5
26-Jun-09			
27-Jun-09			
28-Jun-09			
29-Jun-09	7	550	78.6
30-Jun-09	3.5	248	70.9
1-Jul-09			
2-Jul-09	6	410	68.3
3-Jul-09	6.5	454	69.8
4-Jul-09			
5-Jul-09			
6-Jul-09			
7-Jul-09	4	384	96.0
8-Jul-09	7.25	527	72.6
9-Jul-09	3.5	259	74.1
10-Jul-09	2.5		
11-Jul-09			
12-Jul-09			
13-Jul-09	6.25	348	55.7
14-Jul-09	1.5	82	54.5
15-Jul-09	2	82	41.1
16-Jul-09			
17-Jul-09	4	376	93.9
18-Jul-09			
19-Jul-09			
20-Jul-09	6.25	387	61.9
21-Jul-09			
22-Jul-09	5.75	272	47.3
23-Jul-09	6	486	81.0
24-Jul-09	7	454	64.8
25-Jul-09			
26-Jul-09			
27-Jul-09			
28-Jul-09	5	368	73.6
29-Jul-09	6.75	174	25.8
30-Jul-09	5.5	692	125.8
31-Jul-09	5	670	134.0
1-Aug-09			
2-Aug-09			

Table 5

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

Date	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
3-Aug-09			
4-Aug-09	6.75	815	120.7
5-Aug-09	7	809	115.5
6-Aug-09	3.75	448	119.5
7-Aug-09			
8-Aug-09			
9-Aug-09			
10-Aug-09	7	946	135.1
11-Aug-09	7.25	696	96.1
12-Aug-09	7	784	112.0
13-Aug-09			
14-Aug-09			
15-Aug-09			
16-Aug-09			
17-Aug-09	9.5	768	80.9
18-Aug-09	9.25	683	73.8
19-Aug-09	1.5	129	86.0
20-Aug-09			
21-Aug-09			
22-Aug-09			
23-Aug-09			
24-Aug-09	8.5	715	84.2
25-Aug-09	9	677	75.2
26-Aug-09	5.5	470	85.4
27-Aug-09			
28-Aug-09			
29-Aug-09			
30-Aug-09			
31-Aug-09	6	448	74.6
1-Sep-09	6	393	65.5
2-Sep-09	3.5	252	71.9
3-Sep-09			
4-Sep-09			
5-Sep-09			
6-Sep-09			
7-Sep-09			
8-Sep-09			
9-Sep-09			
10-Sep-09			
11-Sep-09			
12-Sep-09			
13-Sep-09			
14-Sep-09	8	233	29.1
15-Sep-09	8	458	57.2
16-Sep-09			
17-Sep-09			
18-Sep-09			
19-Sep-09			
20-Sep-09			
21-Sep-09			
22-Sep-09			
23-Sep-09	8	623	77.8
24-Sep-09	4.5	259	57.5
25-Sep-09			
26-Sep-09			
27-Sep-09			

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

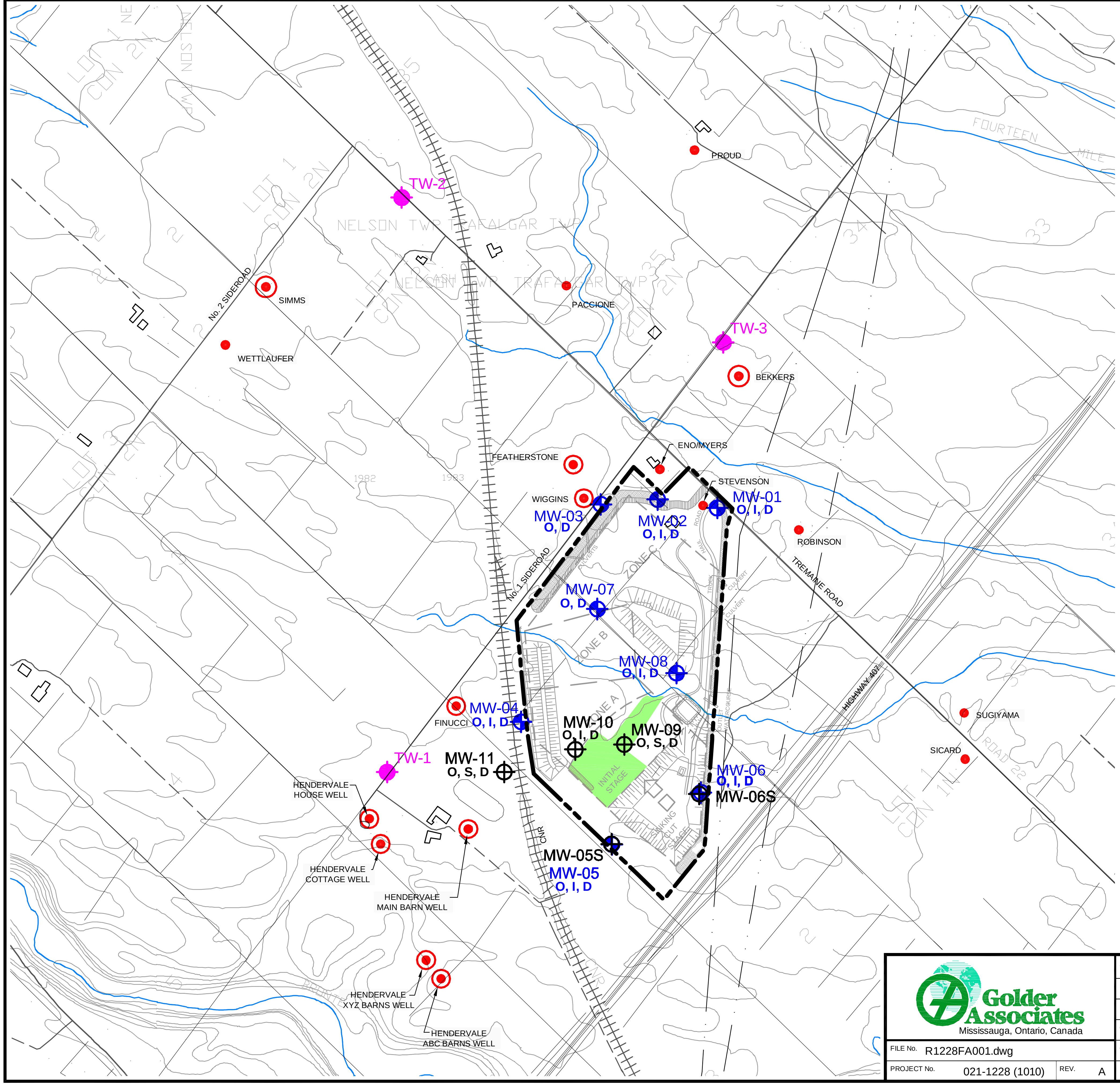
Date	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
28-Sep-09			
29-Sep-09			
30-Sep-09			
1-Oct-09			
2-Oct-09			
3-Oct-09			
4-Oct-09			
5-Oct-09			
6-Oct-09	6	507	84.5
7-Oct-09			
8-Oct-09			
9-Oct-09			
10-Oct-09			
11-Oct-09			
12-Oct-09			
13-Oct-09	4	233	58.3
14-Oct-09			
15-Oct-09	12.5	961	76.9
16-Oct-09	7	419	59.8
17-Oct-09			
18-Oct-09			
19-Oct-09			
20-Oct-09	7	569	81.2
21-Oct-09	6	447	74.5
22-Oct-09	8	598	74.8
23-Oct-09	2	189	94.3
24-Oct-09			
25-Oct-09			
26-Oct-09	3	164	54.7
27-Oct-09			
28-Oct-09	4.5	337	74.9
29-Oct-09	8.5	706	83.1
30-Oct-09			
31-Oct-09			
1-Nov-09			
2-Nov-09	7	506	72.3
3-Nov-09	4	219	54.7
4-Nov-09			
5-Nov-09			
6-Nov-09			
7-Nov-09			
8-Nov-09			
9-Nov-09			
10-Nov-09	5	354	70.8
11-Nov-09	7.5	514	68.5
12-Nov-09	8	382	47.7
13-Nov-09			
14-Nov-09			
15-Nov-09			
16-Nov-09			
17-Nov-09	5	208	41.7
18-Nov-09	6	345	57.6
19-Nov-09	6	190	31.7
20-Nov-09			
21-Nov-09			
22-Nov-09			

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

Date	Hours of Pumping	Daily Pond Volume Increase (m^3)	Equivalent Pumping Rate (m^3/hr)
23-Nov-09			
24-Nov-09	6	448	74.7
25-Nov-09	6.5	494	76.0
26-Nov-09	4	308	77.0
27-Nov-09			
28-Nov-09			
29-Nov-09			
30-Nov-09	7.5	399	53.3
1-Dec-09	5	242	48.5
2-Dec-09	1.5	49	32.8
3-Dec-09	5.5	405	73.7
4-Dec-09	5.75	393	68.3
5-Dec-09			
6-Dec-09			
7-Dec-09			
8-Dec-09			
9-Dec-09	5.5	453	82.3
10-Dec-09	6.5	422	64.8
11-Dec-09			
12-Dec-09			
13-Dec-09			
14-Dec-09	4.25	334	78.6
15-Dec-09	6.5	451	69.4
16-Dec-09			
17-Dec-09			
18-Dec-09	5	163	32.5
19-Dec-09			
20-Dec-09			
21-Dec-09	5	430	86.0
22-Dec-09			
23-Dec-09	5.5	272	49.4
24-Dec-09			
25-Dec-09			
26-Dec-09			
27-Dec-09			
28-Dec-09	5.5	385	70.0
29-Dec-09	4.5	291	64.6
30-Dec-09			
31-Dec-09			
Total for 2009:	765	53,333	

Notes:
- Decant Pond commissioned in June 2009
- Shaded values are estimates made by Golder based on the average pumping rate reported in previous years

FIGURES



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.

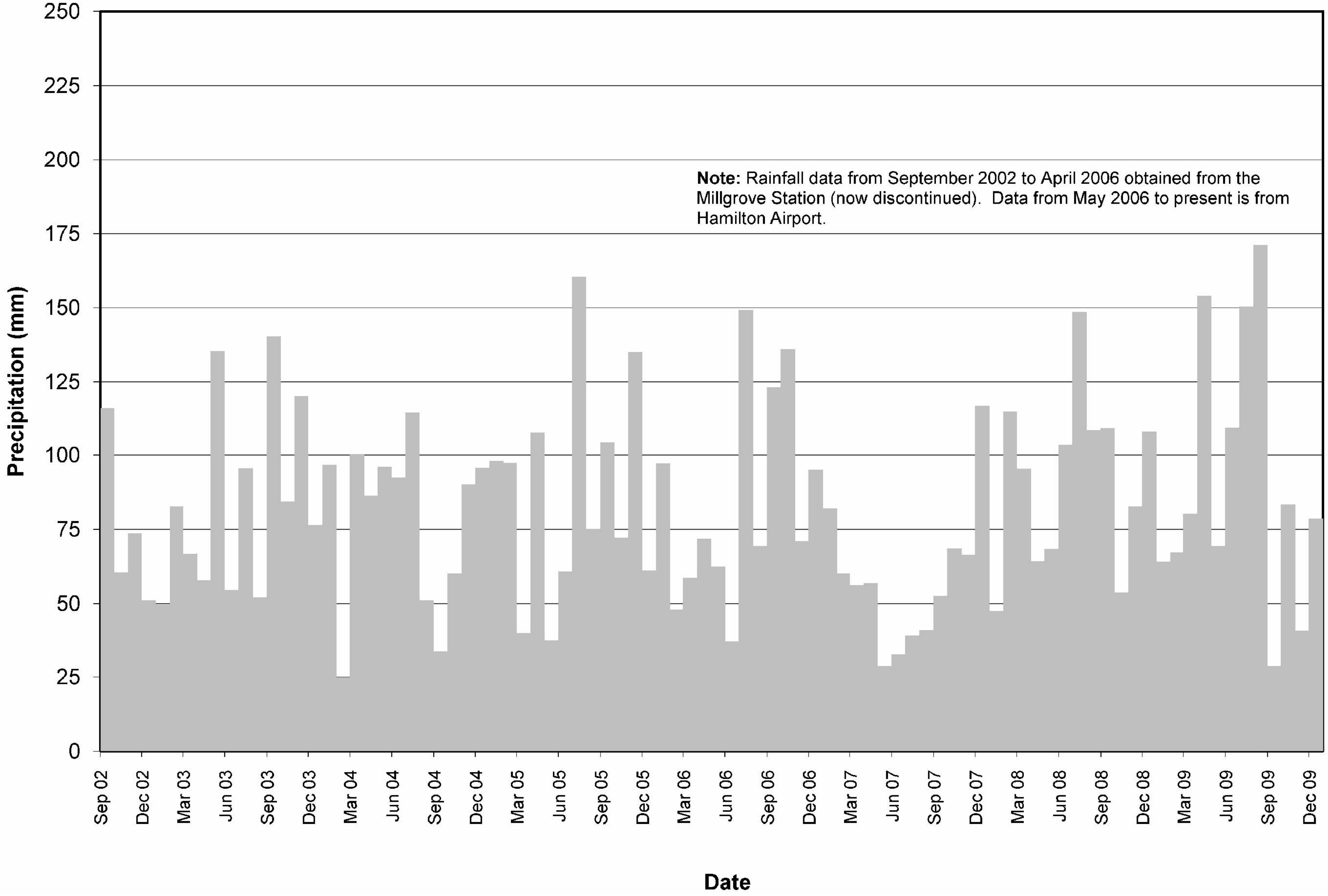
200 0 200 400
SCALE 1:10000 METRES

Golder Associates
Mississauga, Ontario, Canada

SCALE	AS SHOWN	TITLE	
DATE	9/16/2011		**WELL LOCATION PLAN**
DESIGN			
CAD	FC/KD		
CHECK	MB	TANSLEY QUARRY, HANSON BRICK LTD.	FIGURE 1
REVIEW	PMMC		

FILE No. R1228FA001.dwg
PROJECT No. 021-1228 (1010) REV. A

PLOT DATE: September 16, 2011
FILENAME: T:\Projects\2002\021-1228\-FA- PHASE 1010\R1228FA002.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 9/16/2011
DESIGN KD
CAD KD
CHECK MB
REVIEW PMMC

TITLE

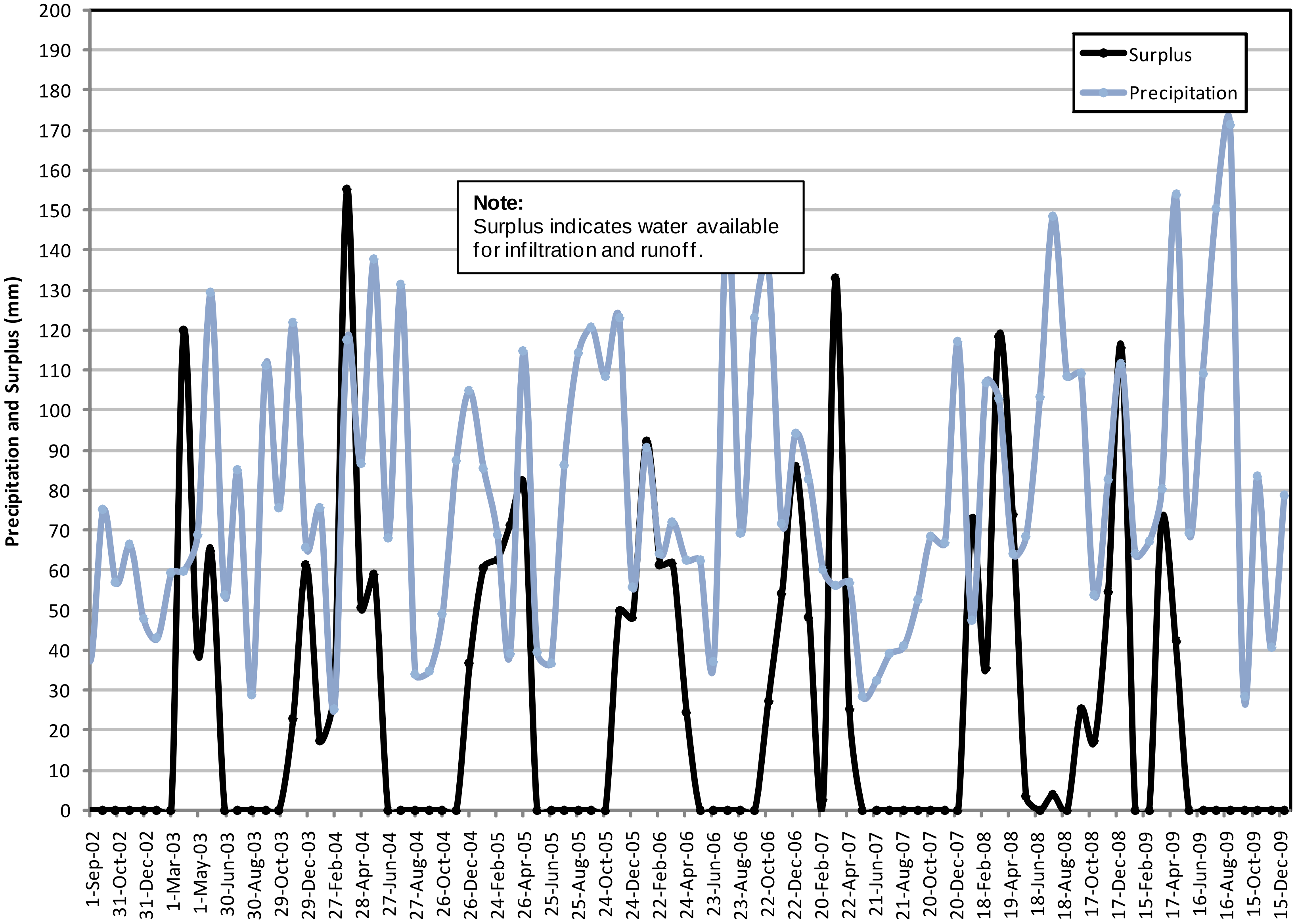
MONTHLY PRECIPITATION (mm)
MILLGROVE STATION / HAMILTON AIRPORT

FILE No. R1228FA002.dwg
PROJECT No. 021-1228 (1010) REV.

TANSLEY QUARRY, HANSON BRICK LTD.

FIGURE 2

PLOT DATE: September 16, 2011
FILENAME: T:\Projects\2002\021-1228\-FA- PHASE 1010\R1228FA003.dwg



Note:
Surplus indicates water available for infiltration and runoff.

Golder Associates
Mississauga, Ontario, Canada

FILE No. R1228FA003.dwg
PROJECT No. 021-1228 (1010)
REV.

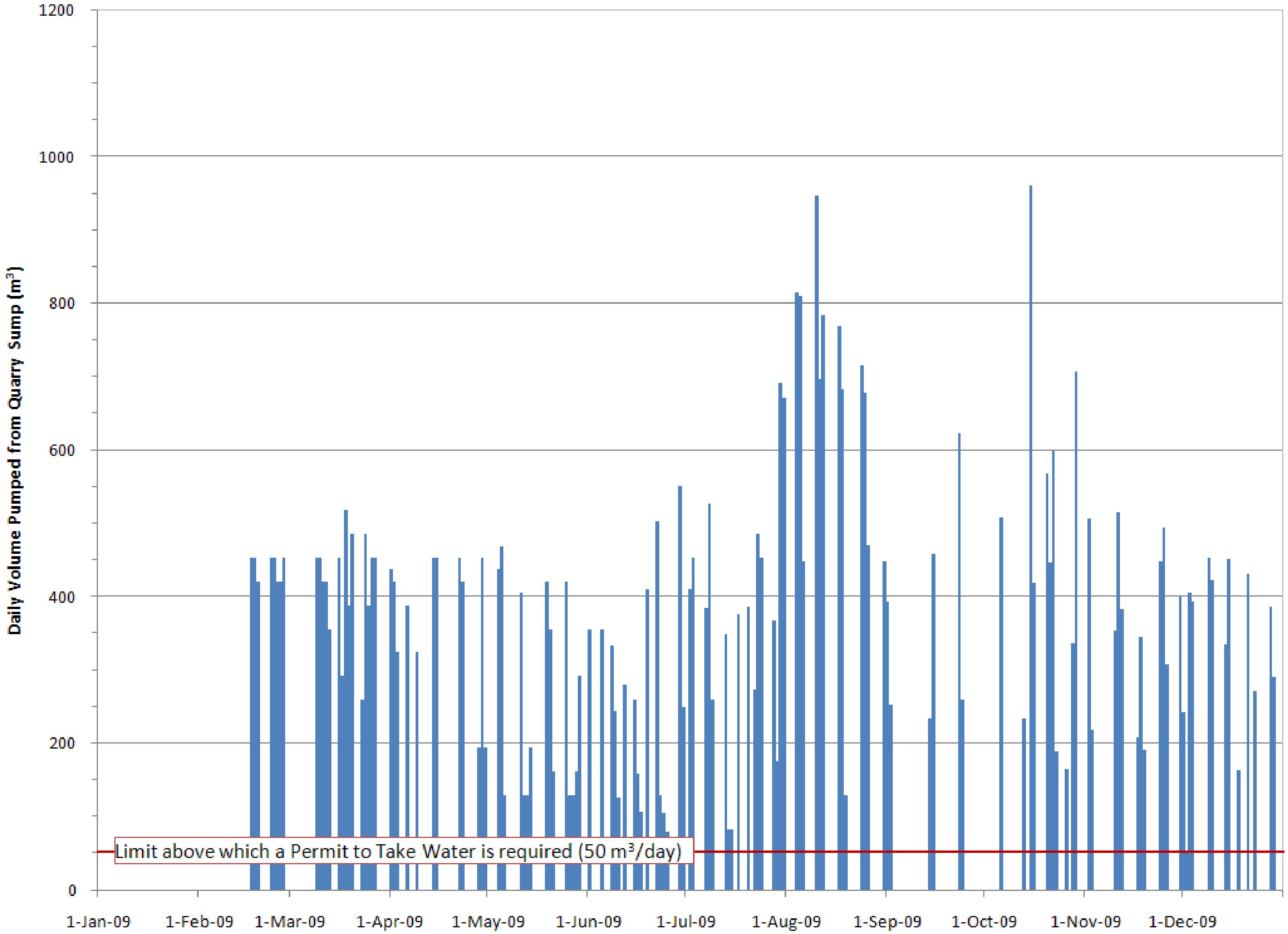
SCALE AS SHOWN
DATE 9/16/2011
DESIGN KD
CAD KD
CHECK MB
REVIEW PMMC

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
DATE	9/16/2011
DESIGN	KD
CAD	KD
CHECK	MB
REVIEW	PMMC

FILE No. R1228FA004.dwg

PROJECT No. 021-1228 (1010) REV.

TITLE

DAILY SUMP DISCHARGE VS. TIME

TANSLEY QUARRY, HANSON BRICK LTD.

FIGURE 4

APPENDIX A

Tansley Quarry Monitoring Requirements

- Adaptive Management Plan (AMP)
- 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

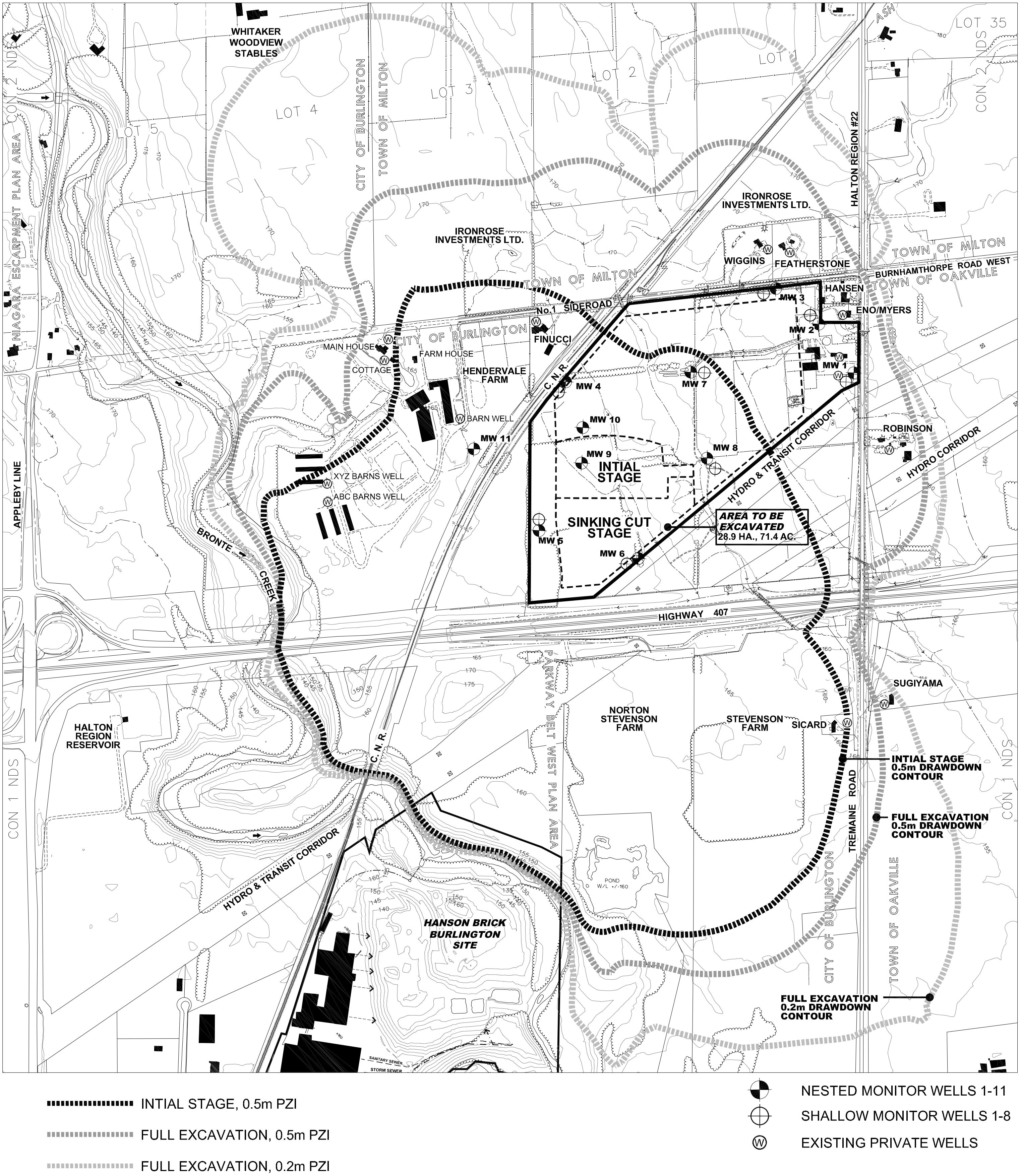
Successful Well Restoration as defined in subsection 6.8 b)

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)



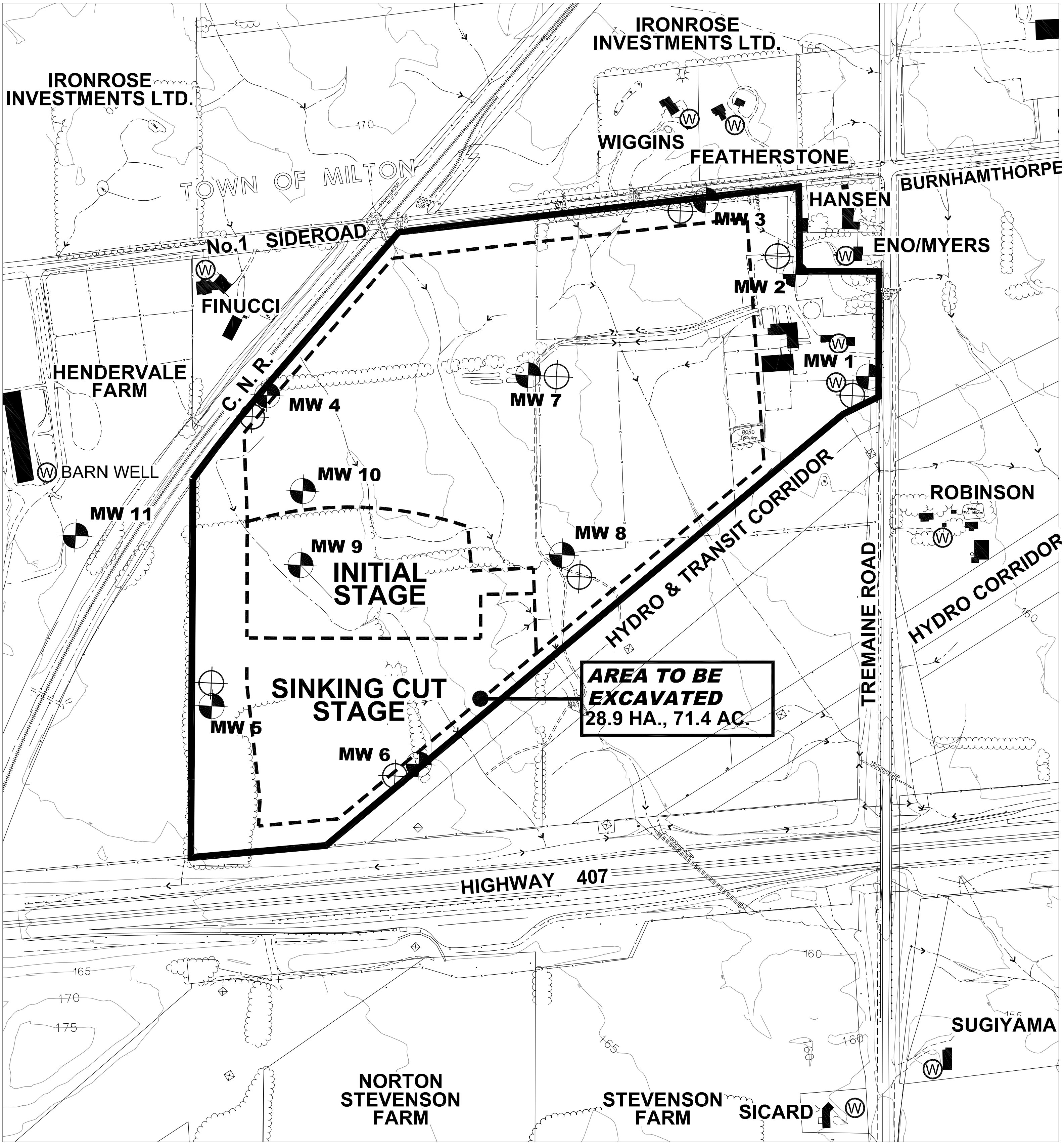
Source: Golder Associates, June 2005

Figure 1

POTENTIAL STEADY STATE ZONES OF INFLUENCE

Scale: 1: 12,500

13 November 2006



◕ 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

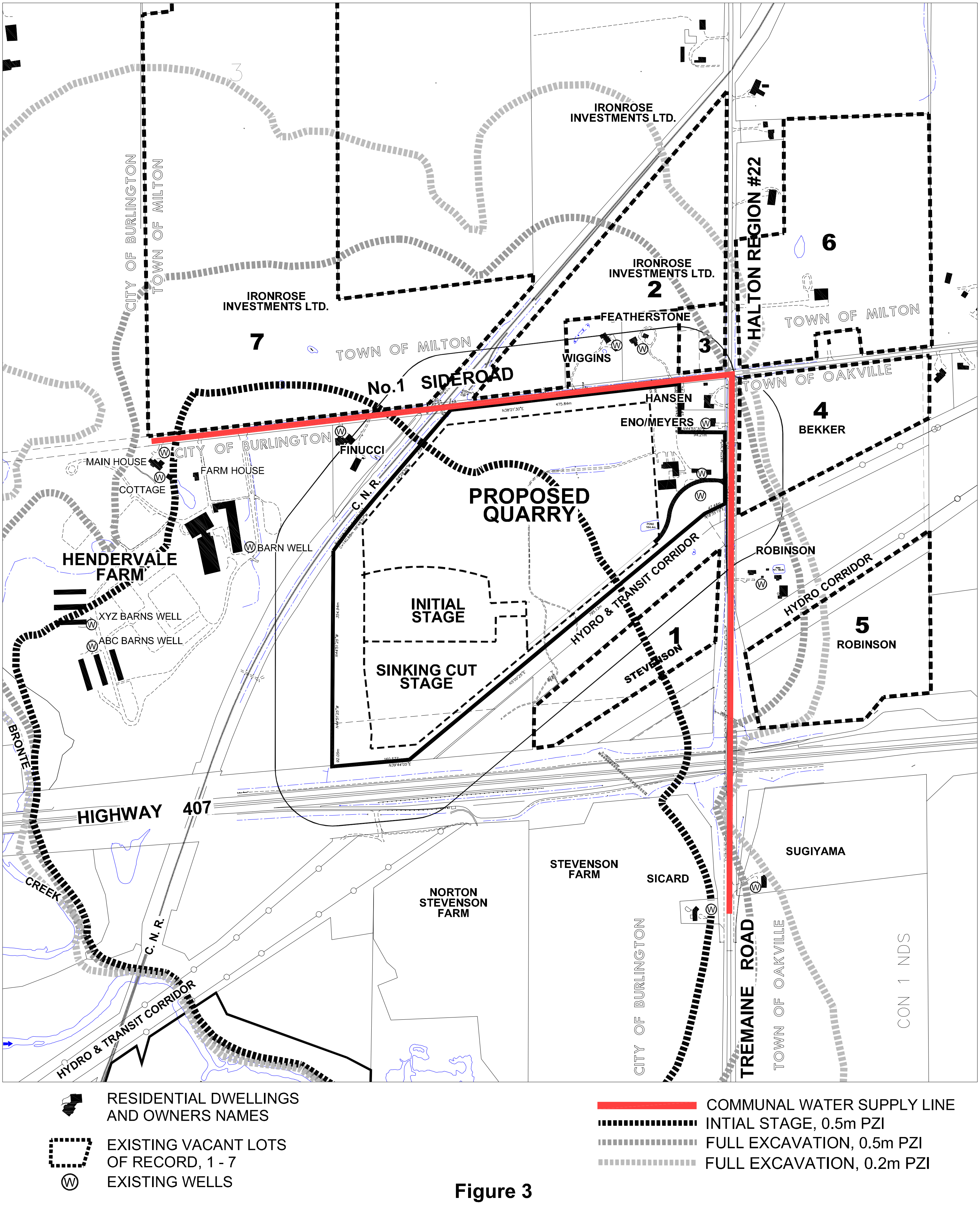


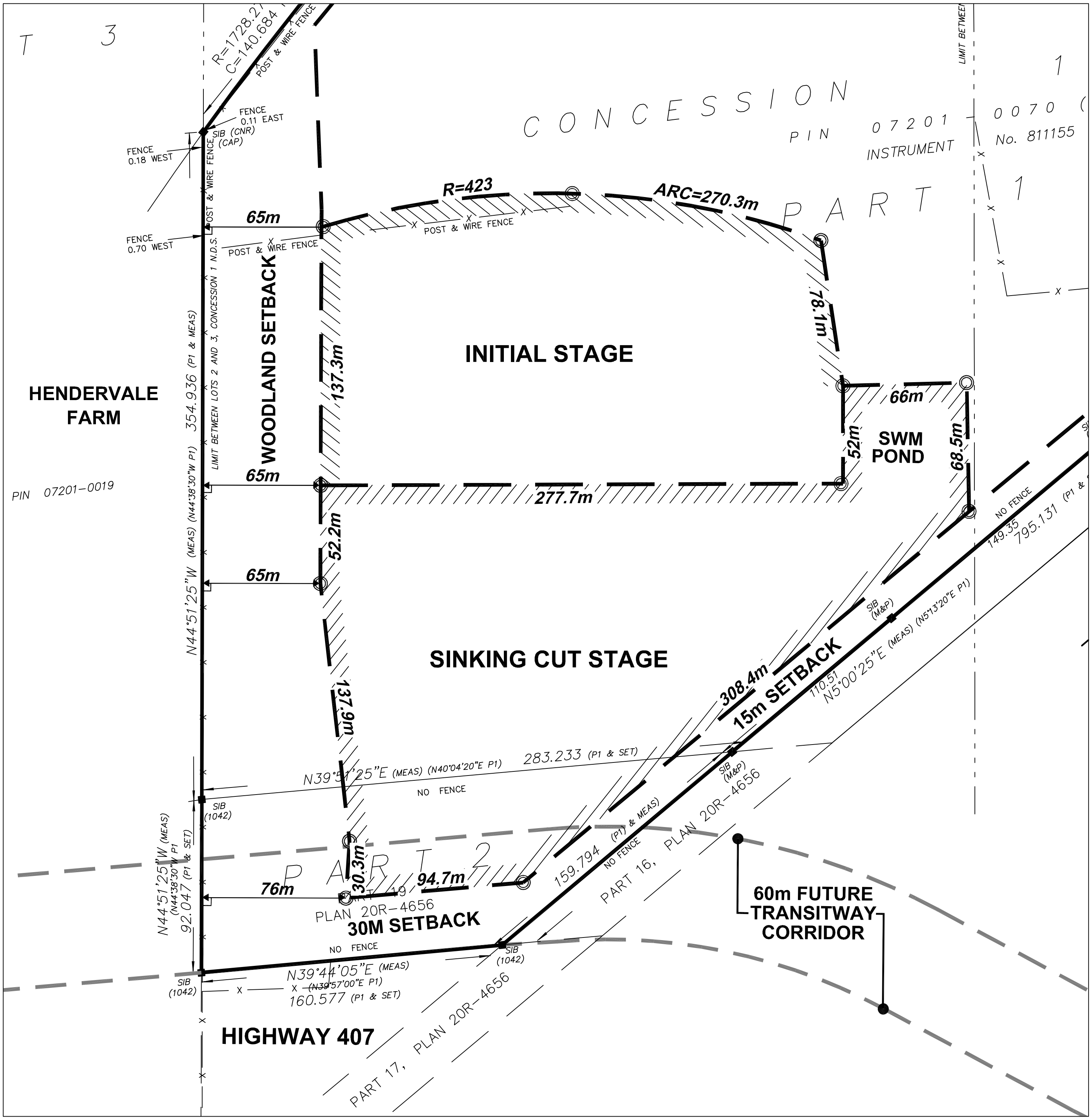
Figure 3

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. <u>Application for Approval of Industrial Sewage Works</u> submitted by Stephen Luckett of Hanson Brick Ltd. dated October 30, 2007;
2. <u>Tansley Quarry - Design Report for Industrial Storm Drainage</u>, 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 06 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 <u>Ontario Water Resources Act</u>, 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 <u>Environmental Bill of Rights</u>, 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 <u>Ontario Water Resources Act</u>, 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
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

DRILLING DATE: Oct.1-3, 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		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:

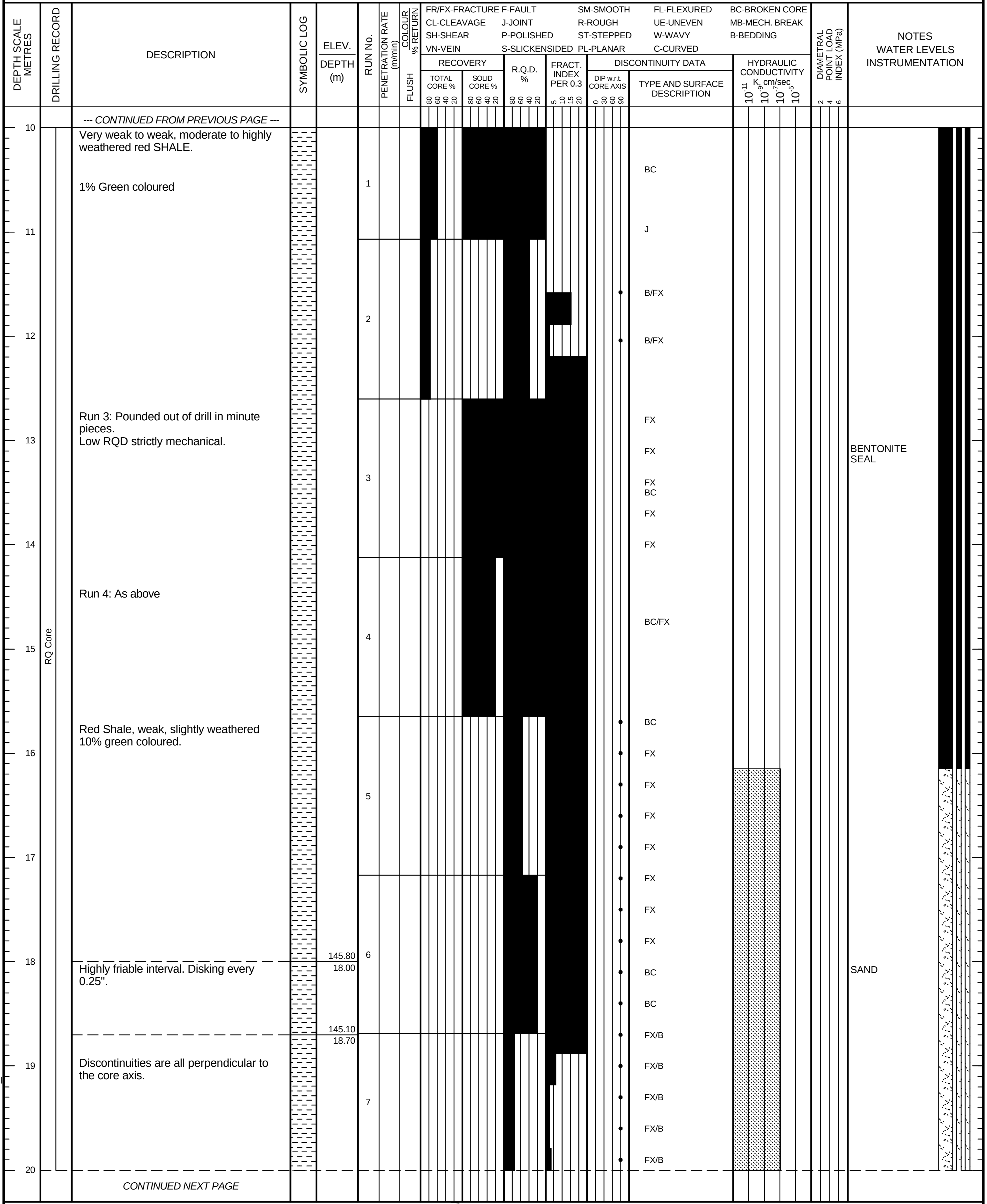
PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 2 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



--- CONTINUED FROM PREVIOUS PAGE ---

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.

145.80
18.00

Highly friable interval. Disking every 0.25".

145.10
18.70

Discontinuities are all perpendicular to the core axis.

CONTINUED NEXT PAGE

BC
J
B/FX
B/FX
FX
FX
FX
BC
FX
FX
BC/FX
BC
FX
FX
FX
FX
FX
FX
FX
BC
BC
FX/B
FX/B
FX/B
FX/B
FX/B

BENTONITE SEAL

SAND

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: MW1

SHEET 3 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Oct.1-3, 2002

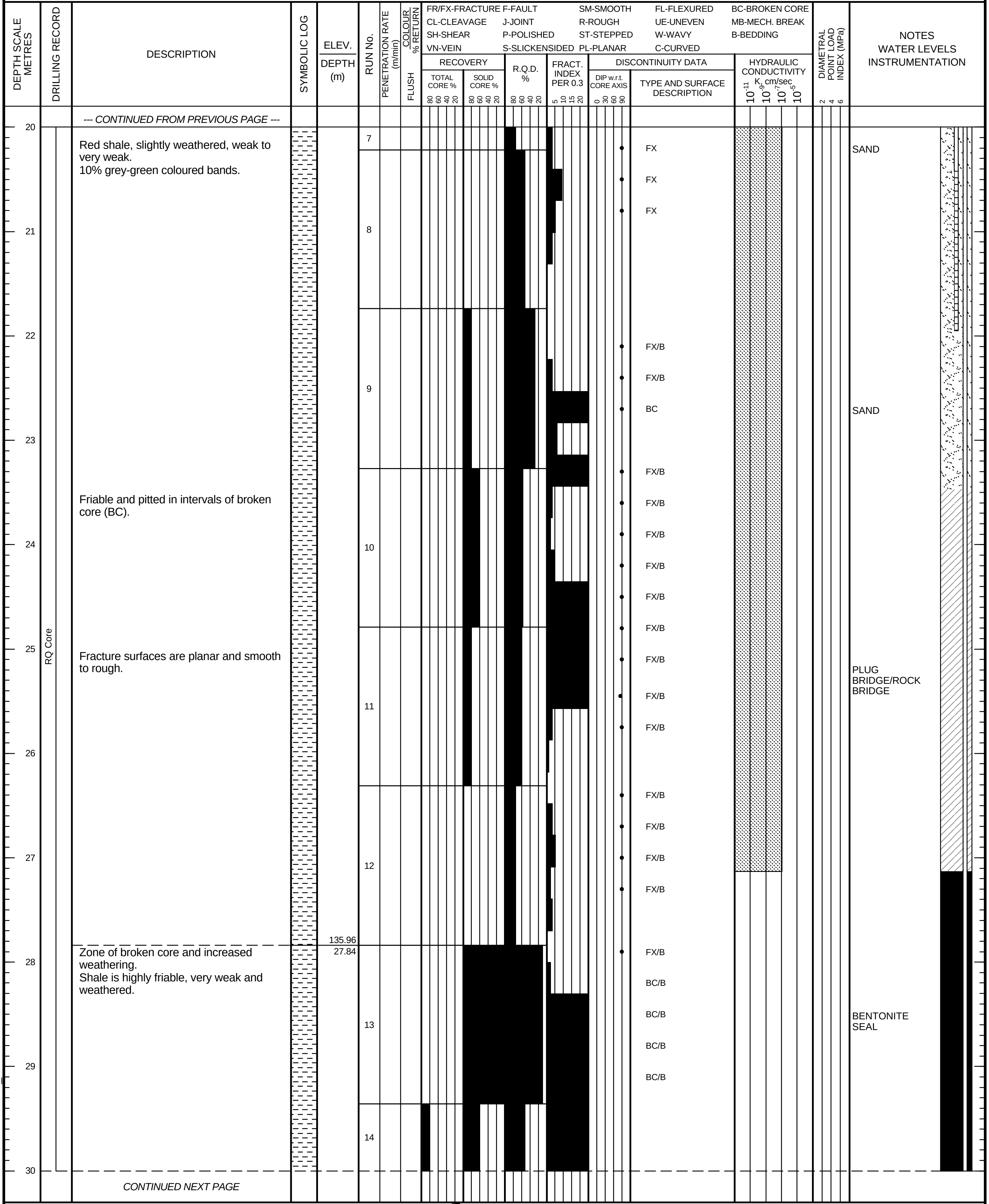
DATUM:

DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

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 ---

Red shale, slightly weathered, weak to very weak.
10% grey-green coloured bands.

Friable and pitted in intervals of broken core (BC).

Fracture surfaces are planar and smooth to rough.

135.96
27.84

Zone of broken core and increased weathering.
Shale is highly friable, very weak and weathered.

CONTINUED NEXT PAGE

FX
FX
FX
FX/B
FX/B
BC
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
BC/B
BC/B
BC/B
BC/B

SAND

SAND

PLUG
BRIDGE/ROCK
BRIDGE

BENTONITE
SEAL

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: MW1

SHEET 4 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

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) | 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

Drilling record: RQ Core

--- CONTINUED FROM PREVIOUS PAGE ---

Depth scale (m)	Description	ELEV. DEPTH (m)
30	Zone of broken core and increased weathering. Shale is highly friable, very weak and weathered.	
		132.91 30.89
31	Highly weathered and friable.	
32		131.71 32.09
	Red shale, moderately weathered, weak, friable.	
33		
34		
35	Fracture surfaces are planar and smooth to rough.	
36		
37		126.70 37.10
	Extremely friable zone. Discontiniuites	
38		125.80 38.00
	Red shale, fresh, weak to moderately strong.	
39		
40		

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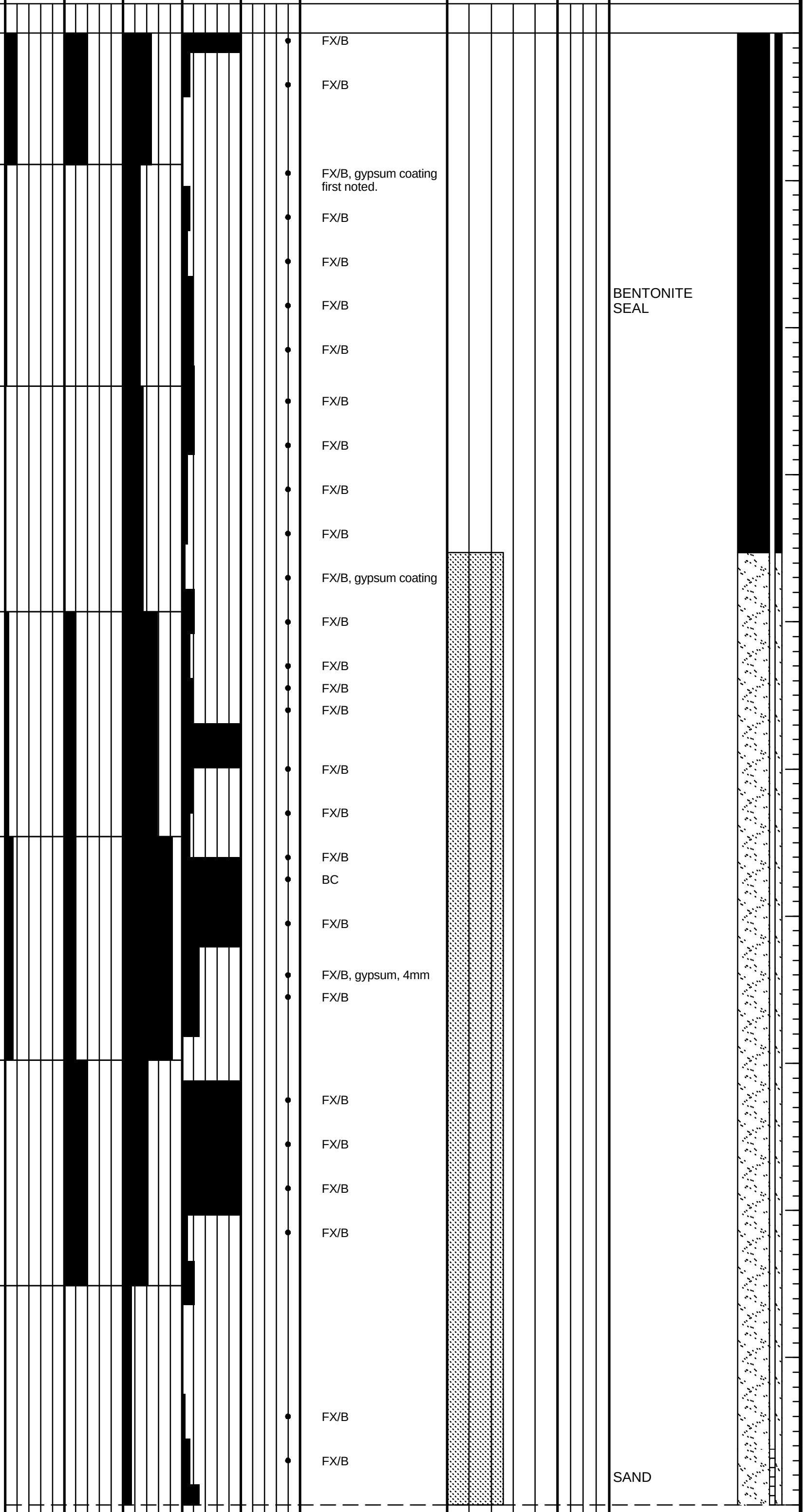
Run No.: 14, 15, 16, 17, 18, 19, 20



Type and surface description:
FX/B
FX/B
FX/B, gypsum coating first noted.
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B, gypsum coating
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
BC
FX/B
FX/B, gypsum, 4mm
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B
FX/B

Notes: BENTONITE SEAL
SAND

DEPTH SCALE
1 : 50

LOGGED: MR
CHECKED:

Golder Associates

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

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW1

SHEET 5 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Oct.1-3, 2002

DATUM:

DRILL RIG: CME 75

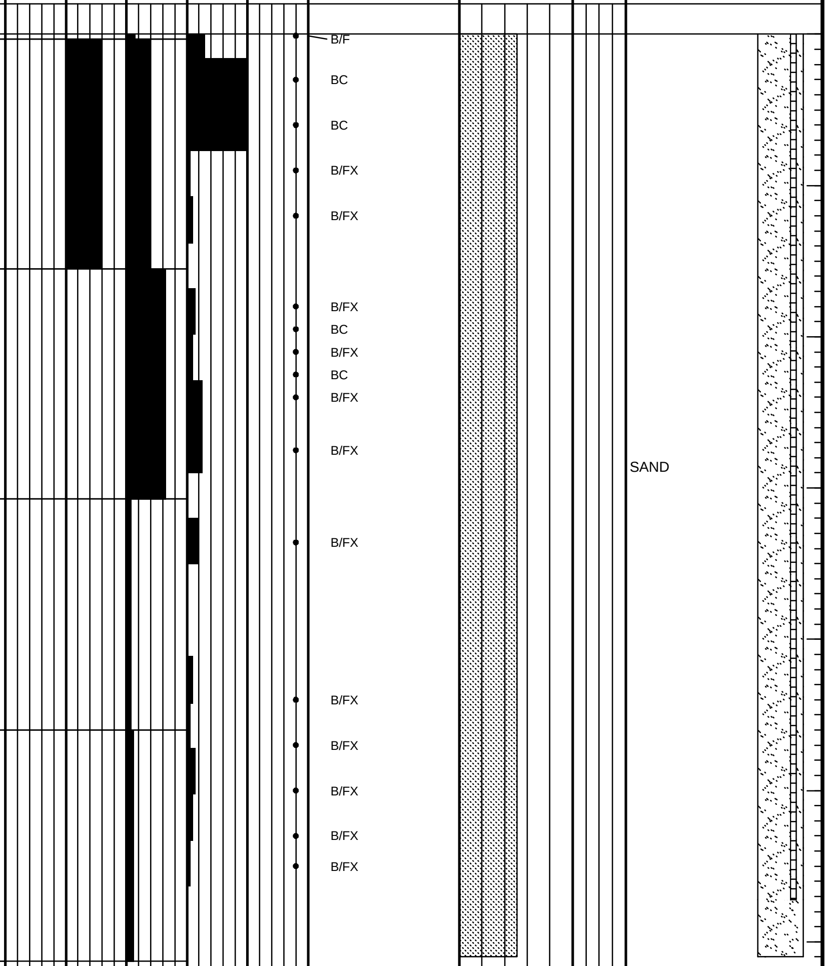
INCLINATION: -90° AZIMUTH: ---

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

--- *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
40	RQ Core	Red shale, fresh, weak to moderately strong.		21	B/F BC BC B/FX B/FX	
41		10% grey-green coloured.				
42				22	B/FX BC B/FX BC B/FX B/FX	
43		Red shale, fresh, weak, 10% green coloured.	120.80 43.00	23	B/FX	SAND
44					B/FX	
45				24	B/FX B/FX B/FX B/FX	
46			117.67 46.13			
		END OF BOREHOLE				
47						
48						
49						
50						



DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

SHEET 1 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Sept.26&30, 2002

DATUM:

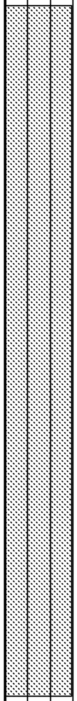
INCLINATION: -90° AZIMUTH: ---

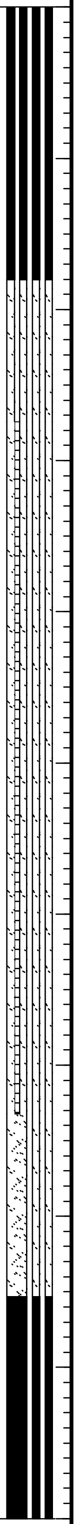
DRILL RIG: CME 75

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	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		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

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	

Column headings: 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 METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
10	AUGER	BEDROCK Red shale, very weak, friable. Fresh, moderately weathered upper 3.05 to 4.57m from bedrock surface recovered as rubble/broken core.				
11						
	HQ CORE	Red shale with occasional (10%+/-) green coloured bands, weak. This interval recovered as broken core.	154.09 11.81	1	FX	
12					Broken Core	
				2	FX	
13					B	
14		Intact core begins.	151.78 14.12	3	B/FX	BENTONITE SEAL
					B/FX	
					B/FX	
15					B/FX	
					B/FX	
				4	B/FX	
16					B/FX	
					B/FX	
					B/FX	
17					B/FX	
				5	B/FX	
					B/FX	
					B/FX	
18					B/FX	
					B/FX	
				6	B/FX	
19					B/FX	SAND
					B/FX	
					B/FX	
20			145.90		B/FX	

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: MW2

SHEET 3 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.	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---			
20	HQ CORE	Red shale, weak, moderately weathered. Some very weak red shale bands. Friable.	20.00	6	
21				7	
22				8	SAND
23		Slight strength increase to moderately strong in green coloured shale bands.	142.60 23.30	9	
24					
25				10	
26		Discontinuity surfaces are perpendicular to core axis, planar and smooth. They appear to be bedding parallel, mechanically induced fractures.			
27				11	SAND
28				12	BENTONITE SEAL
29				13	
30		*CONTINUED NEXT PAGE*			

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

TYPE AND SURFACE DESCRIPTION (20 m to 30 m):

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
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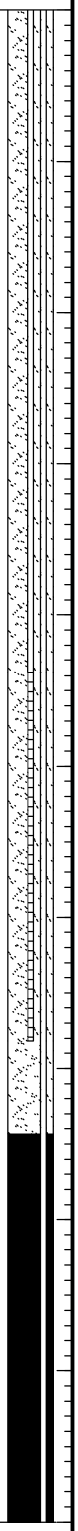
B/FX



DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW2

SHEET 4 OF 5

LOCATION: Refer to Plan

DRILLING DATE: Sept.26&30, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

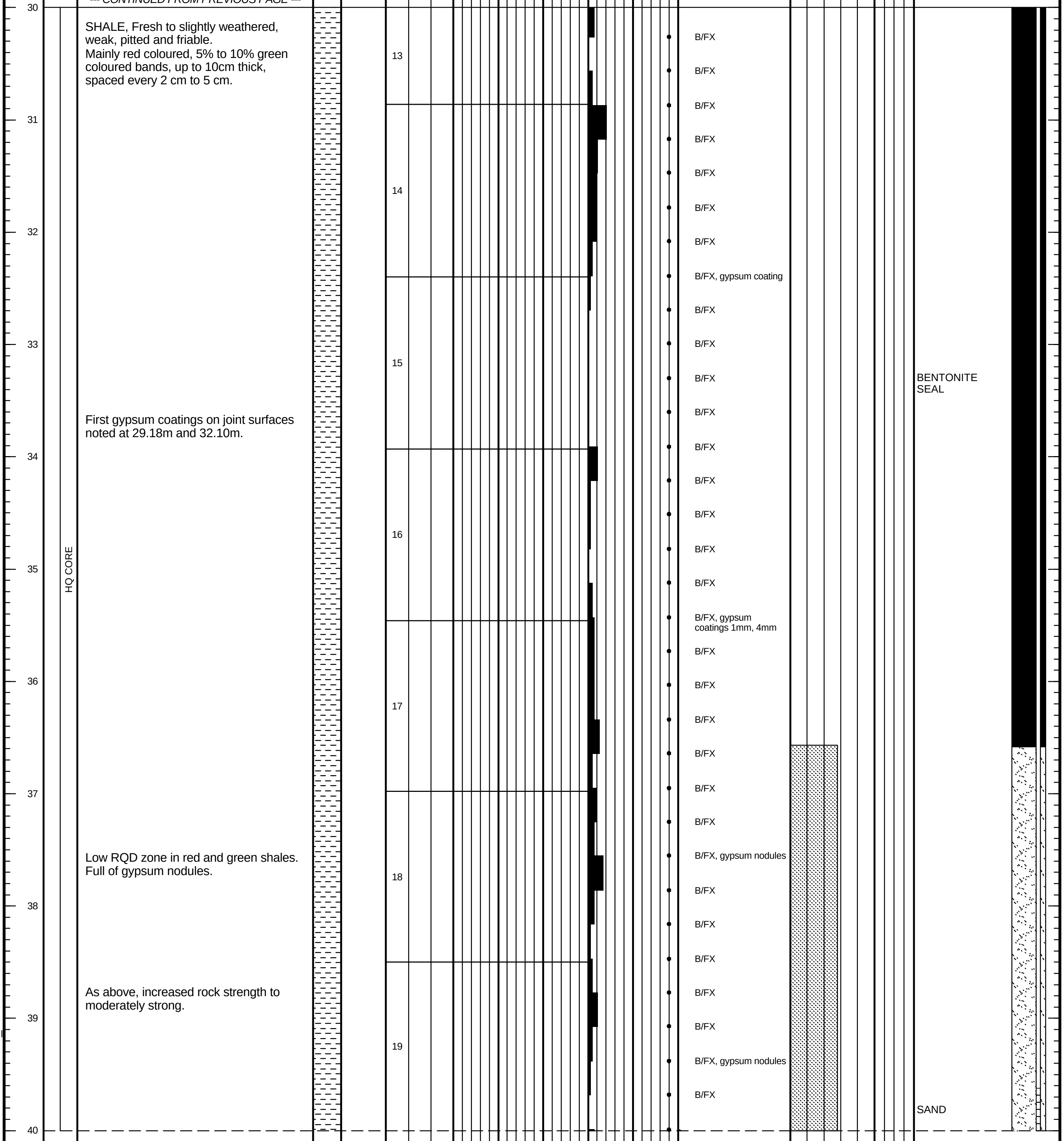
DRILL RIG: CME 75

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 | 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

--- CONTINUED FROM PREVIOUS PAGE ---



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.

First gypsum coatings on joint surfaces noted at 29.18m and 32.10m.

Low RQD zone in red and green shales. Full of gypsum nodules.

As above, increased rock strength to moderately strong.

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

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

DRILLING DATE: Sept.26&30, 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	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	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
44		Gypsum coat at 43.5, 3mm thick.			22											
45					23											
46		END OF BOREHOLE		119.77 46.13												
47																
48																
49																
50																

DEPTH SCALE

1 : 50

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)	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 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													
1																	
2																	
3																	
4																	BENTONITE SEAL
5																	
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													
7																	
8																	
9																	SAND
10																	

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

LOGGED: MR

CHECKED:

Golder Associates

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW3

SHEET 2 OF 4

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

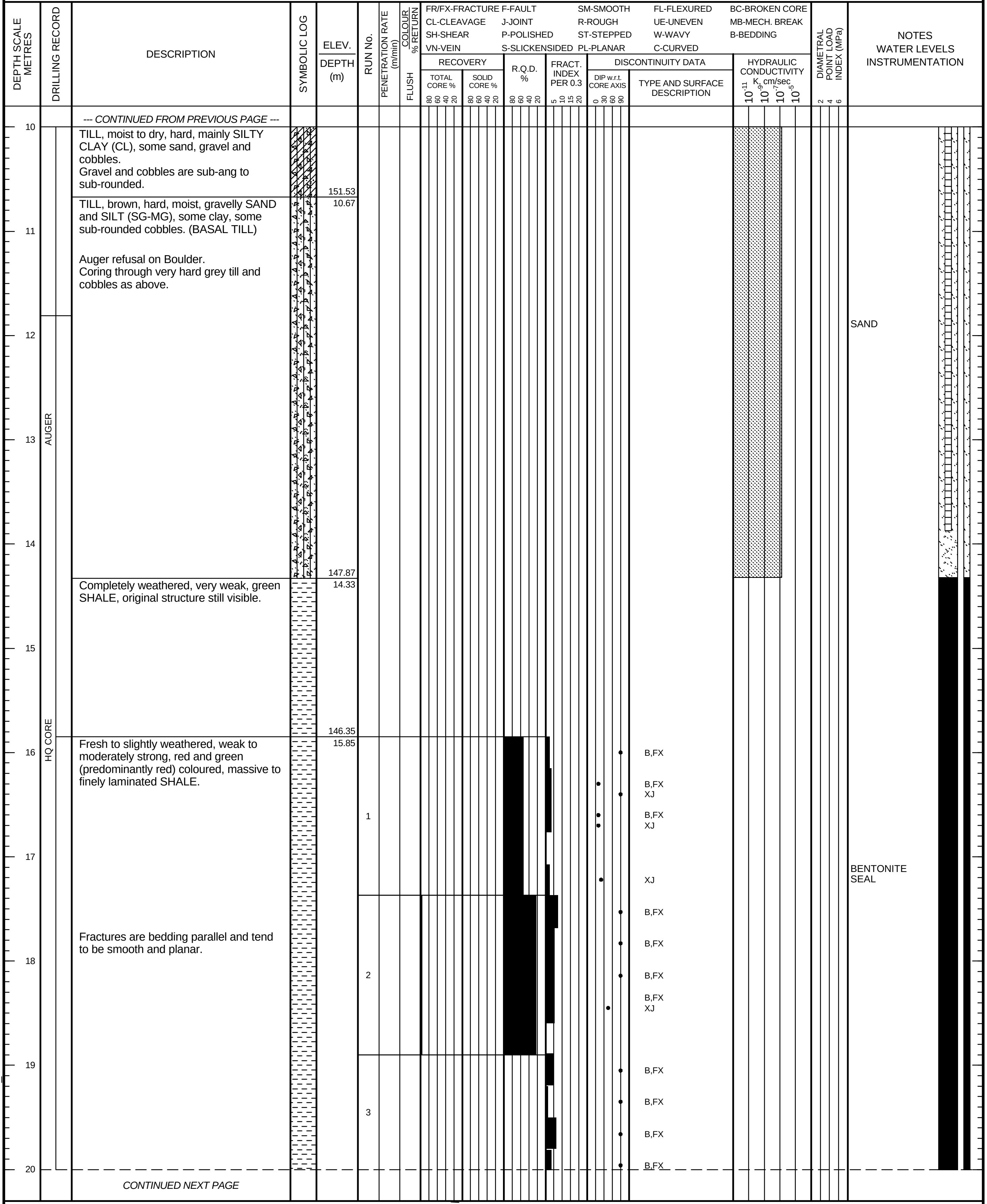
DRILLING DATE: July 24 & 25, 2002

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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DESCRIPTION	ELEV. DEPTH (m)	NOTES WATER LEVELS INSTRUMENTATION
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	
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.	147.87 14.33	SAND
Completely weathered, very weak, green SHALE, original structure still visible.	146.35 15.85	
Fresh to slightly weathered, weak to moderately strong, red and green (predominantly red) coloured, massive to finely laminated SHALE. Fractures are bedding parallel and tend to be smooth and planar.		BENTONITE SEAL

RUN No.	TYPE AND SURFACE DESCRIPTION
1	B,FX B,FX XJ B,FX XJ XJ
2	B,FX B,FX B,FX B,FX XJ
3	B,FX B,FX B,FX B,FX

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 3 OF 4

LOCATION: Refer to Plan

DRILLING DATE: July 24 & 25, 2002

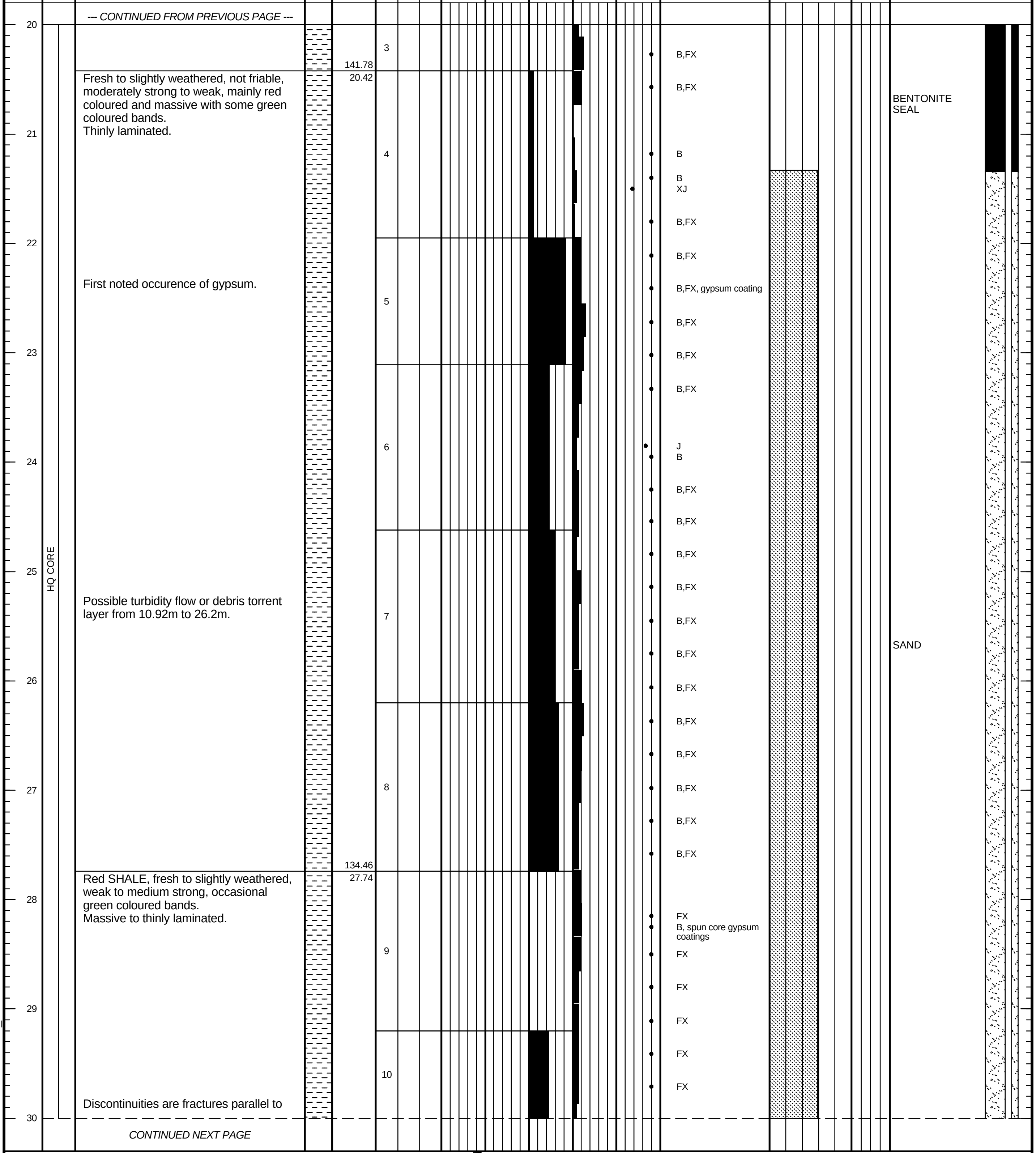
DATUM:

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



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ELEV. / DEPTH (m)	DESCRIPTION
141.78 20.42	Fresh to slightly weathered, not friable, moderately strong to weak, mainly red coloured and massive with some green coloured bands. Thinly laminated. First noted occurence of gypsum. Possible turbidity flow or debris torrent layer from 10.92m to 26.2m.
134.46 27.74	Red SHALE, fresh to slightly weathered, weak to medium strong, occasional green coloured bands. Massive to thinly laminated. Discontinuities are fractures parallel to

TYPE AND SURFACE DESCRIPTION:

B,FX
B,FX
B
B
XJ
B,FX
B,FX
B,FX, gypsum coating
B,FX
B,FX
B,FX
J
B
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
B,FX
FX
B, spun core gypsum coatings
FX
FX
FX
FX
FX

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 4 OF 4

LOCATION: Refer to Plan

DRILLING DATE: July 24 & 25, 2002

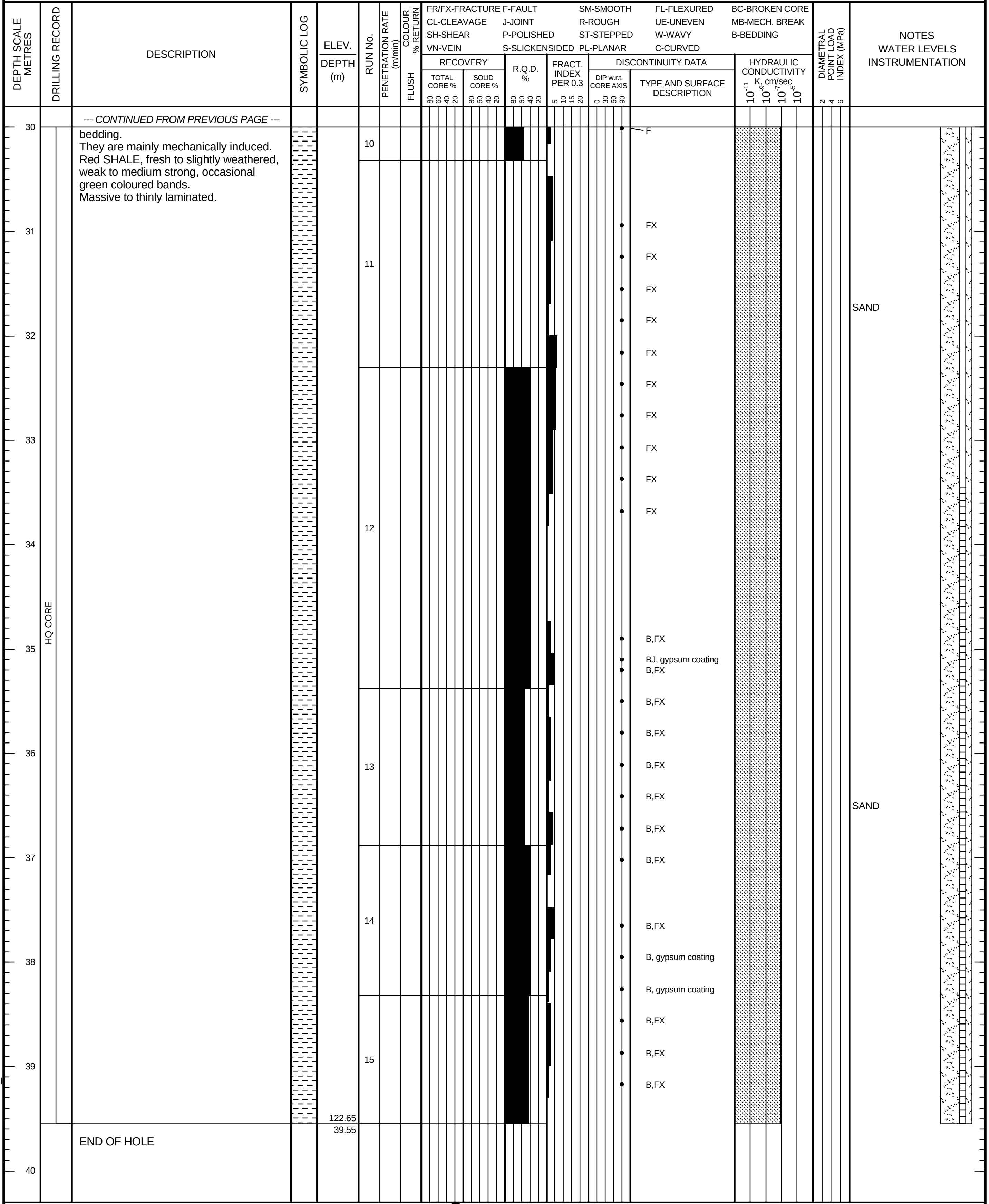
DATUM:

DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

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

122.65
39.55

END OF HOLE

DEPTH SCALE
1 : 50

Golder Associates

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:

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

CONTINUED NEXT PAGE

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

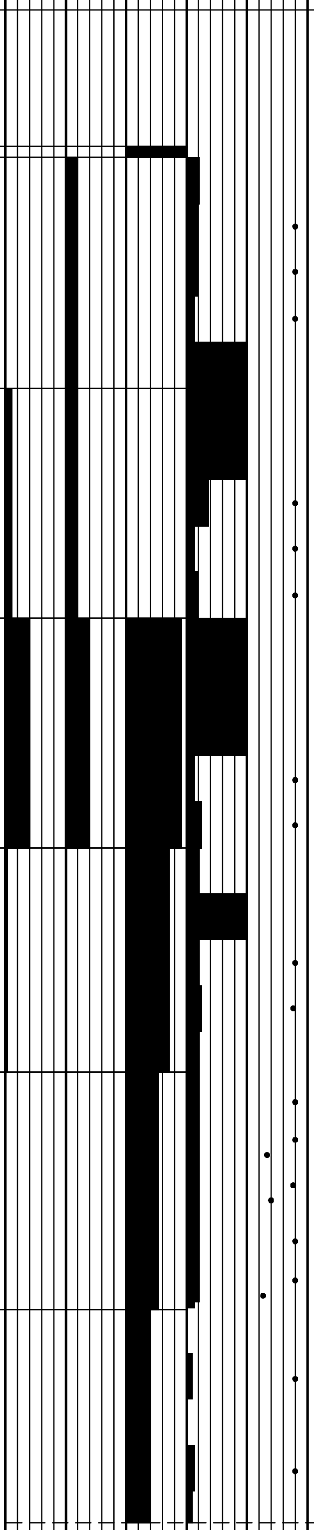
DRILL RIG: CME 75

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

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.
		--- *CONTINUED FROM PREVIOUS PAGE* ---		
10	Overburden	Inferred top of rock, moist, red-brown (80%) and green (20%), highly weathered, very weak, friable SHALE.		
11	RQ Core	Red SHALE, very weak R1/R2, friable, moderate to highly weathered (W3-W5)	153.80 10.90	1 2 3 4
15.54		Moderately weathered, weak to medium strong, red shale. All fractures/breaks are bedding parallel.	149.16 15.54	5 6 7
20		*CONTINUED NEXT PAGE*		



DISCONTINUITY DATA – TYPE AND SURFACE DESCRIPTION

Depth scale (m)	Type and surface description
11.45	B
11.75	B
12.05	B
13.25	B
13.55	B
13.85	B
15.10	B,FX
15.40	B,FX
16.30	B,FX
16.60	B,FX
17.20	B,FX
17.45	C XJ
17.75	B,FX XJ
18.15	B,FX
18.40	B,FX XJ
19.05	FX
19.65	FX
20.00	B,FX

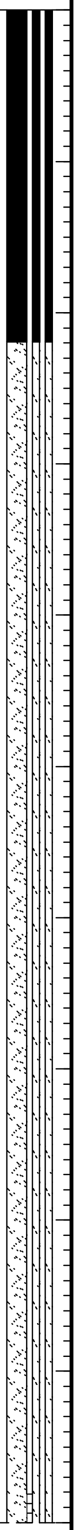
ROCK STRENGTH INDEX: R4 R3 R2 R1

WEATHERING INDEX: W1 W2 W3 W4

NOTES, WATER LEVELS, INSTRUMENTATION

BENTONITE SEAL

SAND



DEPTH SCALE

1 : 50

Golder Associates

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:

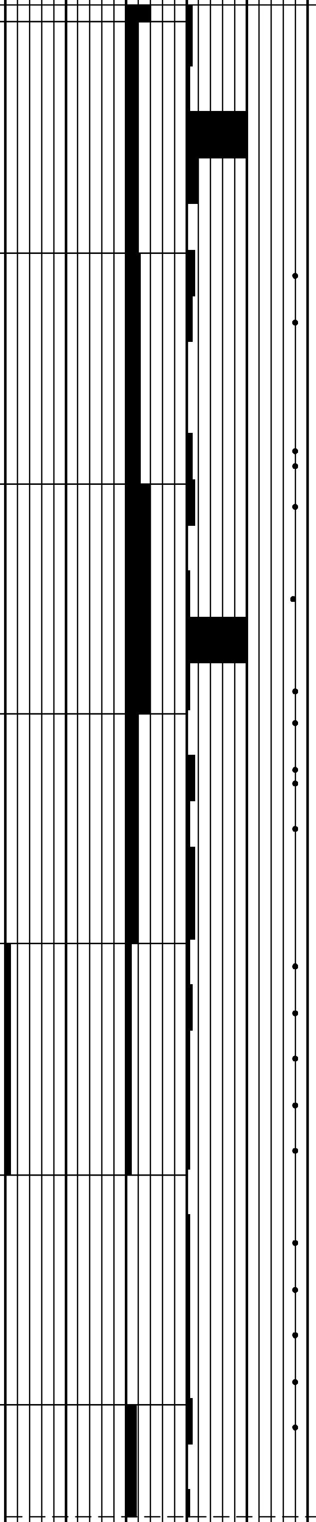
DRILL RIG: CME 75

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

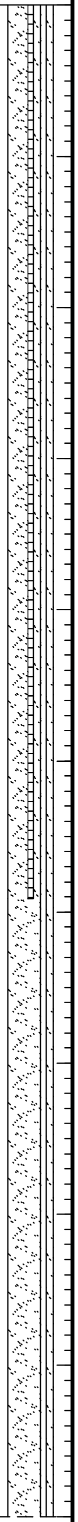
FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

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	
21					B,FX	
		Weak to medium strong, friable, Tends to break along red.green colour contacts.	143.06 21.64	9	B,FX	
22					B,FX	
23					B,FX B	
		Fractures/breaks all bedding and smooth.		10	B,FX	
24					B,FX B,FX	
25				11	B,FX B,FX B,FX B,FX	
26				12	B,FX B,FX	
27					B,FX B,FX B,FX	
28				13	B,FX B,FX B,FX	SAND
29					B,FX	
		Slightly weathered, red (90%) and green (10%), medium strong, finely laminated SHALE.	135.44 29.26	14	FX,B	
30		*CONTINUED NEXT PAGE*				



ROCK STRENGTH INDEX R4 R3 R2 R1

WEATHERING INDEX W1 W2 W3 W4



DEPTH SCALE
1 : 50

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 4 OF 5

LOCATION: Refer to Plan

INCLINATION: -90° AZIMUTH: ---

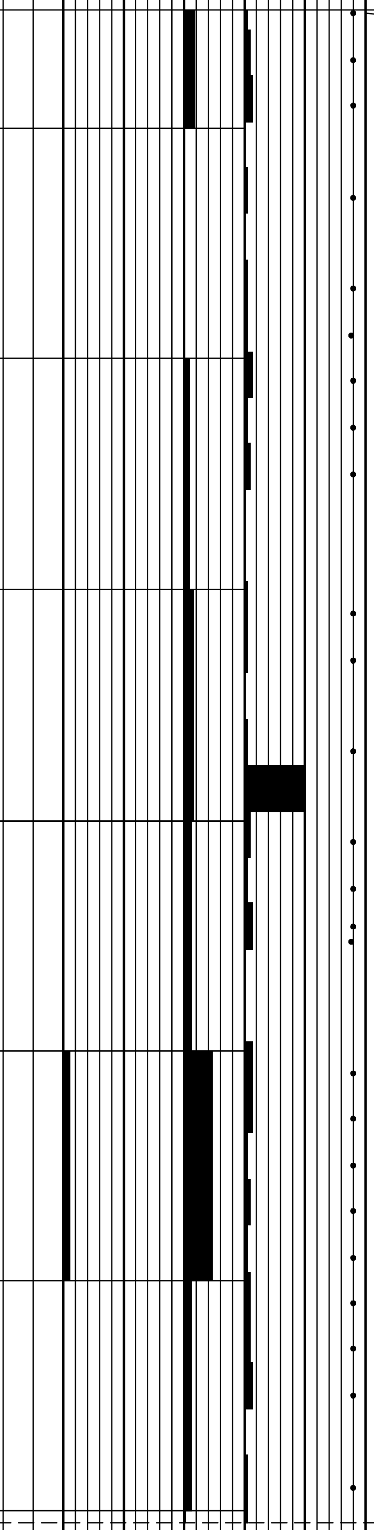
DRILLING DATE: July 4-9, 2002
DRILL RIG: CME 75
DRILLING CONTRACTOR: ALL TERRAIN DRILLING

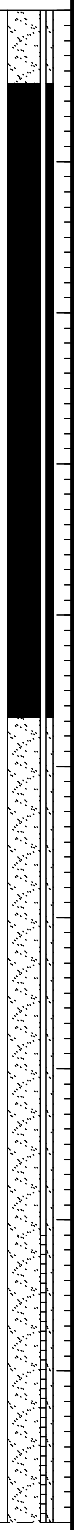
DATUM:

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

--- 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
30	RQ Core	Slightly weathered, red (90%) and green (10%), medium strong, finely laminated SHALE.			FX,B	SAND
				14	FX,B	
					F,B	
31				15	FX,B	
		This interval not friable.			FX,B	
32					B,J, gypsum	
					B,FX	BENTONITE SEAL
					B,FX	
33				16	B,FX, gypsum	
		Fractures are all bedding parallel, smooth and planar.				
34					B,FX	
					B,FX	
		Green portions appear to be stronger.		17		
35					B,FX	
		Red-brown, moderately weathered (red) to slightly weathered (green) shale. Medium strong, (R2), friable (especially one day after recovery).	129.35 35.35		B,FX	
					B,FX	
36				18	B,FX B	
37					B,FX	
					B,FX	
				19	B,FX	
38					B	
					B,FX	
					B,FX	
39					B,FX	
				20	B,FX	SAND
					B,FX	
40						





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DEPTH SCALE
1 : 50

LOGGED: MR
CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW4

SHEET 5 OF 5

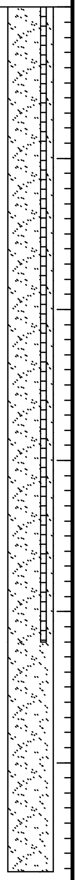
LOCATION: Refer to Plan
INCLINATION: -90° AZIMUTH: ---

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

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	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						



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:

DRILL RIG: CME 75

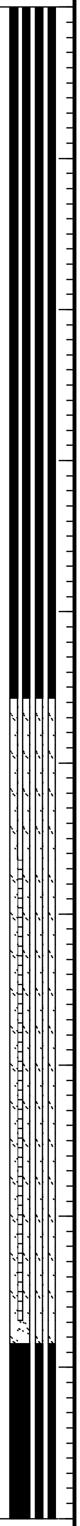
INCLINATION: -90° AZIMUTH: ---

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	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	
		Brown, moist, dense silty sand to silty gravel. (SM-GM)	155.01 5.49	
6		Brown, moist, compact sand, trace some silt, some sub-ang gravel & cobbles, trace clay.	154.25 6.25	
7				SAND
		Brown-yellow brown, wet, very dense sand TILL, some silt, clay, gravel and cobbles. (SM)	152.88 7.62	
8		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				

Column headings: 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



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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MR

CHECKED:

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW5

SHEET 2 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 10-11, 2002

DATUM:

INCLINATION: -90° AZIMUTH: ---

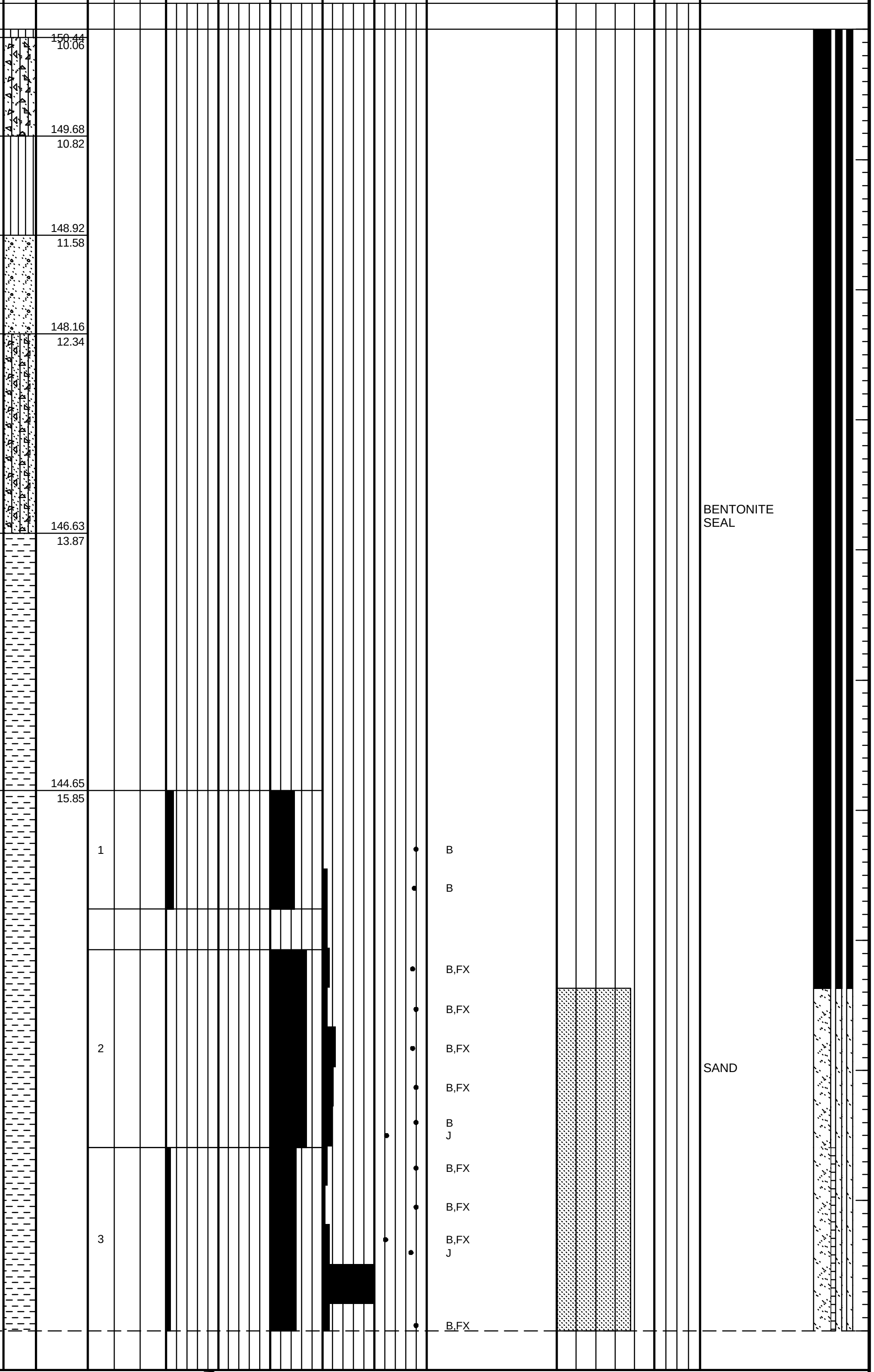
DRILL RIG: CME 75

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

--- 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	AUGER	Brown, dense, moist silty coarse gravelly sand to silty gravel TILL. (SM-GM)	150.44 10.06			
		Brown, dense moist SILT, trace gravel.	149.68 10.82			
11		Wet, dense, grey SAND and GRAVEL, some silt. (TILL) (SG-GM)	148.92 11.58			
12		Brown, moist, hard, cobbley, gravelly SILT TILL. (SM)	148.16 12.34			
13		BEDROCK, highly weathered, very weak, friable red shale, easily augered.	146.63 13.87			BENTONITE SEAL
14–15	HQ CORE					
16		Red SHALE, finely laminated, weak to moderately strong, slightly weathered.	144.65 15.85	1	B B	
17–18		Core is highly discked, reducing RQD.		2	B,FX B,FX B,FX B,FX B J	SAND
19–20				3	B,FX B,FX B,FX J B,FX	



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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

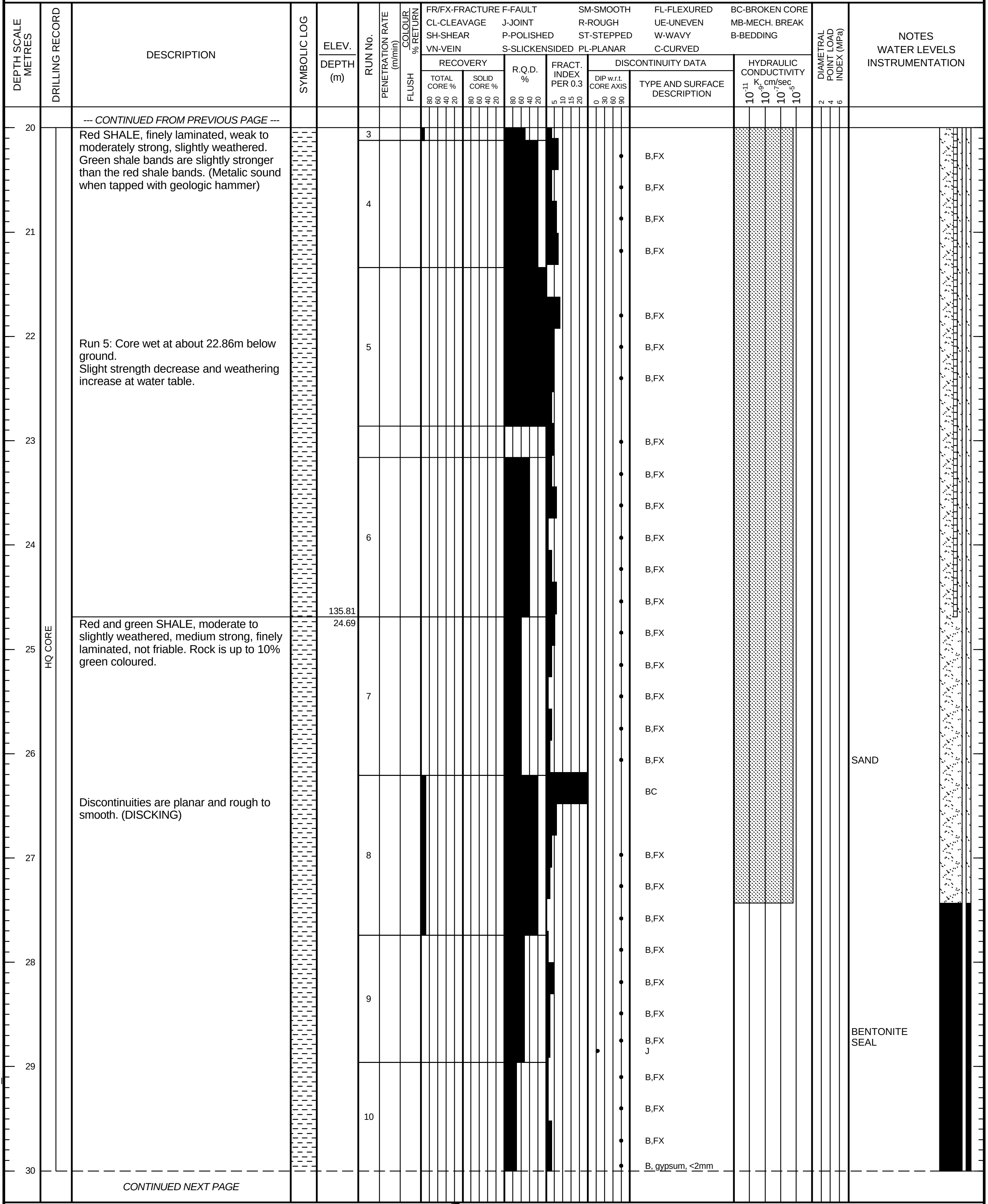
DATUM:

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



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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)

Run 5: Core wet at about 22.86m below ground.
Slight strength decrease and weathering increase at water table.

135.81
24.69

Red and green SHALE, moderate to slightly weathered, medium strong, finely laminated, not friable. Rock is up to 10% green coloured.

Discontinuities are planar and rough to smooth. (DISCKING)

TYPE AND SURFACE DESCRIPTION:

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
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

NOTES:

SAND

BENTONITE SEAL

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: MW5

SHEET 4 OF 5

LOCATION: Refer to Plan

DRILLING DATE: July 10-11, 2002

DATUM:

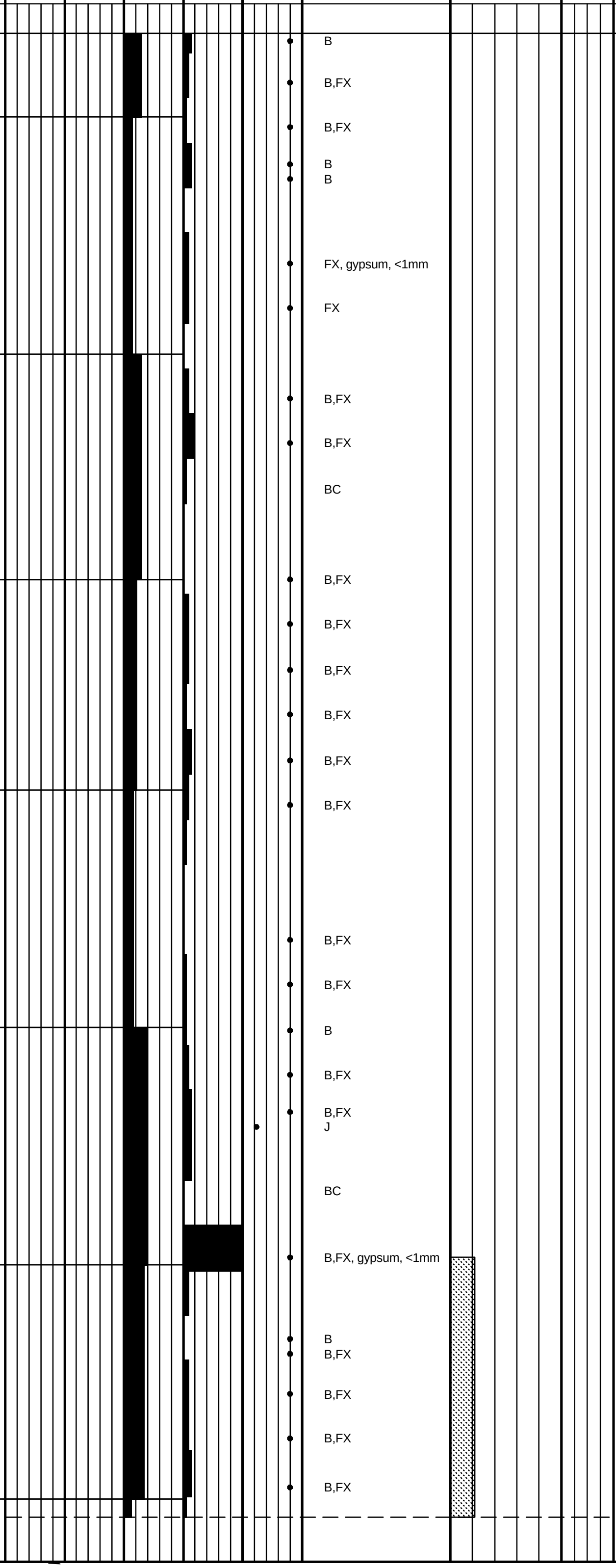
INCLINATION: -90° AZIMUTH: ---

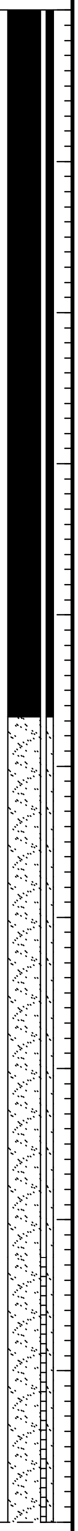
DRILL RIG: CME 75

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)	RUN No.	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
30		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.			B	
				10	B,FX	
					B,FX	
					B	
31					B	
				11	FX, gypsum, <1mm	
					FX	
32		Red SHALE, moderately strong, cannot be scratched with knife, slightly weathered. Finely laminated. Friable.	128.50 32.00			BENTONITE SEAL
					B,FX	
				12	B,FX	
33					BC	
					B,FX	
34					B,FX	
				13	B,FX	
					B,FX	
35	HQ CORE				B,FX	
					B,FX	
36				14		
		Discontinuities are planar and smooth to rough. They tend to be perpendicular to the core axis. they are interpreted as bedding/mechanically induced fractures.			B,FX	
					B,FX	
					B	
37					B,FX	
					B,FX J	
				15	BC	
38		Red shale, finely laminated, some debris flow/turbidity bedding. (38.46m-38.55m)			B,FX, gypsum, <1mm	
					B B,FX	
39		Note that approximately 6%-10% of the recovered core is coloured green.		16	B,FX	SAND
					B,FX	
					B,FX	
40				17		
		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

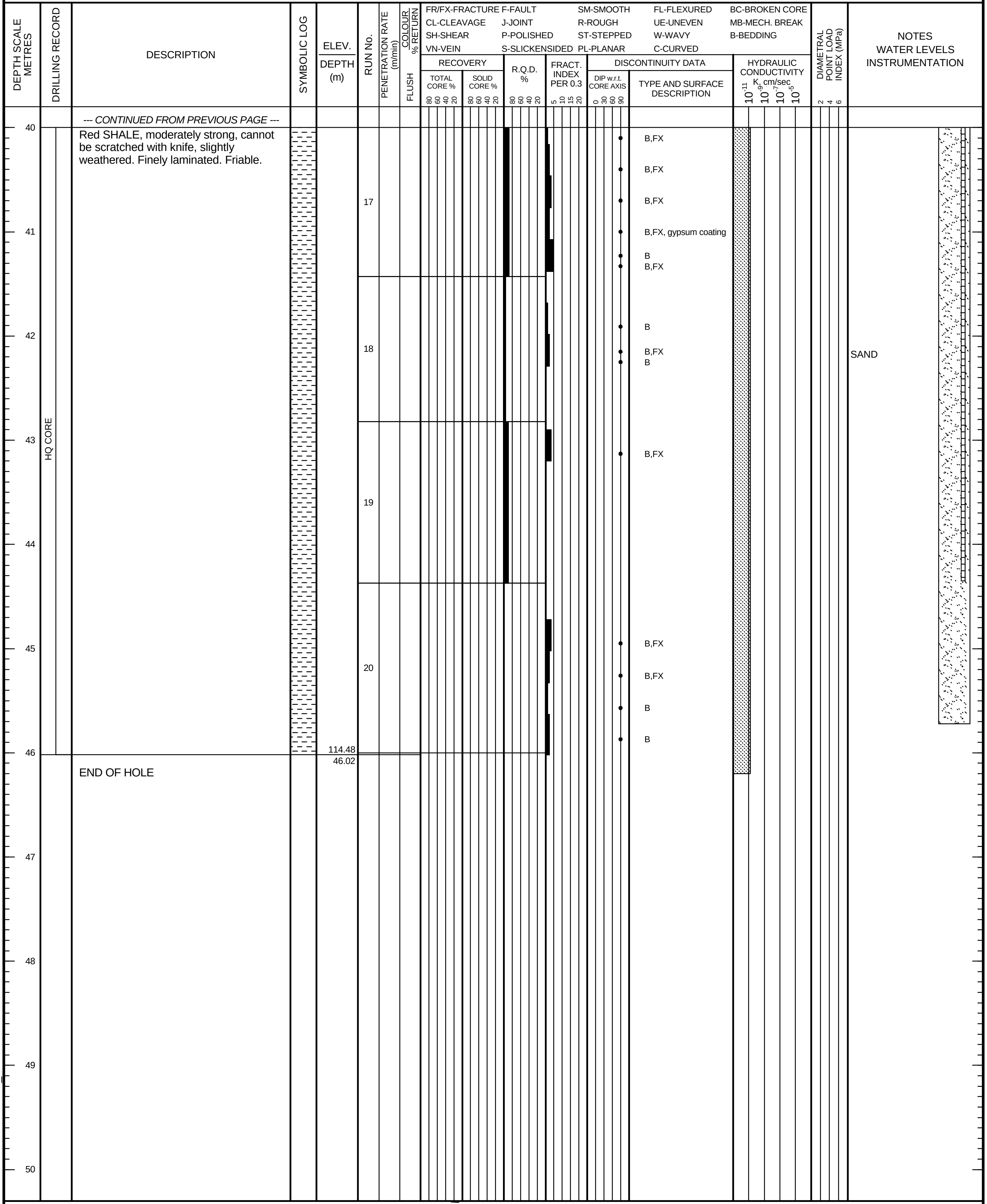
DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: ALL TERRAIN DRILLING

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



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

114.48
46.02

END OF HOLE

B,FX

B,FX

B,FX

B,FX, gypsum coating

B

B,FX

B

B,FX

B

B,FX

B,FX

B,FX

B

B

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

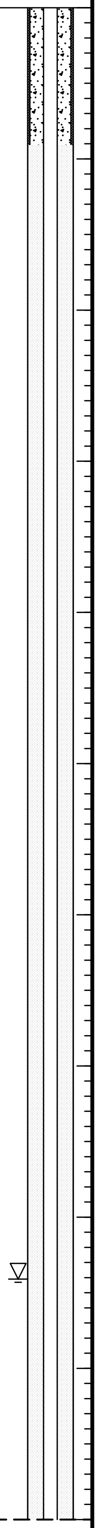
DRILLING CONTRACTOR: All-Terrain Drilling Limited

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.

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	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
		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																					
3		Occasional cobbles after 2.74 m depth																			
4				162.83 4.20																	
		Compact, moist to wet, brown SANDY SILT with some gravel, and occasional cobble, subrounded to subangular, heterogeneous (TILL)																			
5																					Grout
6				160.63 6.40																	
		Compact, saturated, brown SAND with some gravel and silt																			
7																					
8				158.87 8.16																	
		Compact, wet, brown SILT with some sand and gravel																			∇
		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

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:

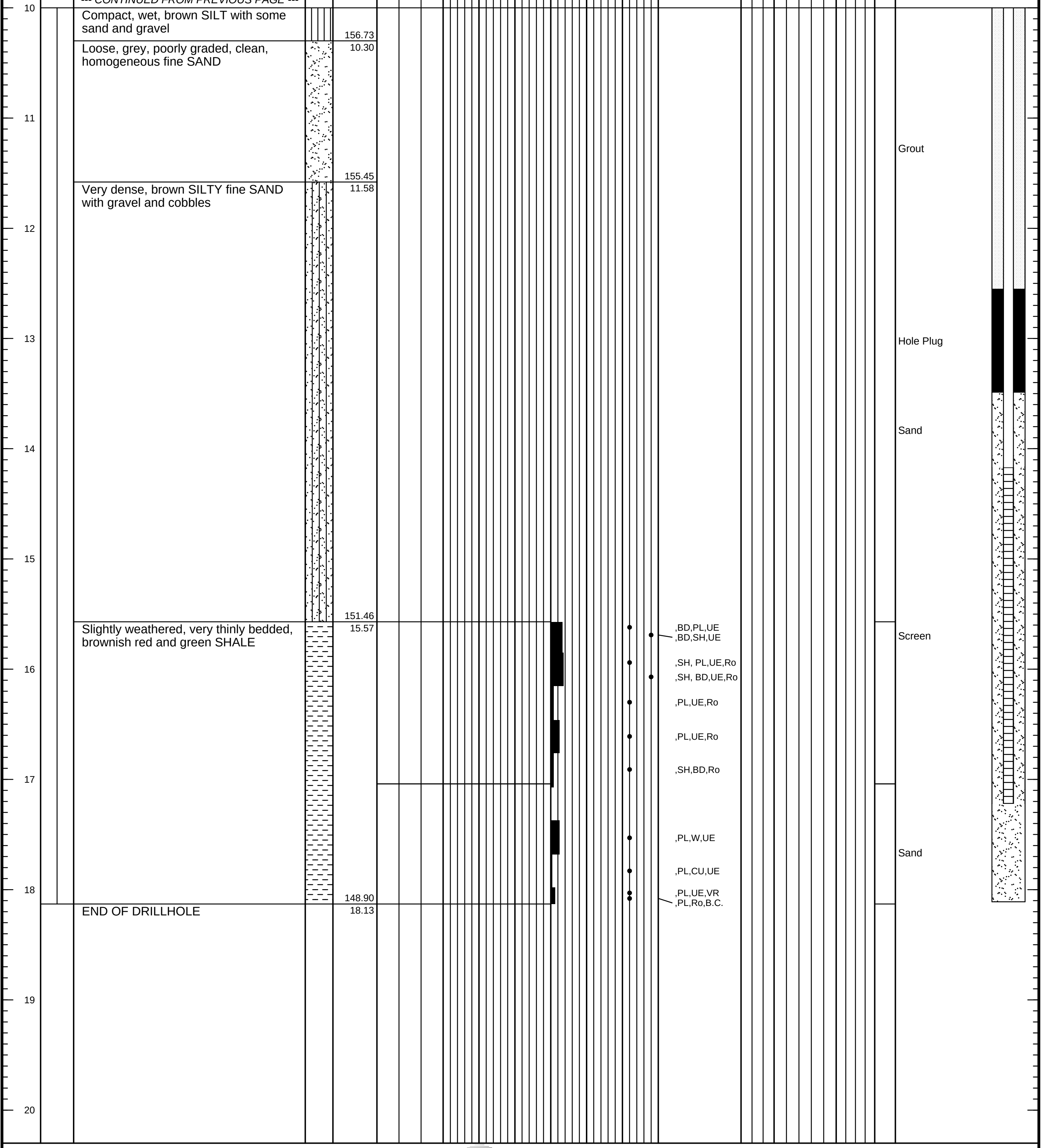
JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

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

Columns: 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

1 : 50

LOGGED: AI

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-06S

SHEET 1 OF 2

LOCATION: N 596351.0 ;E 4808892.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: July 6 and 10, 2007

DRILL RIG: CME - 75 Track Mount

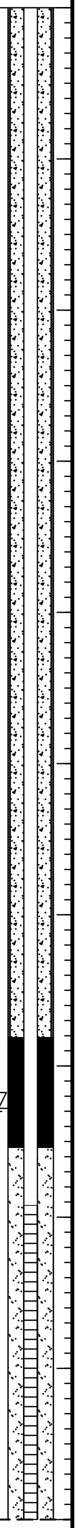
DRILLING CONTRACTOR: All-Terrain Drilling Limited

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	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
		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																			
3		Slightly moist, brown SANDY SILT, some clay, cobble/gravel bands (TILL)		162.70 3.35																	Cement
5		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
8		Reddish brown SILT, trace gravel (TILL)		158.13 7.92																	Screen
9		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:

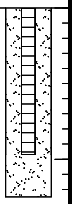
INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME - 75 Track Mount

DRILLING CONTRACTOR: All-Terrain Drilling Limited

JN - Joint	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	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
		--- 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																					



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

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

DRILLING DATE: July 3 to 5, 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

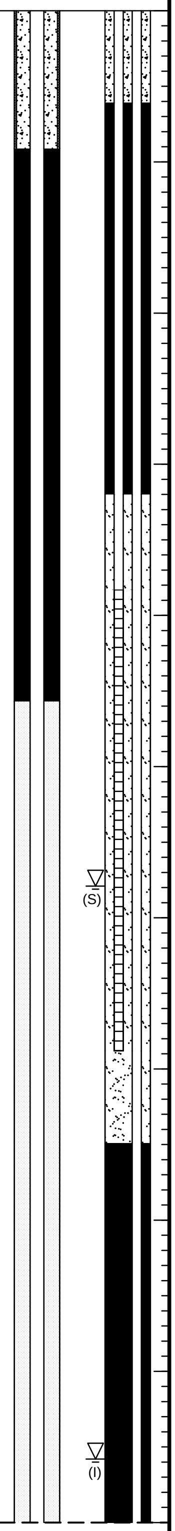
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

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		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																	
		Stiff, reddish brown SILTY CLAY (Weathered Shale)		155.78 9.75																	(I)
10																					



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DEPTH SCALE
1 : 50

Golder Associates

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

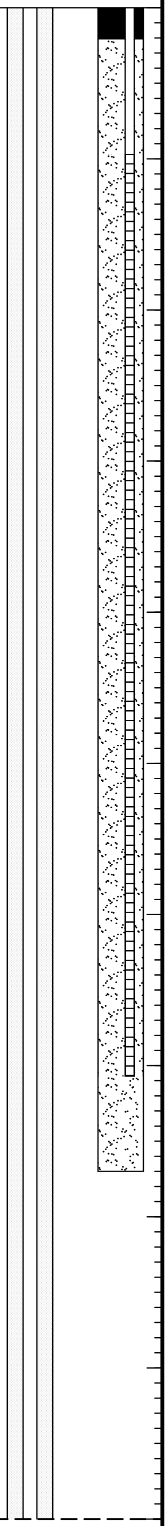
DATUM:

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	

Columns: 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.	TYPE AND SURFACE DESCRIPTION
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	,JN,IR,Ro ,JN,IR,Ro ,JN,IR,Ro
14			2	,JN,IR,Ro ,FO,IR,Ro ,BD,IR,Ro ,JN,IR,Ro
15			3	,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
17			4	
18			5	,FR,IR,Ro ,JN,PL,SM ,JN,IR,Ro
18			6	,FO,PL,SM ,FO,IR,Ro ,FO,IR,Ro ,JN,PL,Ro
20				



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DEPTH SCALE

1 : 50

Golder Associates

LOGGED: AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 3 OF 5

LOCATION: N 596166.0 ;E 4809014.0

DRILLING DATE: July 3 to 5, 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

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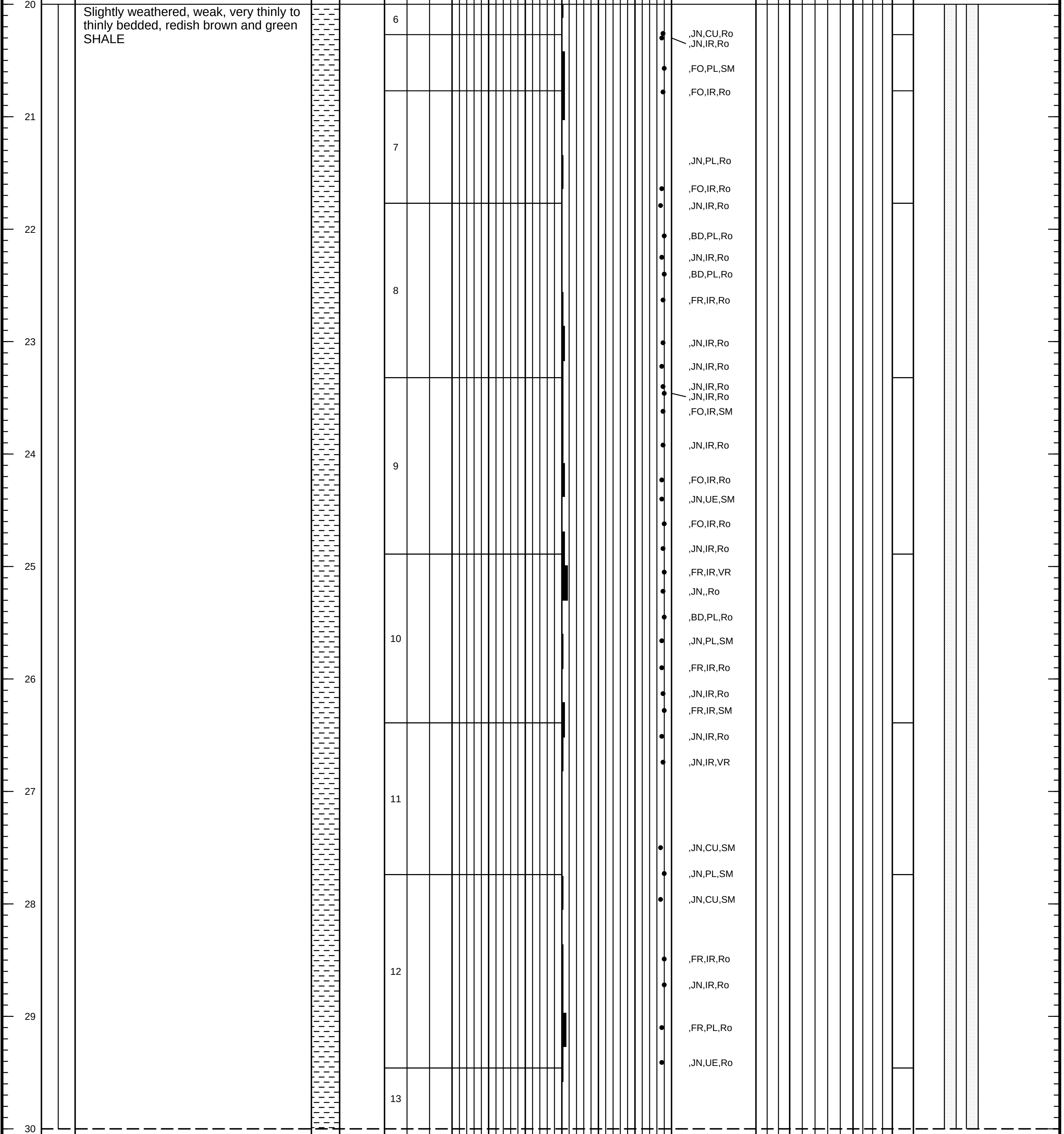

Slightly weathered, weak, very thinly to thinly bedded, redish brown and green SHALE

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

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DEPTH SCALE
1 : 50

Golder Associates

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-09

SHEET 4 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

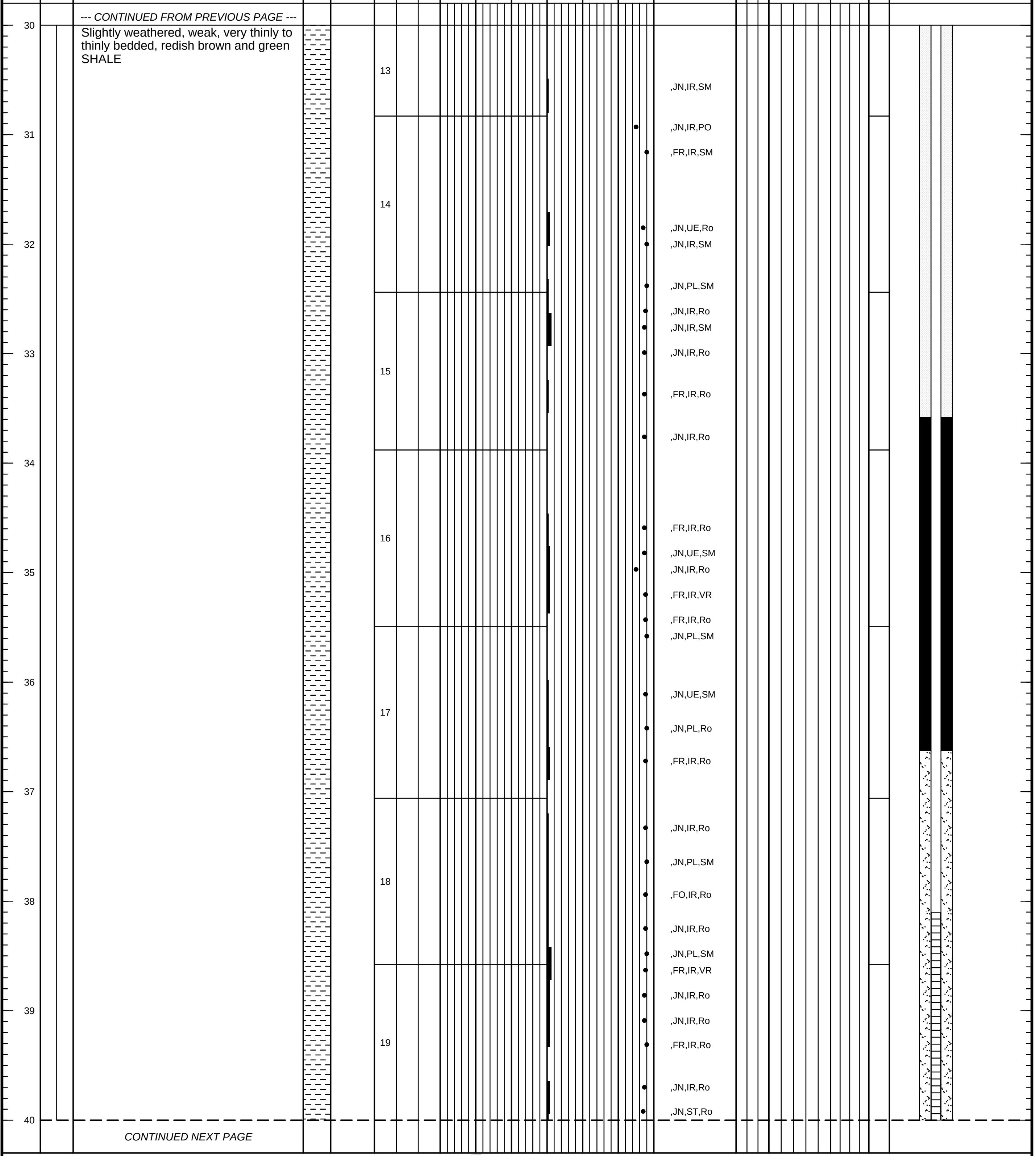
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

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)	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	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



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

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

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

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:

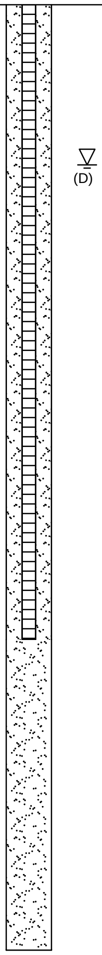
JN - Joint
FLT - Fault
SHR- Shear
VN - Vein
CJ - Conjugate
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular
PO- Polished
K - Slickensided
SM- Smooth
Ro - Rough
MB- Mechanical Break
BR - Broken Rock

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

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE min/(m)	COLOUR % RETURN	FLUSH	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3 m	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	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, thinly bedded, redish brown and green SHALE		125.43 40.10	19 20 21								,JN,IR,Ro ,JN,IR,Ro ,JN,PL,SM ,JN,IR,Ro ,JN,CU,SM ,FR,IR,Ro ,JN,IR,Ro ,FR,IR,Ro ,FR,IR,VR ,FR,IR,VR ,FR,IR,Ro ,JN,CU,SM				(D)
43		Slightly weathered, weak, layered, redish brown and green SHALE		122.43 43.10	22 23								,JN,IR,Ro ,FR,IR,Ro ,JN,PL,SM ,JN,IR,Ro ,FR,IR,SM ,JN,PL,SM				
46		END OF DRILLHOLE		119.28 46.25													

Depth scale marks: 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

Scale values: RECOVERY 80 60 40 20; R.Q.D. 80 60 40 20; FRACT. INDEX 5 10 15 20; B Angle 0 90 180 270; DIP w.r.t. CORE AXIS 0 30 60 90; HYDRAULIC CONDUCTIVITY 10^{-6} 10^{-5} 10^{-4} 10^{-3}; Point Load Index 2 4 6; Jr Ja Jn



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

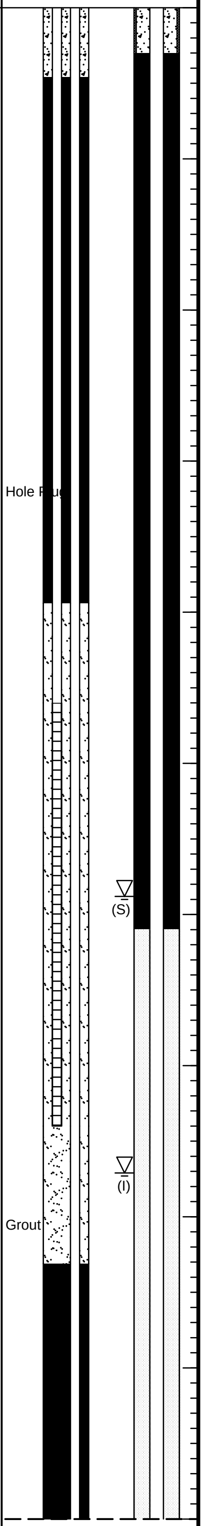
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

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)	COLOUR % RETURN FLUSH	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
								80 60 40 20	80 60 40 20	80 60 40 20	5 10 15 20	0 90 180 270	0 30 60 90					10^{-6} 10^{-5} 10^{-4} 10^{-3}	2 4 6		
		GROUND SURFACE		166.78																	
0		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)																			
1																					
2																					
3																					Hole Plug
4				162.72																	
		Very soft, reddish brown very fine SANDY SILT with semirounded gravel and cobbles (TILL)		4.06																	
5																					
6																					(S)
7																					(I)
8				158.25																	Grout
		Stiff, reddish brown CLAYEY SILT with trace sand and gravel (TILL)		8.53																	
9				157.79																	
		Soft, grey brown fine SILTY SAND with gravel (TILL)		8.99																	
				157.18																	
		Stiff, grey brown very fine SANDY SILT with coarse sand, gravel and cobble s (TILL)		9.60																	
10																					



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DEPTH SCALE
1 : 50

Golder Associates

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

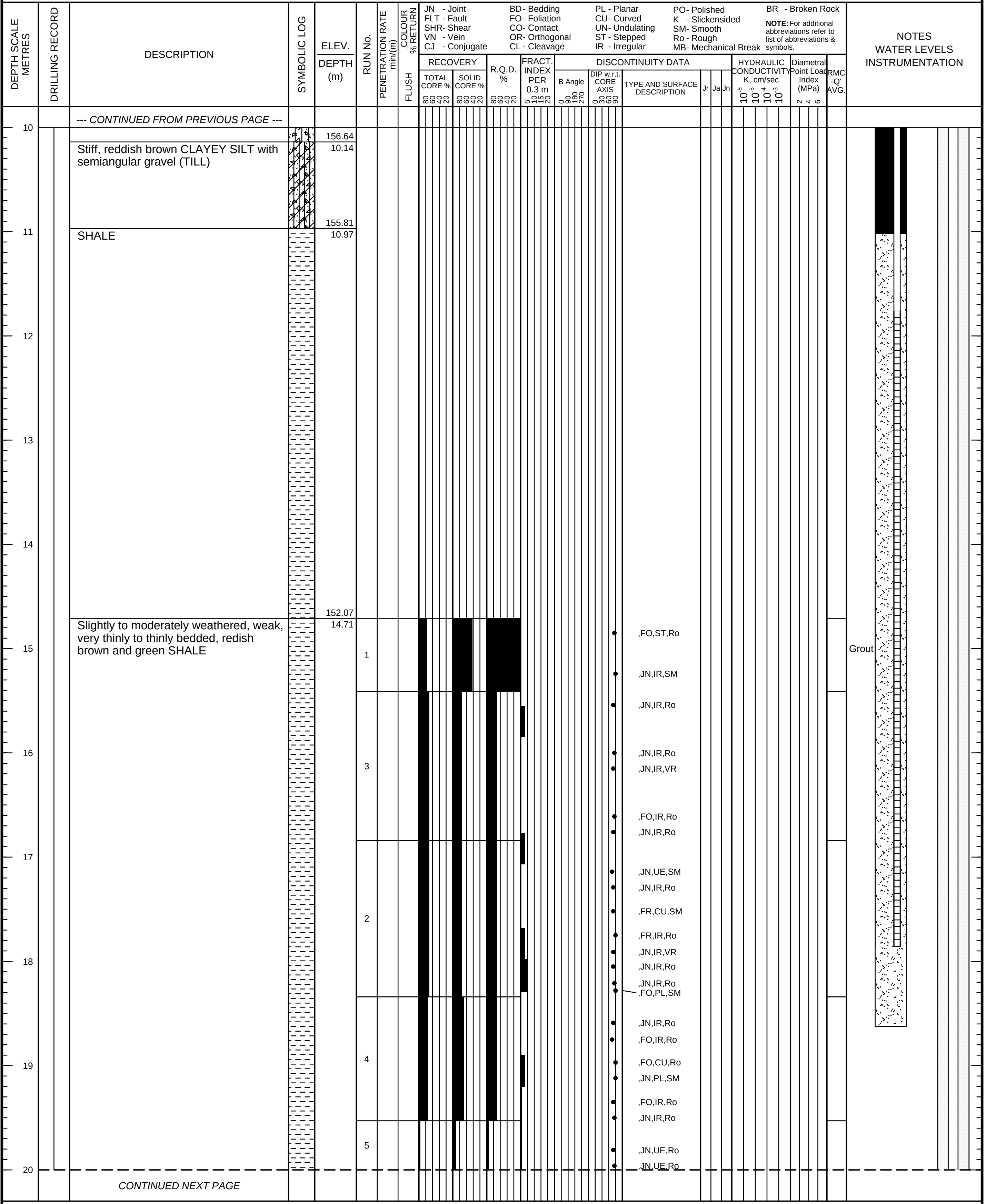
BD- Bedding
FO- Foliation
CO- Contact
OR- Orthogonal
CL - Cleavage

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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Depth scale (m)	Description	Elev. / Depth (m)
10		156.64 10.14
	Stiff, reddish brown CLAYEY SILT with semiangular gravel (TILL)	155.81 10.97
11	SHALE	152.07 14.71
	Slightly to moderately weathered, weak, very thinly to thinly bedded, redish brown and green SHALE	

Discontinuity 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

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

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

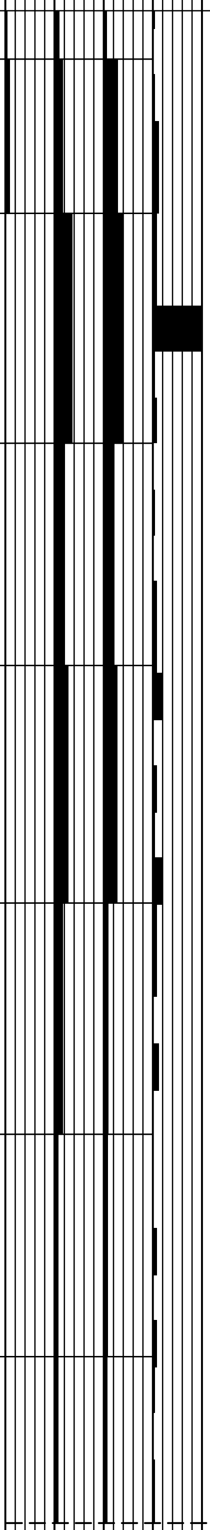
DRILLING CONTRACTOR: All-Terrain Drilling Limited

DATUM:

JN - Joint
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)	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 to moderately weathered, weak, very thinly to thinly bedded, redish brown and green SHALE			5																	
21					6										,JN,IR,SM ,FO,ST,Ro ,FO,PL,SM ,BD,IR,Ro ,FO,IR,Ro ,FO,ST,SM							
		Highly weathered, very weak, thinly bedded, redish brown and green SHALE		145.48 21.30	7										,FO,PL,SM ,JN,PL,SM ,JN,IR,Ro ,JN,IR,Ro ,JN,IR,Ro ,FO,ST,Ro ,JN,IR,Ro							
22																						
23		Slightly weathered, weak, redish brown and green SHALE		143.98 22.80	8										,FR,PL,SM ,FR,ST,SM ,JN,PL,SM ,JN,IR,Ro ,JN,UE,SM ,FR,IR,Ro							
24					9										,JN,IR,Ro ,BD,PL,SM ,BD,IR,Ro ,FO,PL,SM ,JN,ST,Ro ,FO,IR,SM ,JN,PL,SM ,JN,PL,SM							
25																						Grout
26					10										,FO,IR,Ro ,FO,IR,Ro ,JN,IR,Ro							
27																						
28					11										,FR,IR,Ro ,JN,IR,Ro							
29					12										,FO,PL,SM ,FO,ST,SM ,JN,UE,SM							
30		*CONTINUED NEXT PAGE*																				Hole Plug



DEPTH SCALE
1 : 50

LOGGED: AK
CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-10

SHEET 4 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 % 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, redish brown and green SHALE			12									,JN,CU,SM ,JN,IR,Ro							
31					13									,FO,IR,Ro ,FO,IR,Ro ,FO,IR,Ro							
32					14									,JN,PL,SM ,JN,UE,SM ,JN,PL,SM ,FR,IR,Ro							
33														,JN,PL,SM ,FR,ST,SM ,FO,IR,Ro ,JN,PL,SM							Hole Plug
34					15									,JN,IR,Ro ,JN,PL,SM ,JN,IR,Ro							
35					16									,JN,IR,Ro ,JN,PL,SM							
36														,FO,IR,Ro ,JN,PL,SM							
37					17									,JN,UE,SM ,FR,IR,Ro ,FR,IR,Ro							Sand
38					18									,JN,IR,Ro ,JN,PL,SM ,FO,IR,Ro							
39																					Screen
40					19																
		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	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 ---

40

Slightly weathered, weak, redish brown and green SHALE

Run 19: ,FR,ST,SM; ,JN,PL,SM; ,FO,PL,SM

41

,JN,IR,Ro; ,JN,IR,Ro

Run 20: ,JN,PL,VR

42

,JN,PL,Ro; ,JN,IR,Ro

Run 21

43

,JN,ST,Ro; ,JN,UE,Ro

Run 22: ,FR,UE,Ro

44

,JN,PL,Ro; ,JN,ST,SM; ,JN,UE,SM

Run 23: 45

,FO,PL,SM; ,JN,IR,Ro

121.11
45.67

END OF DRILLHOLE

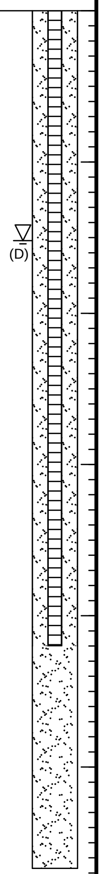
46

47

48

49

50



Screen

Sand

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

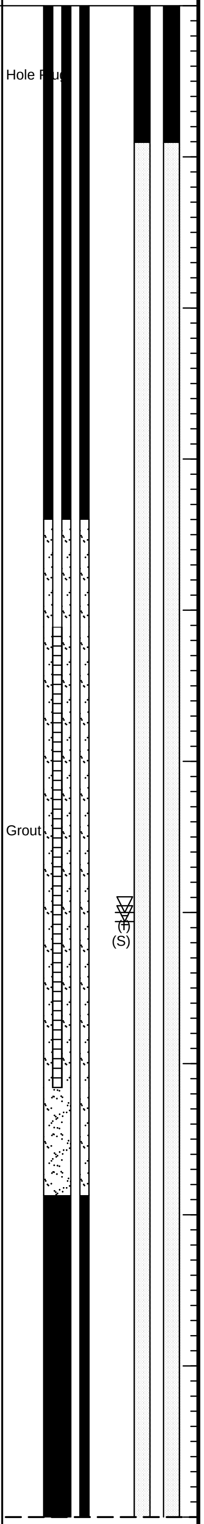
PL - Planar
CU- Curved
UN- Undulating
ST - Stepped
IR - Irregular

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)	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
		GROUND SURFACE		168.31																	
0		Compact, dry, brown SILT, trace clay (TILL)		0.00																	
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																					
6																					
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	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

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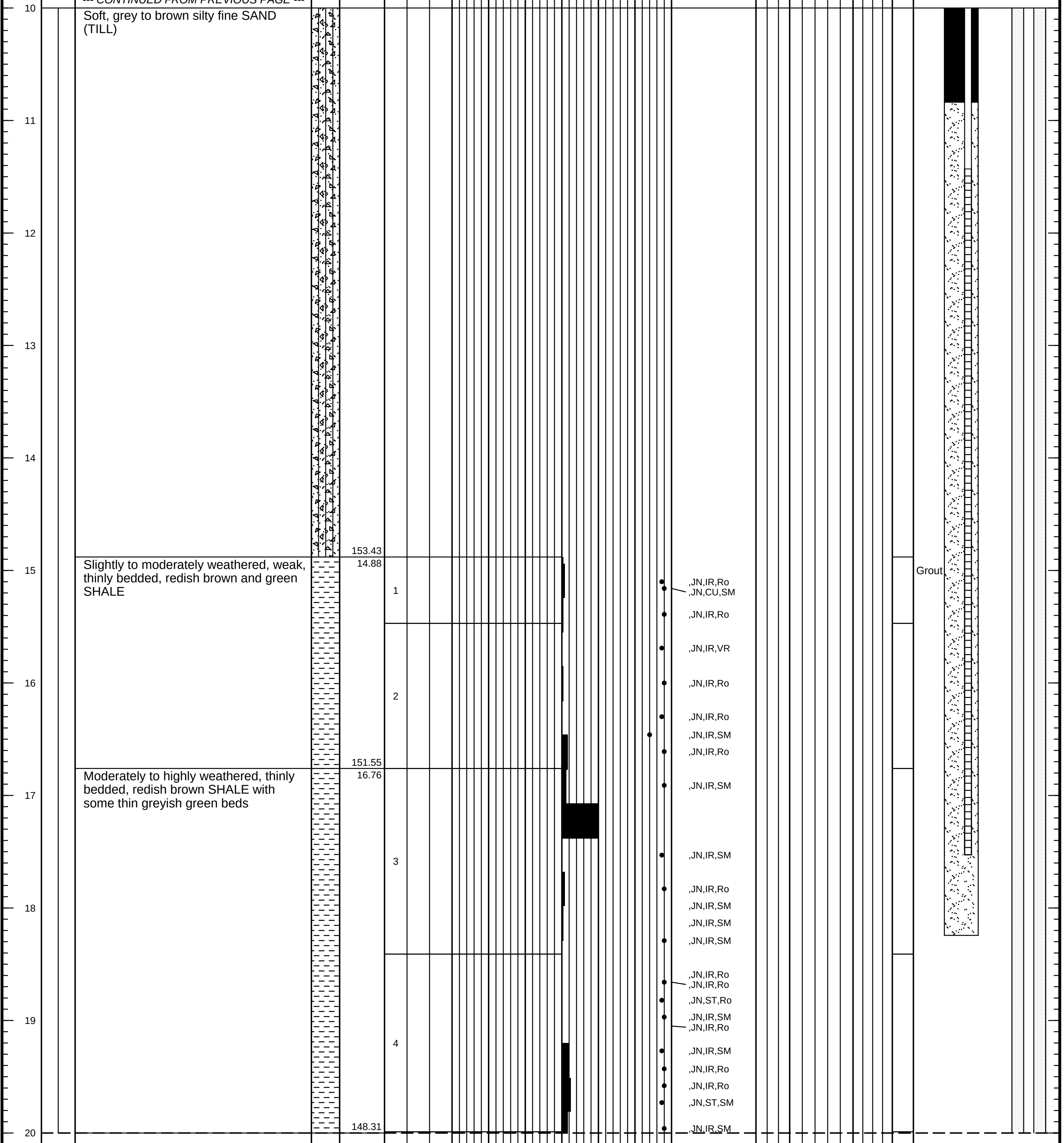

Depth scale (m)	Description	Elev. / Depth (m)	Run No.
10	Soft, grey to brown silty fine SAND (TILL)		
15	Slightly to moderately weathered, weak, thinly bedded, redish brown and green SHALE	153.43 14.88	1 2
17	Moderately to highly weathered, thinly bedded, redish brown SHALE with some thin greyish green beds	151.55 16.76	3 4
20		148.31	

Type and surface description:

,JN,IR,Ro
,JN,CU,SM
,JN,IR,Ro
,JN,IR,VR
,JN,IR,Ro
,JN,IR,Ro
,JN,IR,SM
,JN,IR,Ro
,JN,IR,SM
,JN,IR,SM
,JN,IR,Ro
,JN,IR,SM
,JN,IR,SM
,JN,IR,SM
,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

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD & AK
CHECKED: SW

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	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	

Column headings: 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

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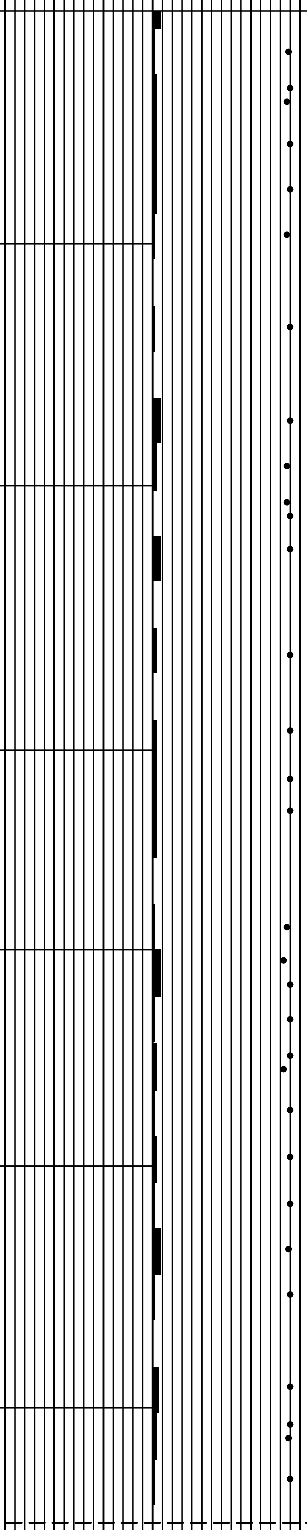


DEPTH SCALE METRES	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
20	Slightly weathered, thinly bedded, redish brown SHALE with some thin green beds	20.00	5	,JN,IR,Ro ,JN,IR,SM ,JN,IR,Ro ,JN,IR,Ro ,JN,IR,Ro ,JN,IR,Ro	
21–22			6	,JN,IR,SM ,JN,IR,SM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

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50

LOGGED: MD & AK

CHECKED: SW

PROJECT: 021-1228

RECORD OF DRILLHOLE: MW-11

SHEET 4 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:

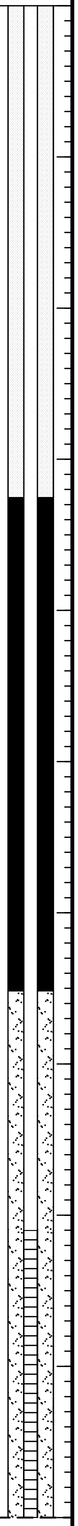
JN - Joint	BD - Bedding	PL - Planar	PO - Polished	BR - Broken Rock
FLT - Fault	FO - Foliation	CU - Curved	K - Slickensided	**NOTE:** For additional abbreviations refer to list of abbreviations & symbols.
SHR - Shear	CO - Contact	UN - Undulating	SM - Smooth	
VN - Vein	OR - Orthogonal	ST - Stepped	Ro -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

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 ---

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

DEPTH SCALE METRES	RUN No.	TYPE AND SURFACE DESCRIPTION	NOTES WATER LEVELS INSTRUMENTATION
30	11	,JN,IR,Ro	
	12	,JN,IR,SM	
31		,JN,IR,Ro	
		,JN,IR,SM	
		,JN,IR,Ro	
		,JN,IR,Ro	Grout
		,JN,IR,Ro	
32		,JN,IR,Ro	
	13	,JN,IR,Ro	
		,JN,IR,Ro	
33		,JN,IR,Ro	
		,JN,IR,Ro	
		,JN,IR,Ro	
		,JN,IR,SM	
		,JN,IR,Ro	
		,JN,UE,Ro	
34	14	,JN,IR,SM	
		,JN,IR,PO	Hole Plug
35	15	,JN,IR,SM	
		,JN,IR,Ro	
36		,JN,IR,Ro	
	16	,JN,PL,SM	
37		,JN,IR,SM	Sand
		,JN,PL,PO	
38		,FR,IR,Ro	
		,JN,PL,Ro	
	17	,JN,CU,Ro	
39			Screen
	18	,JN,IR,Ro	
40			



CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: MD & AK
CHECKED: SW

RECORD OF DRILLHOLE: MW-11

PROJECT: 021-1228
SHEET 5 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	BD- Bedding	PL - Planar	PO- Polished	BR - Broken Rock
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	

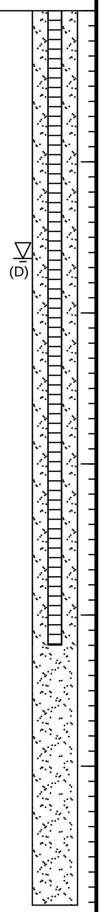
NOTE: For additional abbreviations refer to list of abbreviations & symbols.

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 ---

Depth (m)	Description	Elev. / Depth (m)	Run No.	Type and surface description	Notes
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 ,FR,ST,Ro ,JN,UE,Ro	(D) Screen
42.5			20	,JN,IR,Ro ,JN,IR,Ro ,JN,FL,Ro ,FR,PL,SM ,JN,CU,PO	
44.1			21	,JN,UE,SM ,JN,IR,Ro ,FR,IR,SM ,JN,IR,Ro	Sand
45.3			22	,JN,IR,Ro ,JN,ST,Ro ,JN,FL,Ro ,JN,IR,Ro ,JN,UE,Ro	
45.92	END OF DRILLHOLE	122.39 45.92			

Depth scale marks: 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50



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

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	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		167.64							
0	Air Rotary Drilling 152.4 mm Diameter	Dense, brown, fine grained SILT (TILL) (HALTON TILL)		0.00							
1											
2											
3											
4											▽ Sept. 14/07
5											
6		Dense, brown, fine grained SILT, some gravel , trace clay (TILL) (HALTON TILL)		161.54 6.10							
7											
8											
9											
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	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, fine grained SILT, some gravel , trace clay (TILL) (HALTON TILL)									
16		Weathered red SHALE		151.66 15.98							Casing ends at 15.98m depth Open hole to 18.29m depth
		END OF BOREHOLE		149.35 18.29							

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

DEPTH SCALE
1 : 50

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

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	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: 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				158.03 18.30							
		Dense, reddish brown fine grained SILT, some gravel (TILL) (HALTON TILL)									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	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	Dense, reddish brown fine grained SILT, some gravel (TILL) (HALTON TILL)	▨								
21											
22											
23											
24											
25											
26											
27											
28											
29											
30		*CONTINUED NEXT PAGE*									

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

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

Golder Associates

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

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 ---									
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
19		Red SHALE		147.03 19.82							
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: MD

CHECKED: SMD

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

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			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 ---									
20	Air Rotary Drilling 152.4 mm Diameter	Red SHALE		143.23 23.62							Casing ends at 20.4m depth Open hole to 23.62m depth
21											
22											
23											
		END OF BOREHOLE									
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	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	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	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

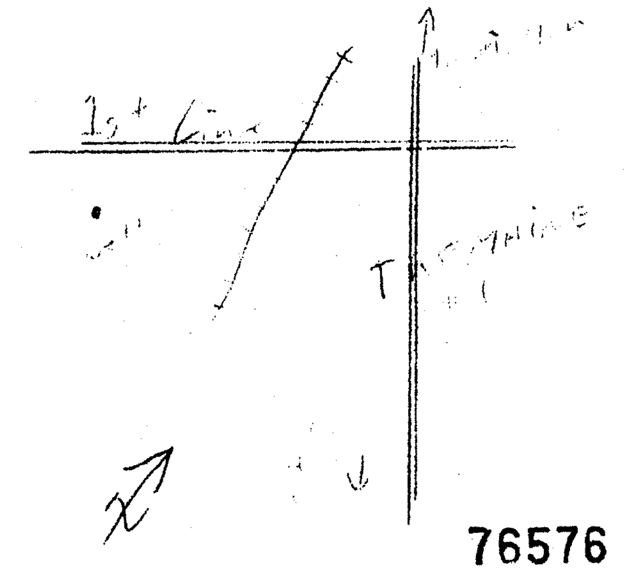
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING: FEET

RECOMMENDED PUMPING RATE: 4.0 GPM

LOCATION OF WELL

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



76576

DRILLERS REMARKS

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

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: J. Howe

WELL TECHNICIAN'S LICENCE NUMBER: T-0518

SIGNATURE OF TECHNICIAN/CONTRACTOR: John McCann

SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

FORM NO. 0506 (11/86) FORM 9

Well 25

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

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 UTM ZONE EASTING NORTHING RC. ELEVATION RC. BASIN CODE

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	16 ga	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	DEPTH TO TOP OF SCREEN FEET
GRAVEL PAK	

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	WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
20 FEET	FEET	22½ FEET	25 FEET	27½ FEET	30 FEET

IF FLOWING, GIVE RATE / 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

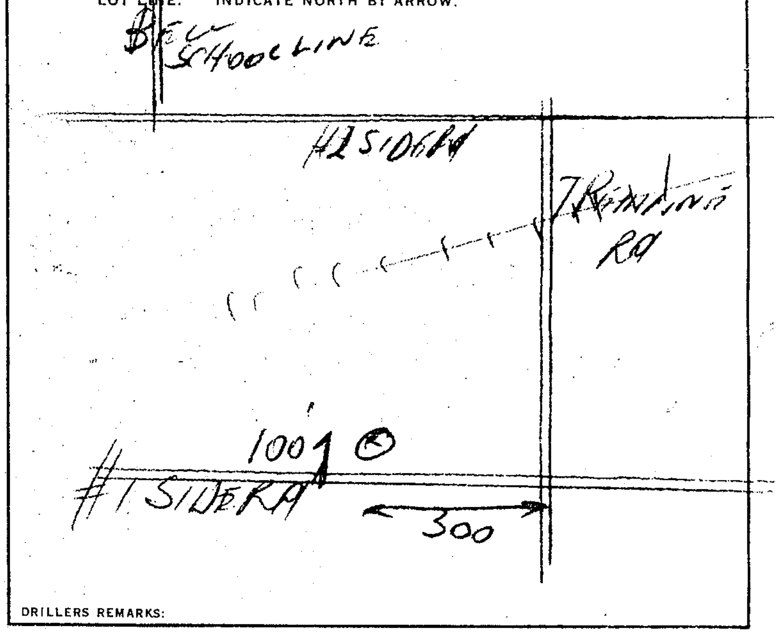
FINAL STATUS OF WELL
- 1 ☒ WATER SUPPLY
- 2 ☐ OBSERVATION WELL
- 3 ☐ TEST HOLE
- 4 ☐ RECHARGE WELL
- 5 ☐ ABANDONED, INSUFFICIENT SUPPLY
- 6 ☐ ABANDONED, POOR QUALITY
- 7 ☐ UNFINISHED

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 MIL
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:
P
WI

MINISTRY OF THE ENVIRONMENT COPY

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

11

MUNICIP. 10-14 | CON. 15-24

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 10 | EASTING 12-17 | NORTHING 18-24 | RC. 25 | ELEVATION 26 | RC. 30 | BASIN CODE 31 | II | III | IV 47

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		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 14 2 ☐ SALTY 4 ☐ MINERAL
15-18 85	1 ☒ FRESH 3 ☐ SULPHUR 19 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34 80 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	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	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

200 GALLONS DAY

STATIC LEVEL	WATER LEVEL END OF PUMPING	25 WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
19-21 FEET	22-24 FEET	26-28 FEET	29-31 FEET	32-34 FEET	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

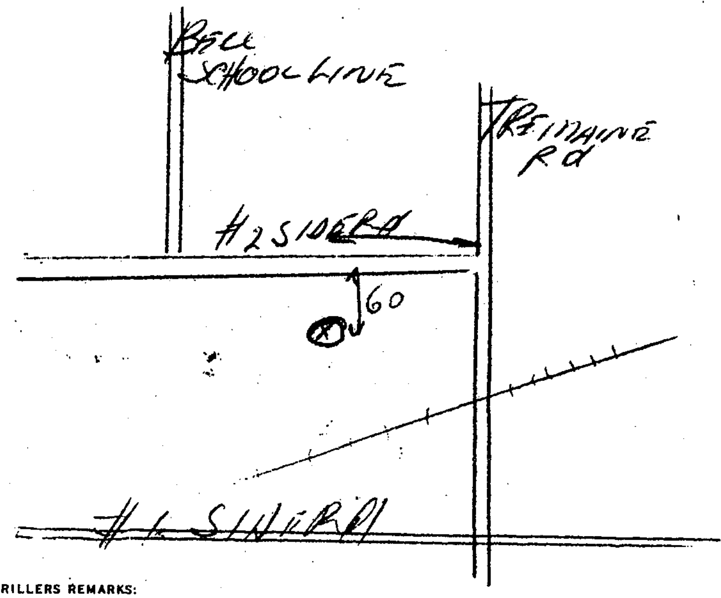
RECOMMENDED PUMP SETTING 43-45: 86 FEET

RECOMMENDED PUMPING RATE 46-49: 2 GPM.

50-53 ___ ___ ___ . ___ GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

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.

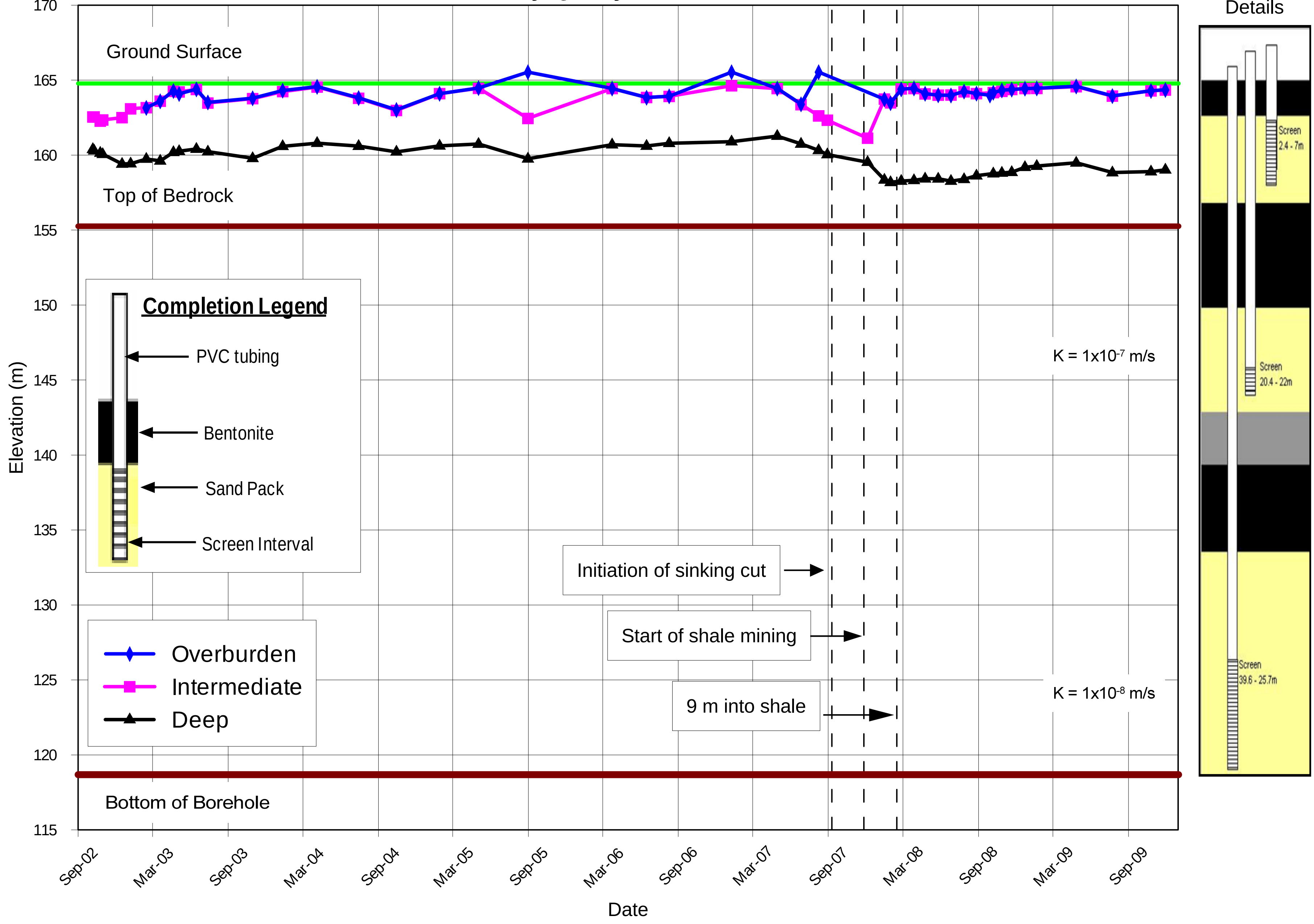


Figure C.2: Monitoring Well MW-2 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

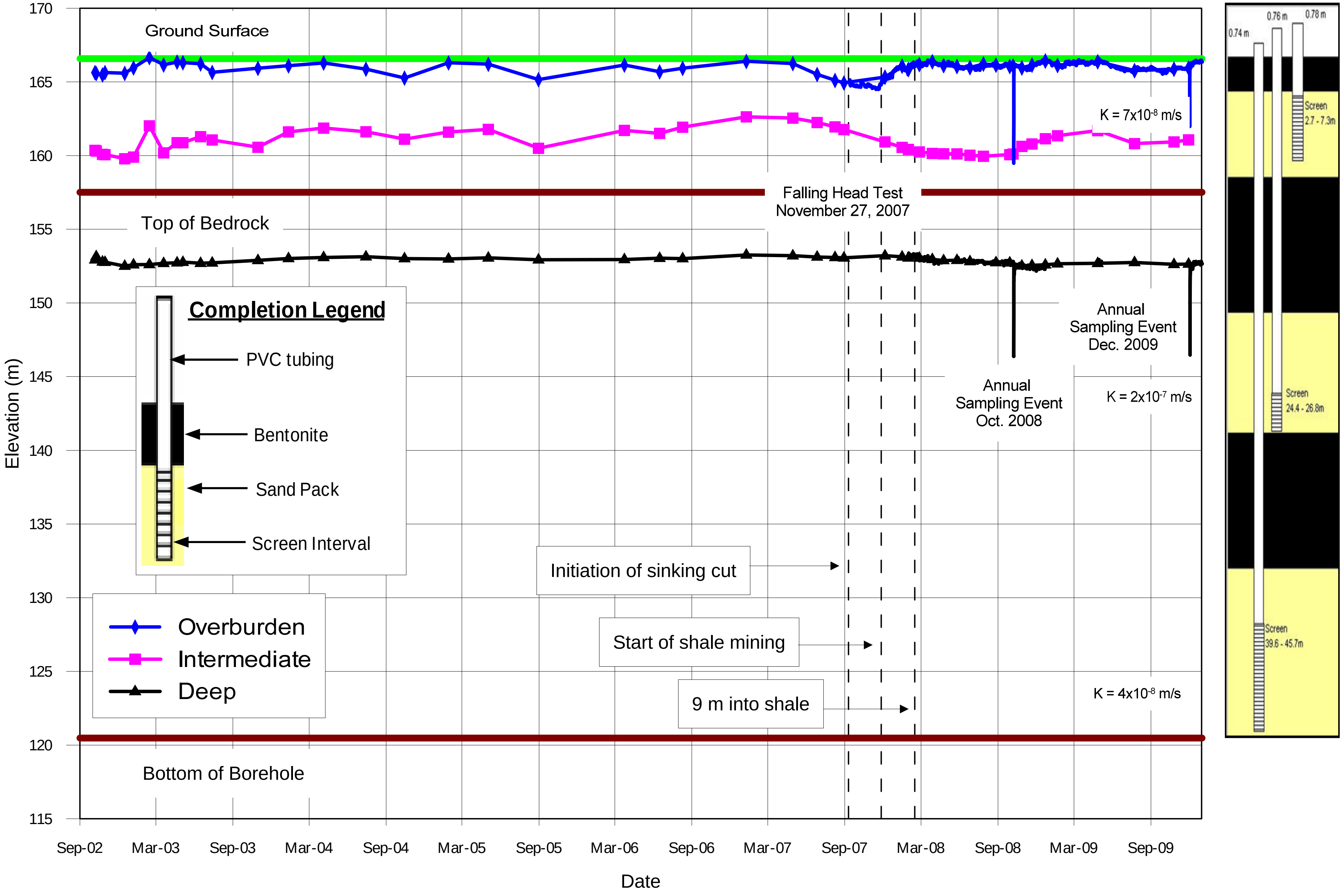


Figure C.3: Monitoring Well MW-03 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

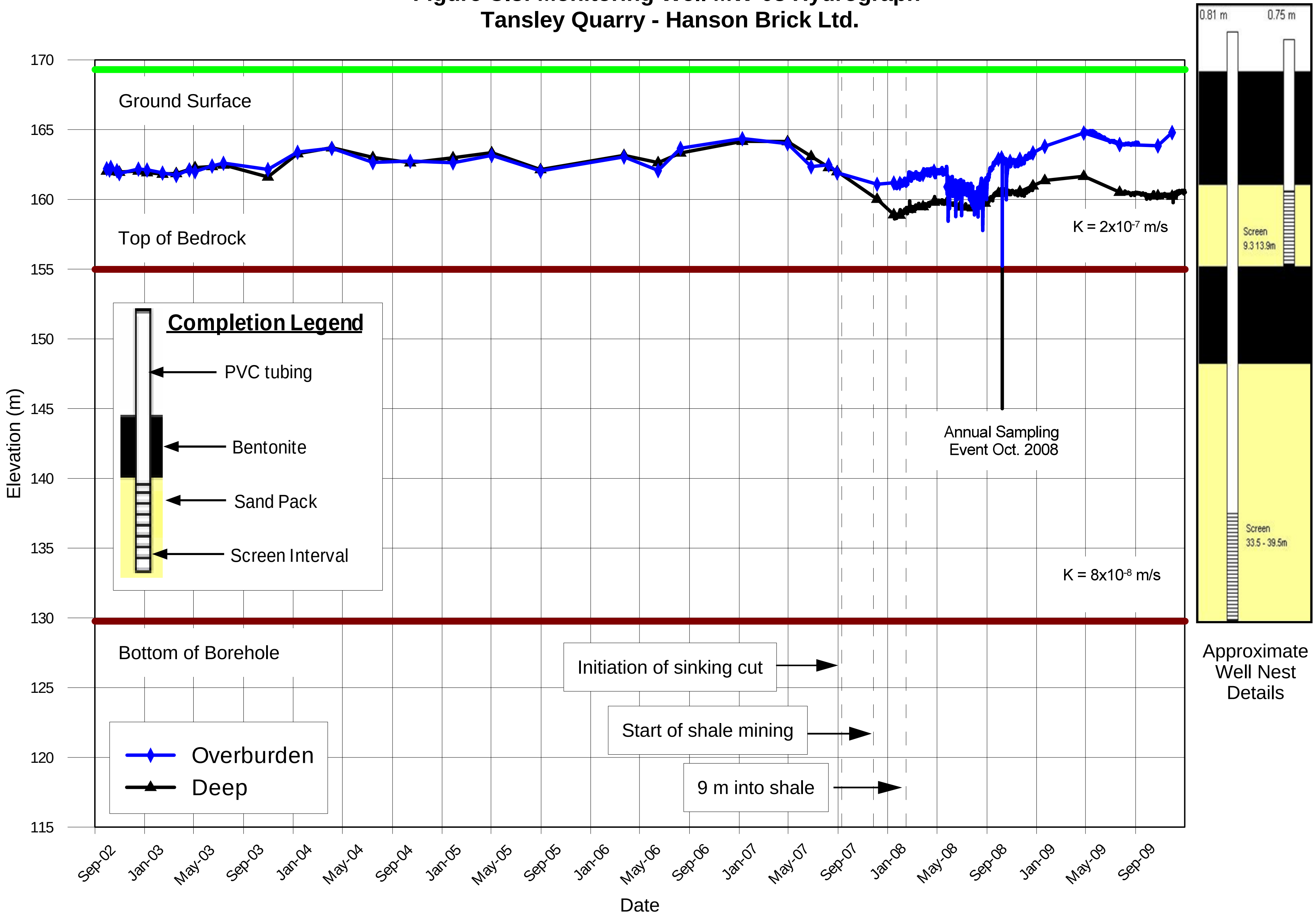


Figure C.4: Monitoring Well MW-04 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

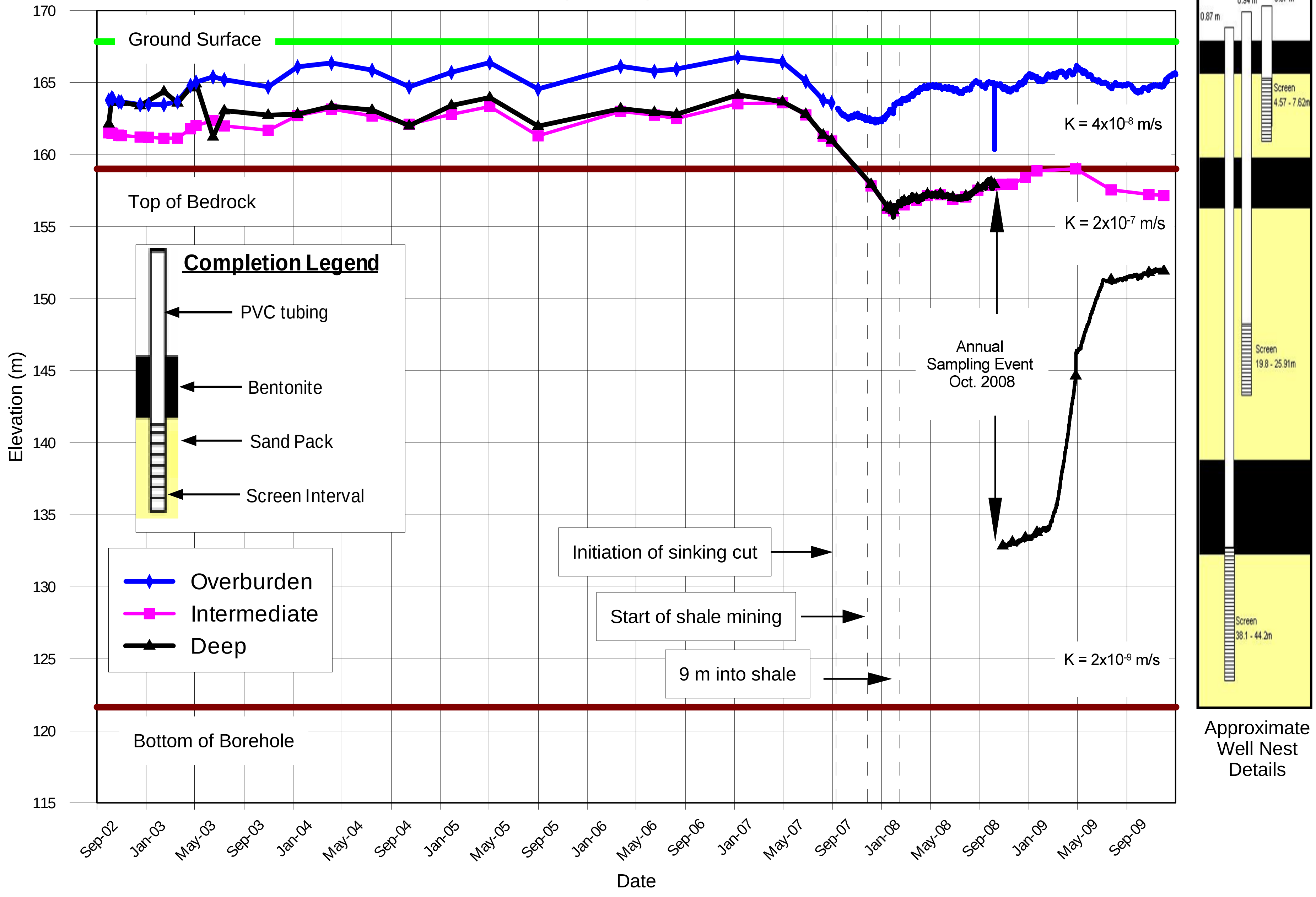


Figure C.5: Monitoring Well MW-05 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

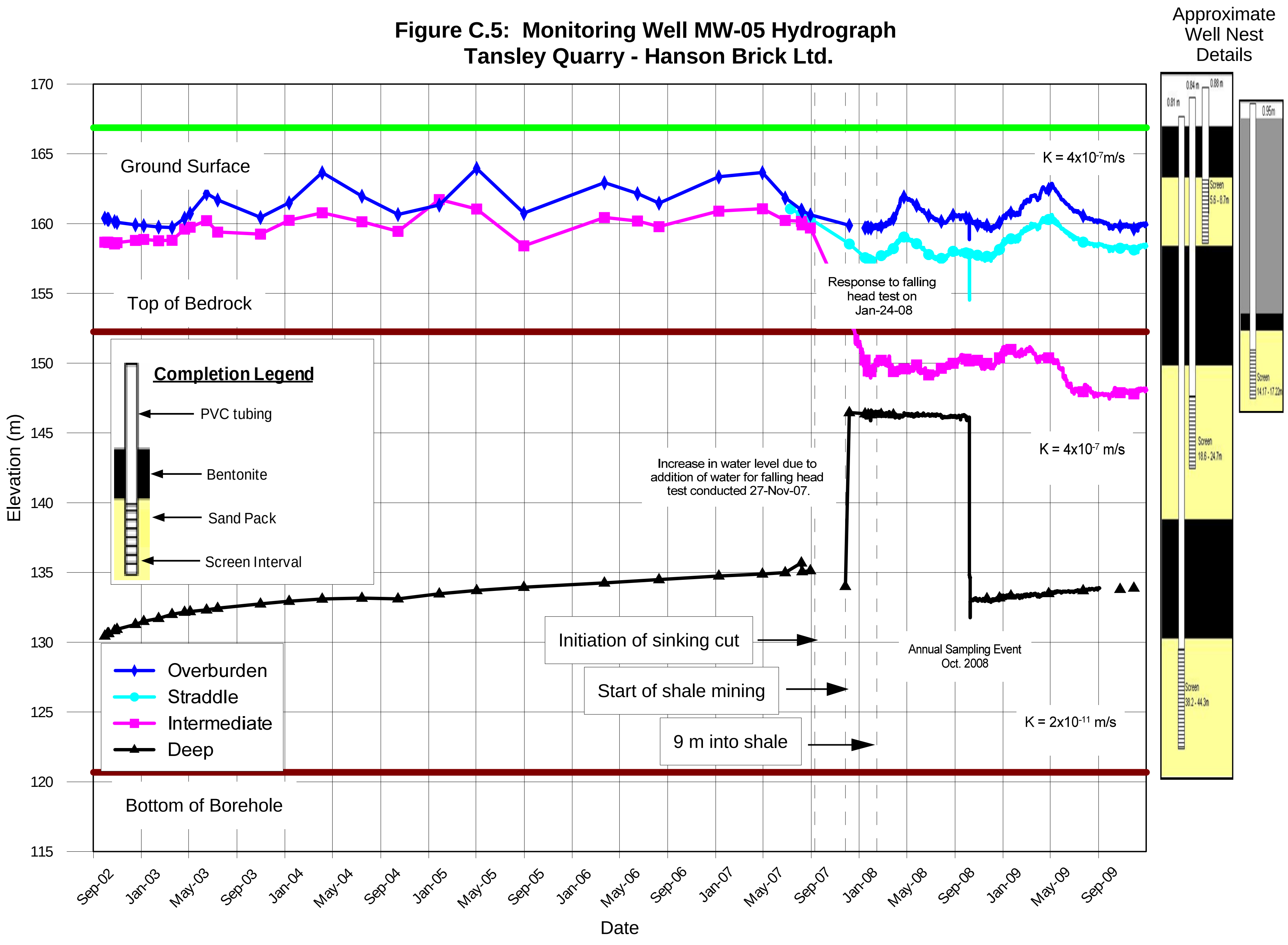


Figure C.6: Monitoring Well MW-06 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

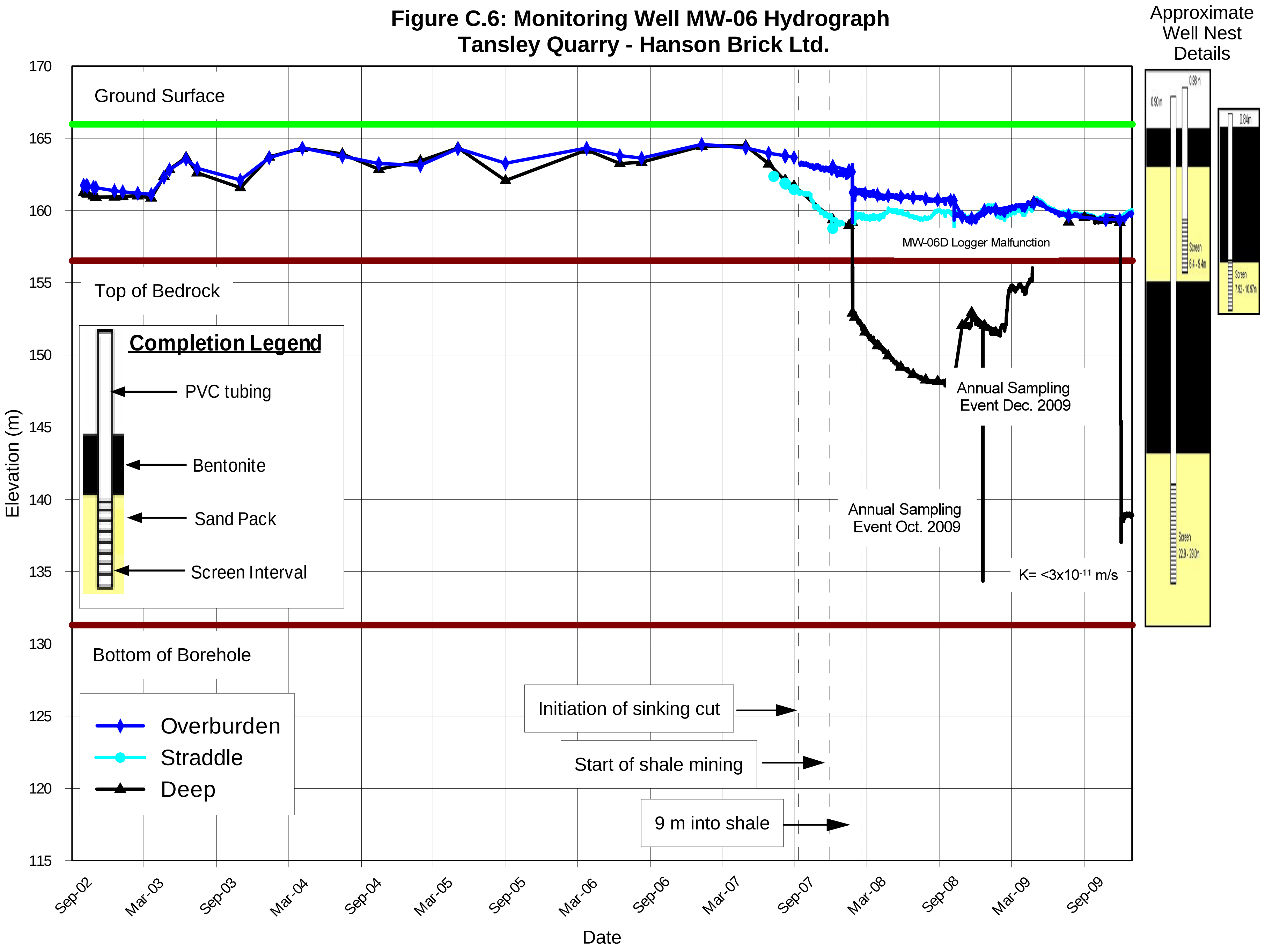


Figure C.7: Monitoring Well MW-07 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

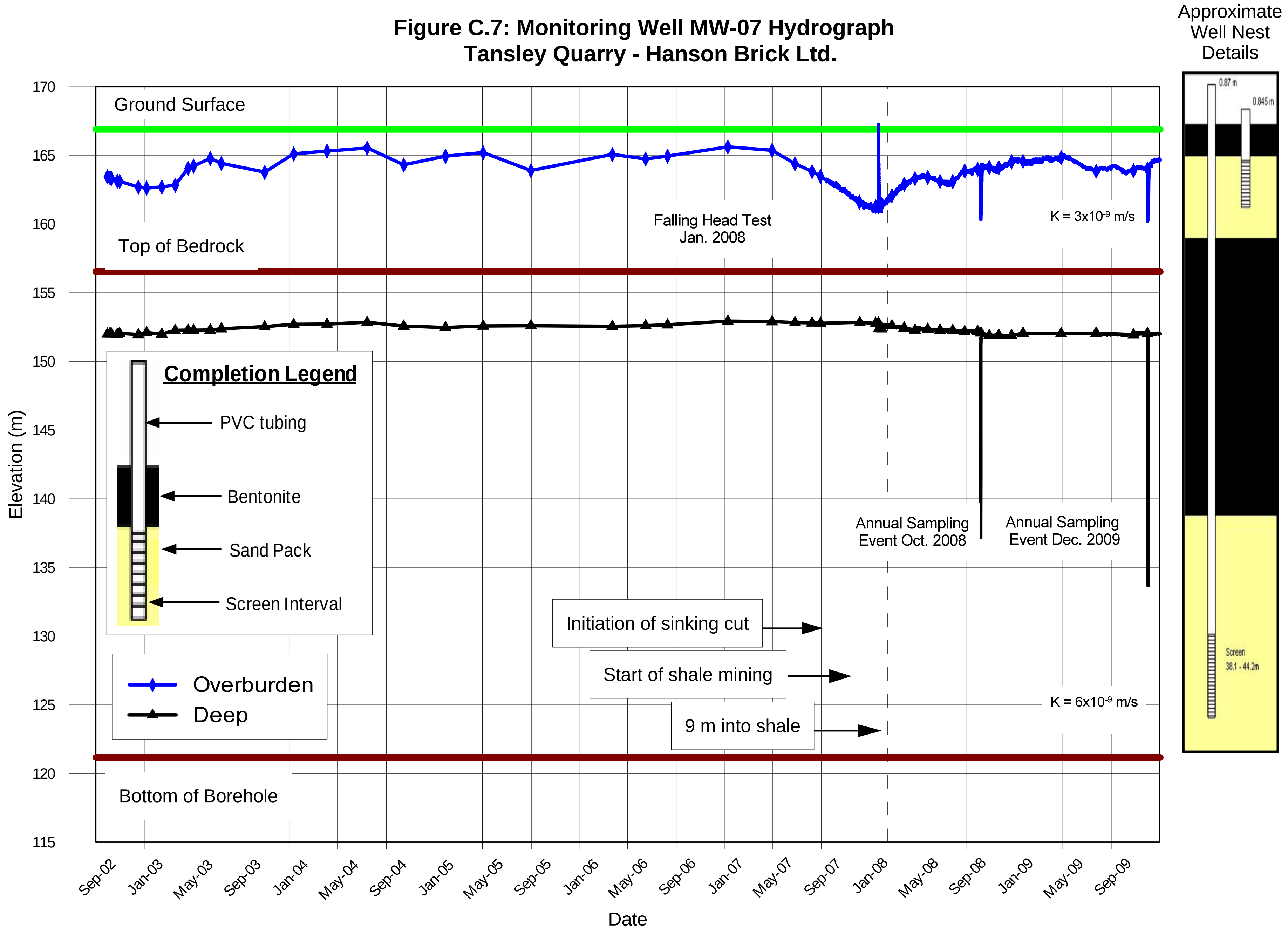


Figure C.8: Monitoring Well MW-08 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

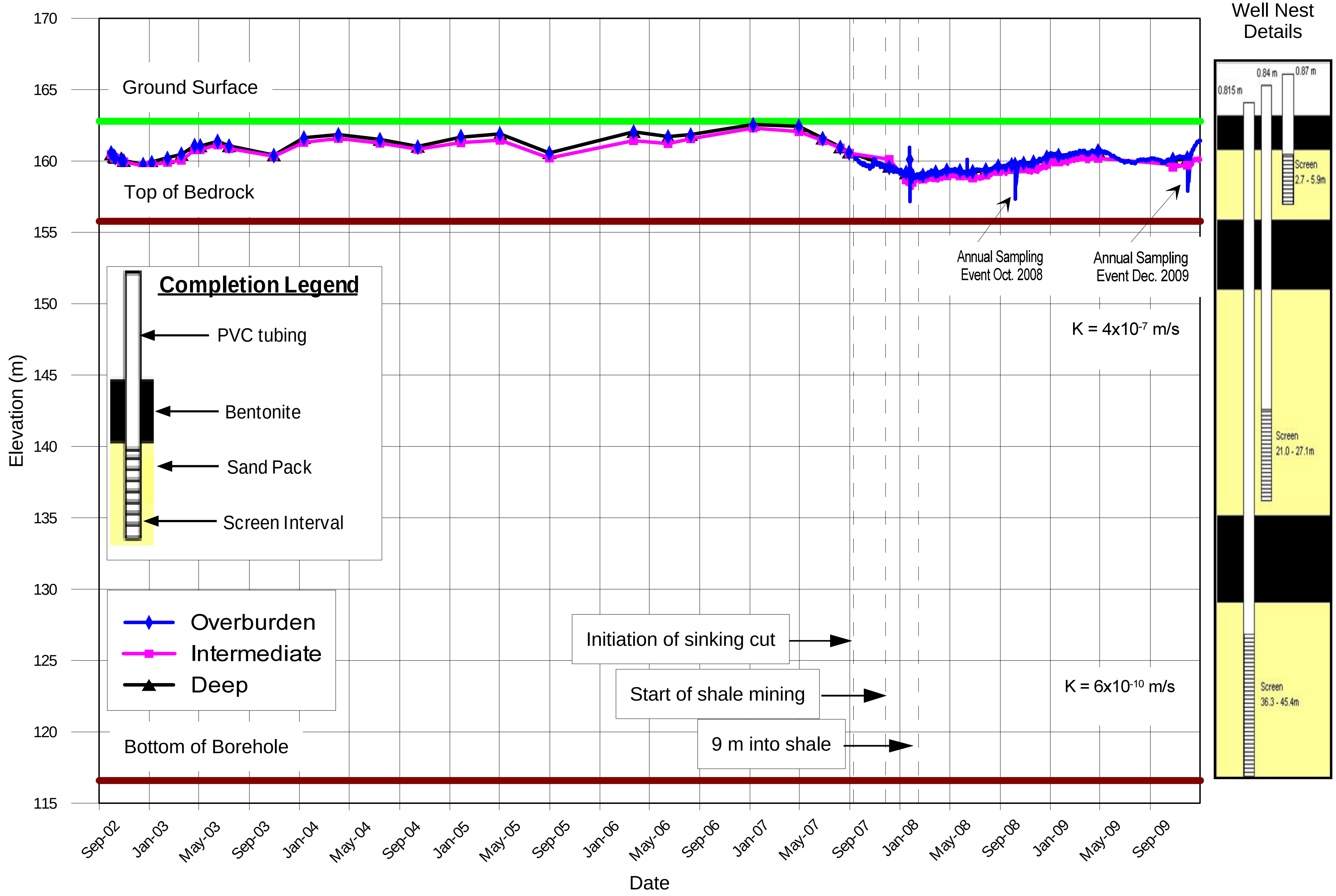


Figure C.9: Monitoring Well MW-09 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

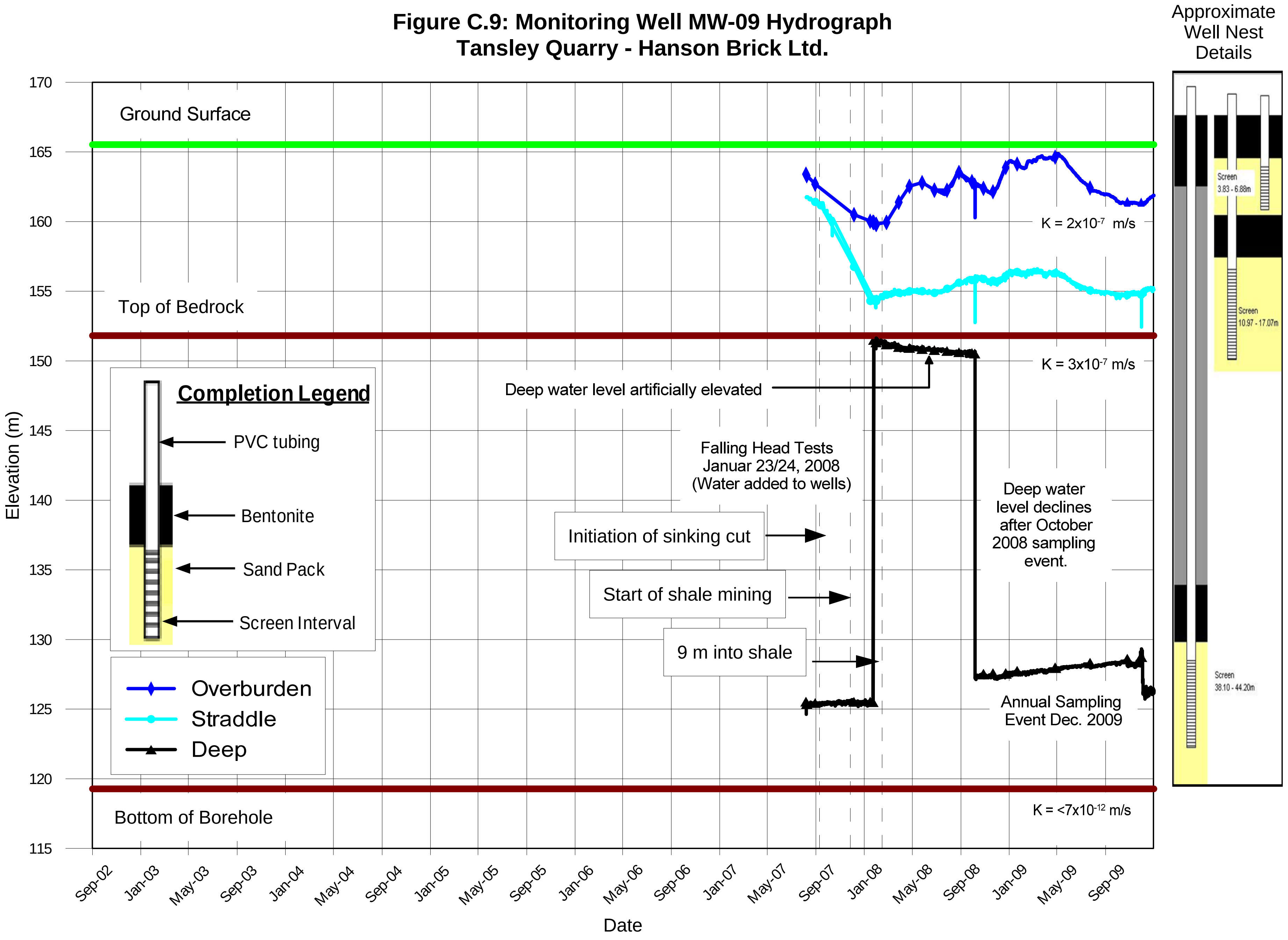


Figure C.10: Monitoring Well MW-10 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

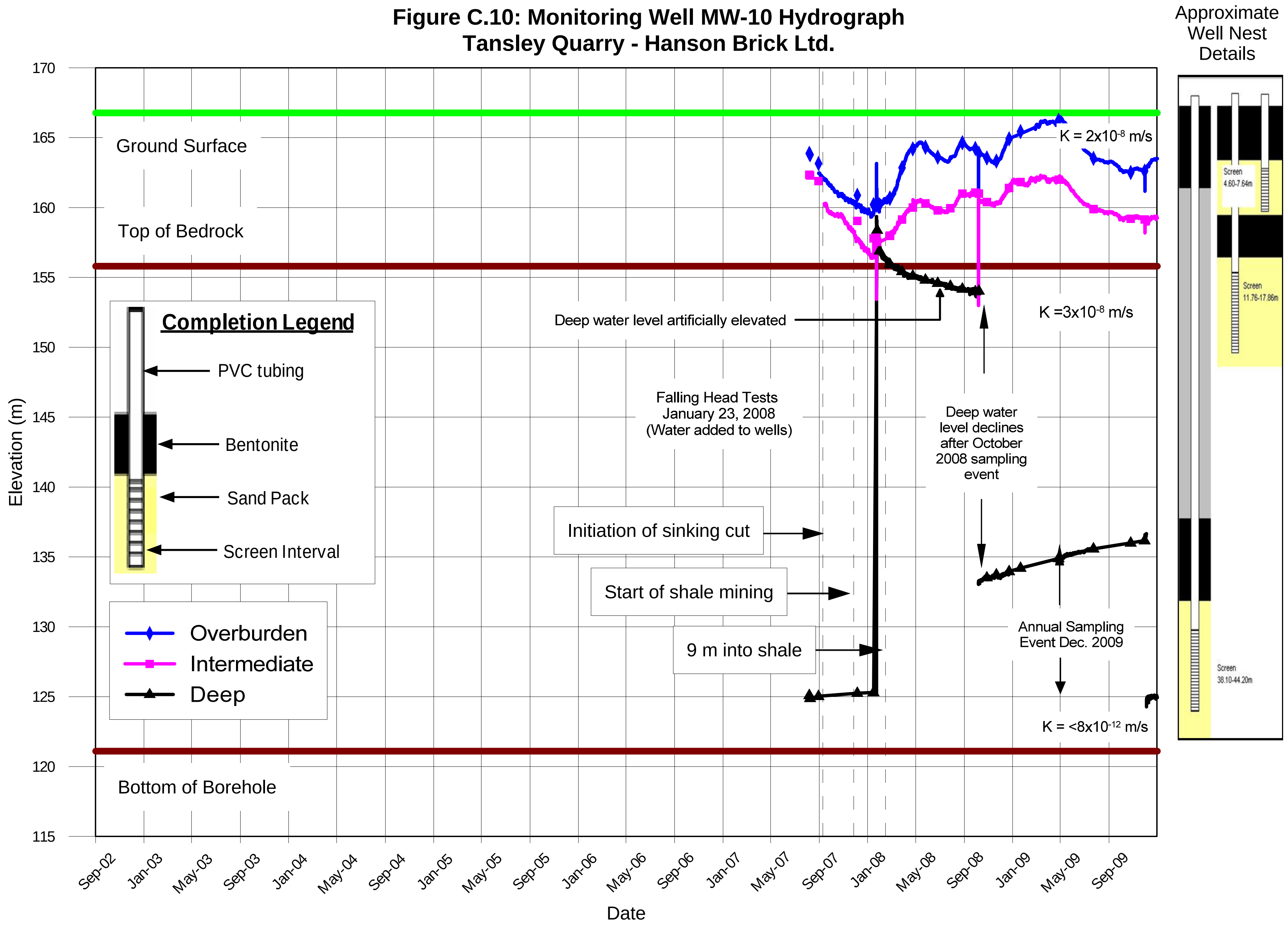


Figure C.11: Monitoring Well MW-11 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

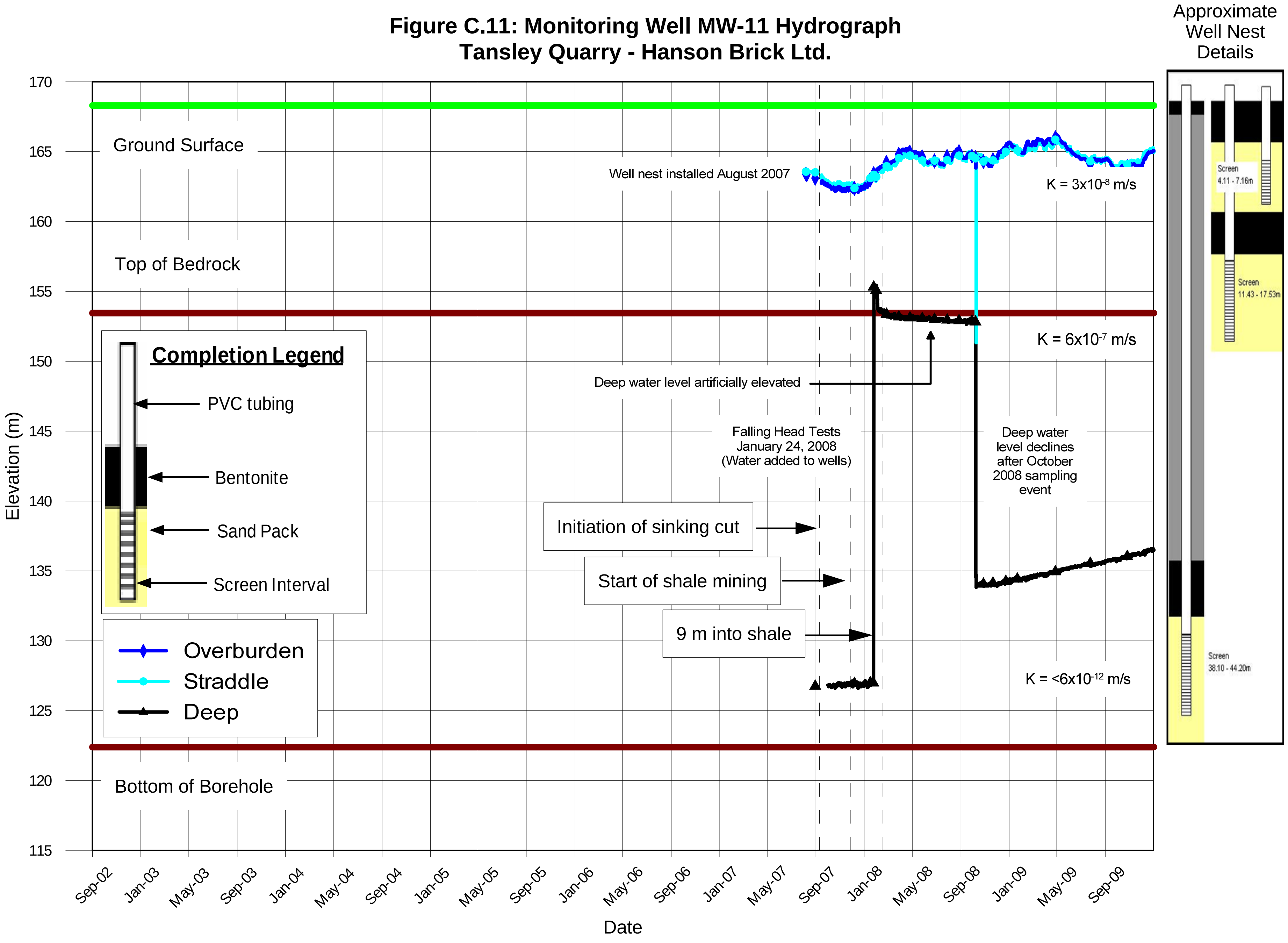


Figure C.12: Monitoring Well TW-1 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

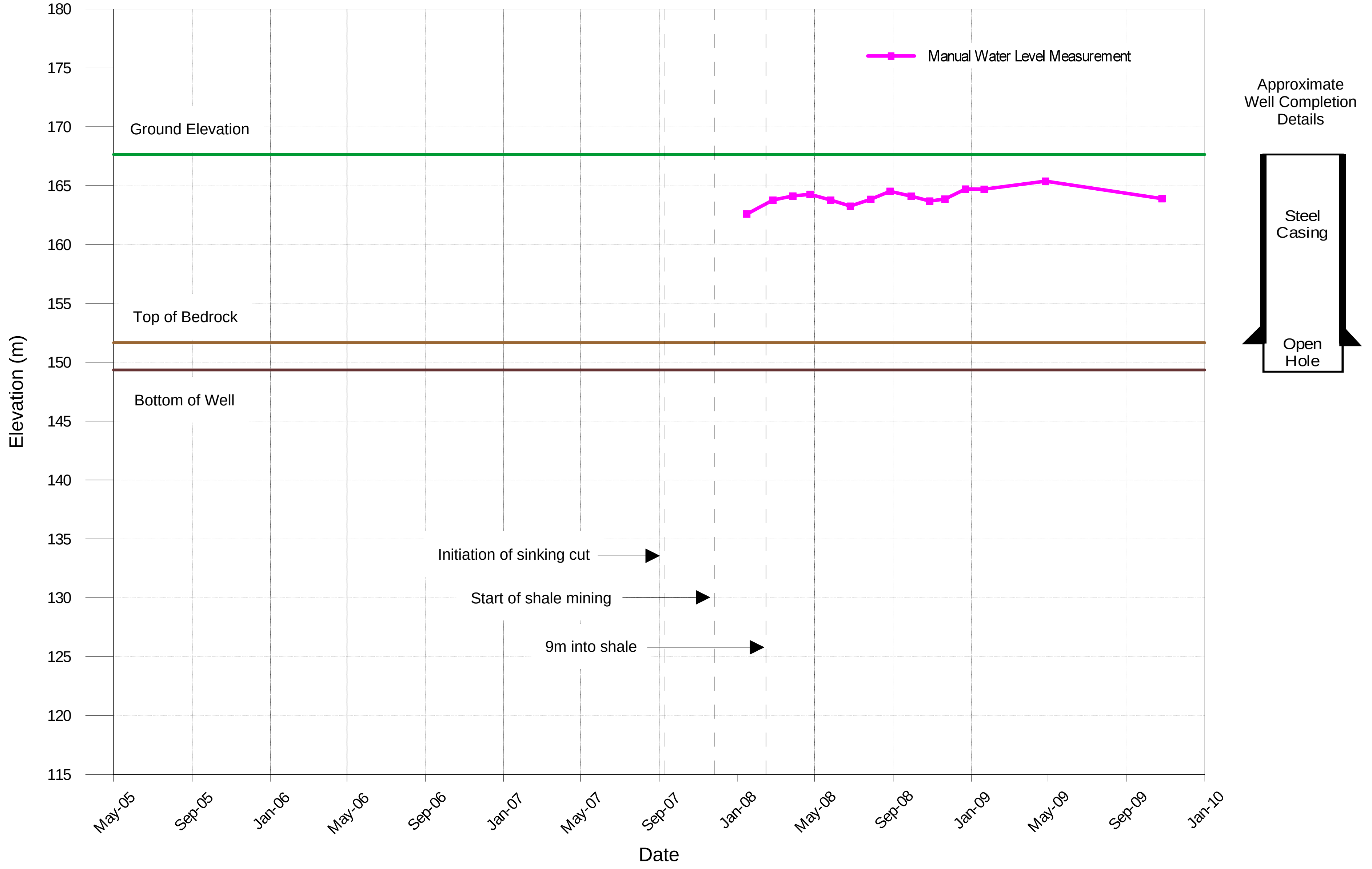


Figure C.13: Monitoring Well TW-2 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

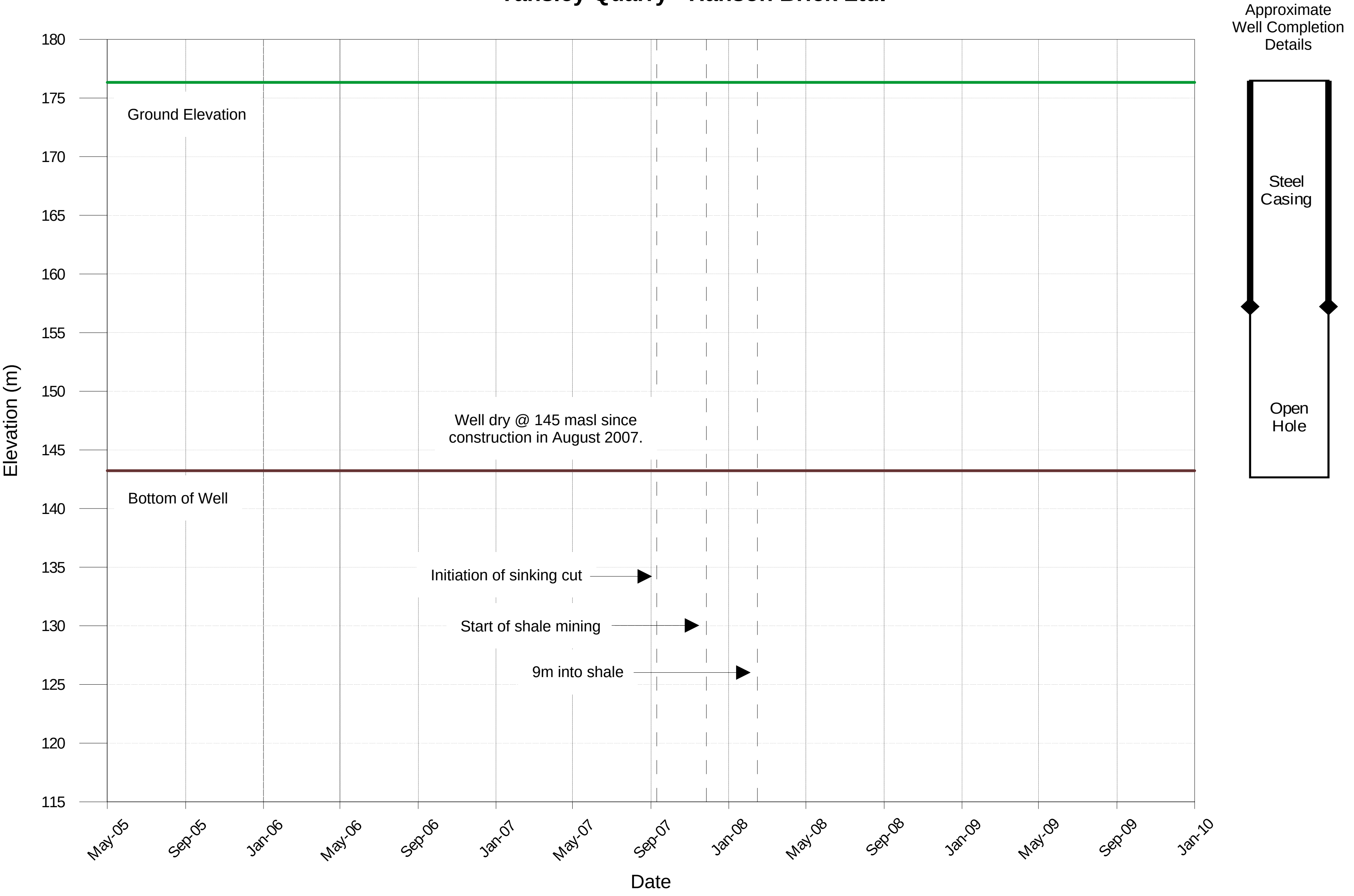


Figure C.14: Monitoring Well TW-3 Hydrograph
Tansley Quarry - Hanson Brick Ltd.

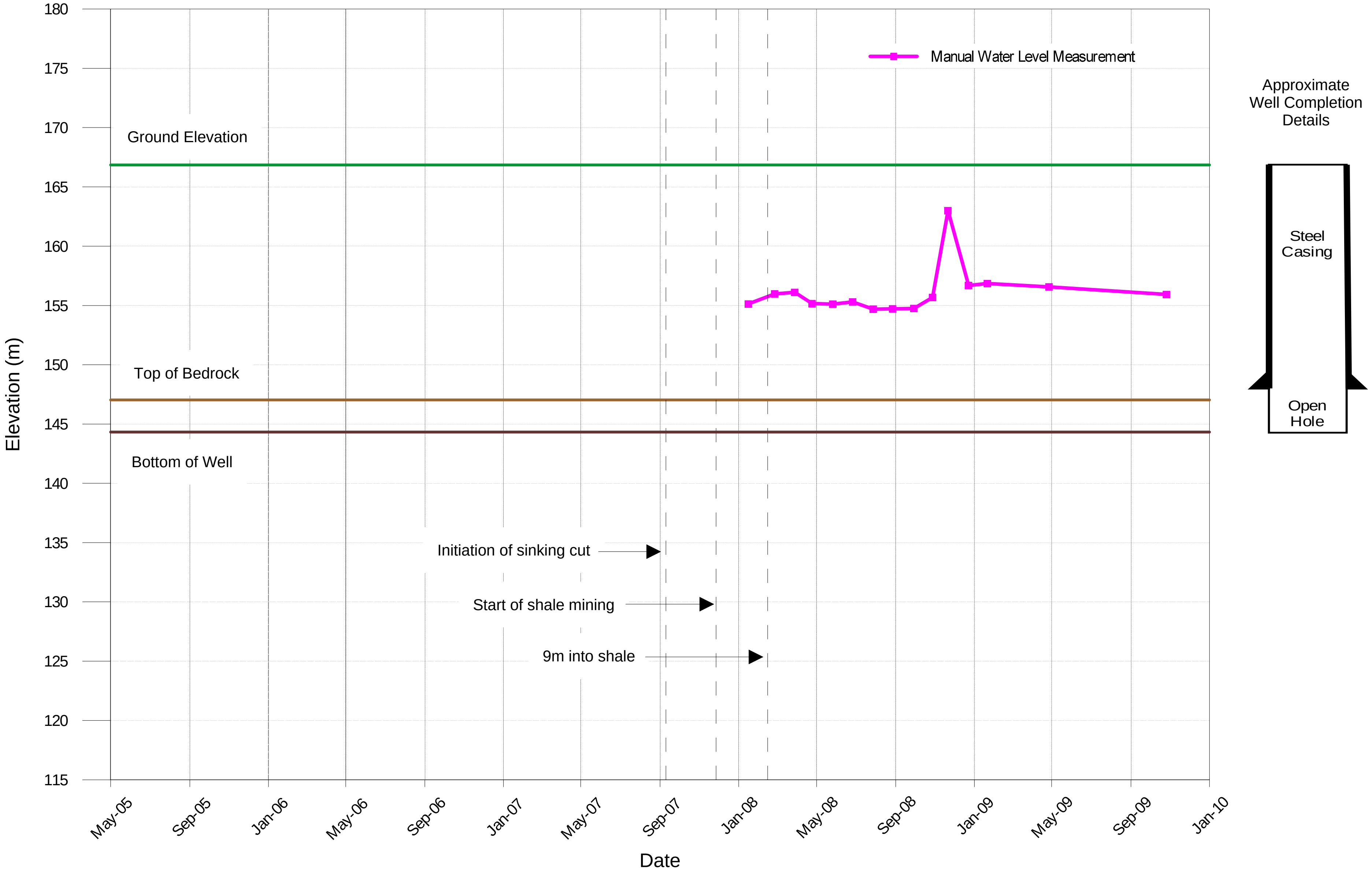


Figure C.15: Featherstone Well
Tansley Quarry - Hanson Brick Ltd.

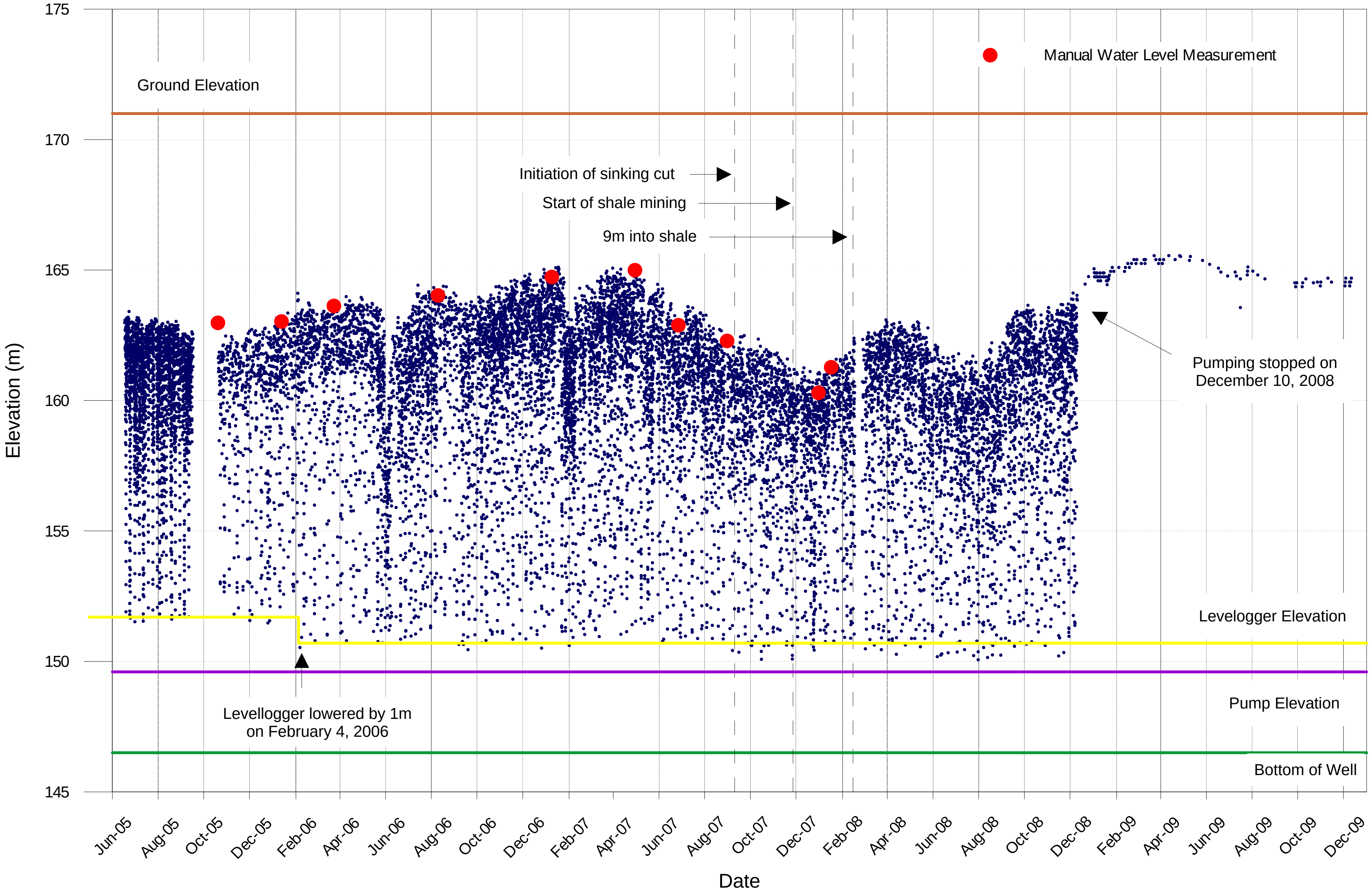


Figure C.16: Finucci Well
Tansley Quarry - Hanson Brick Ltd.

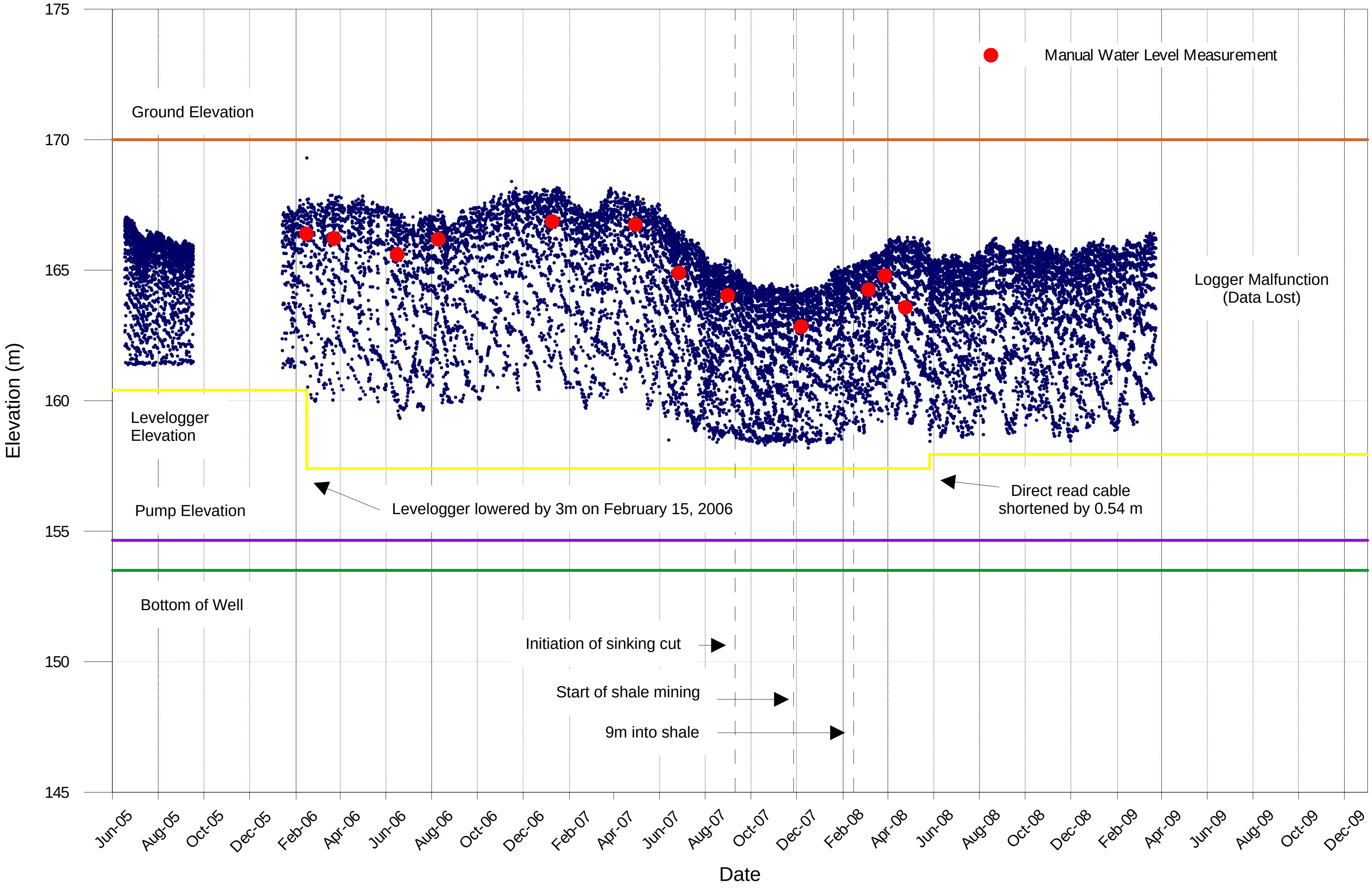


Figure C.17: Hendervale Main Barn Well
Tansley Quarry - Hanson Brick Ltd.

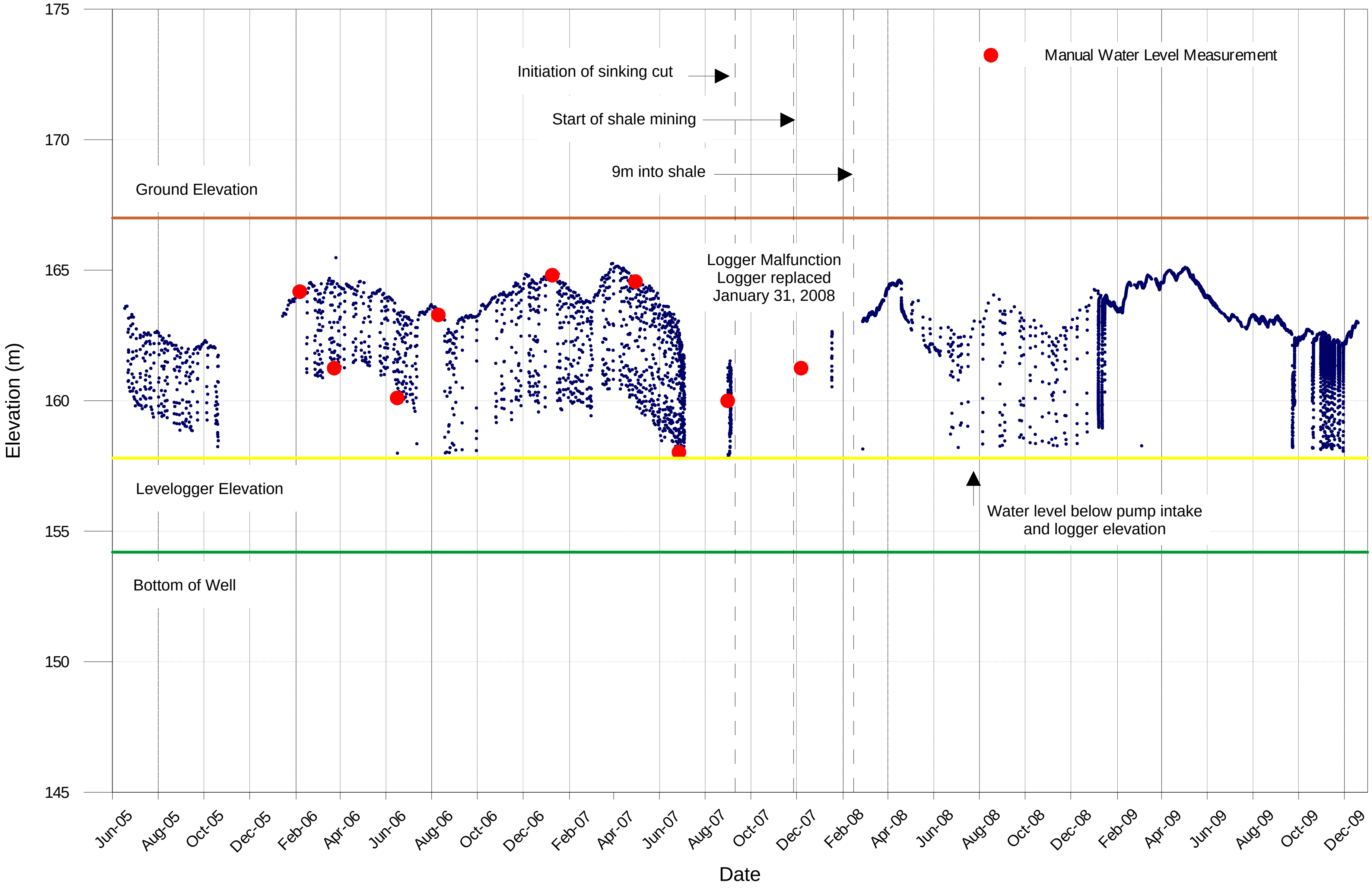


Figure C.18: Hendervale Cottage Well
Tansley Quarry - Hanson Brick Ltd.

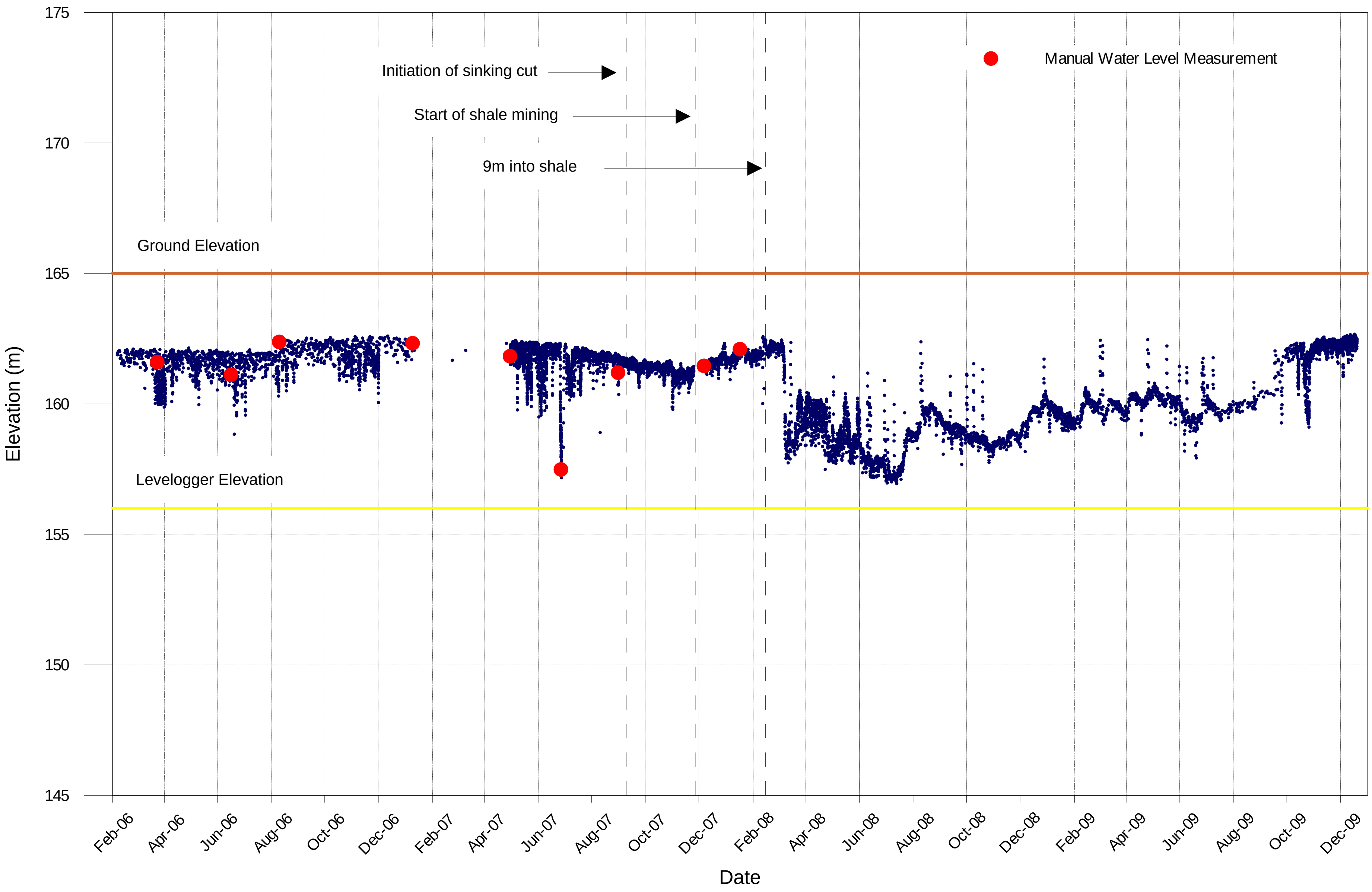


Figure C.19: Hendervale ABC Barn Well
Tansley Quarry - Hanson Brick Ltd.

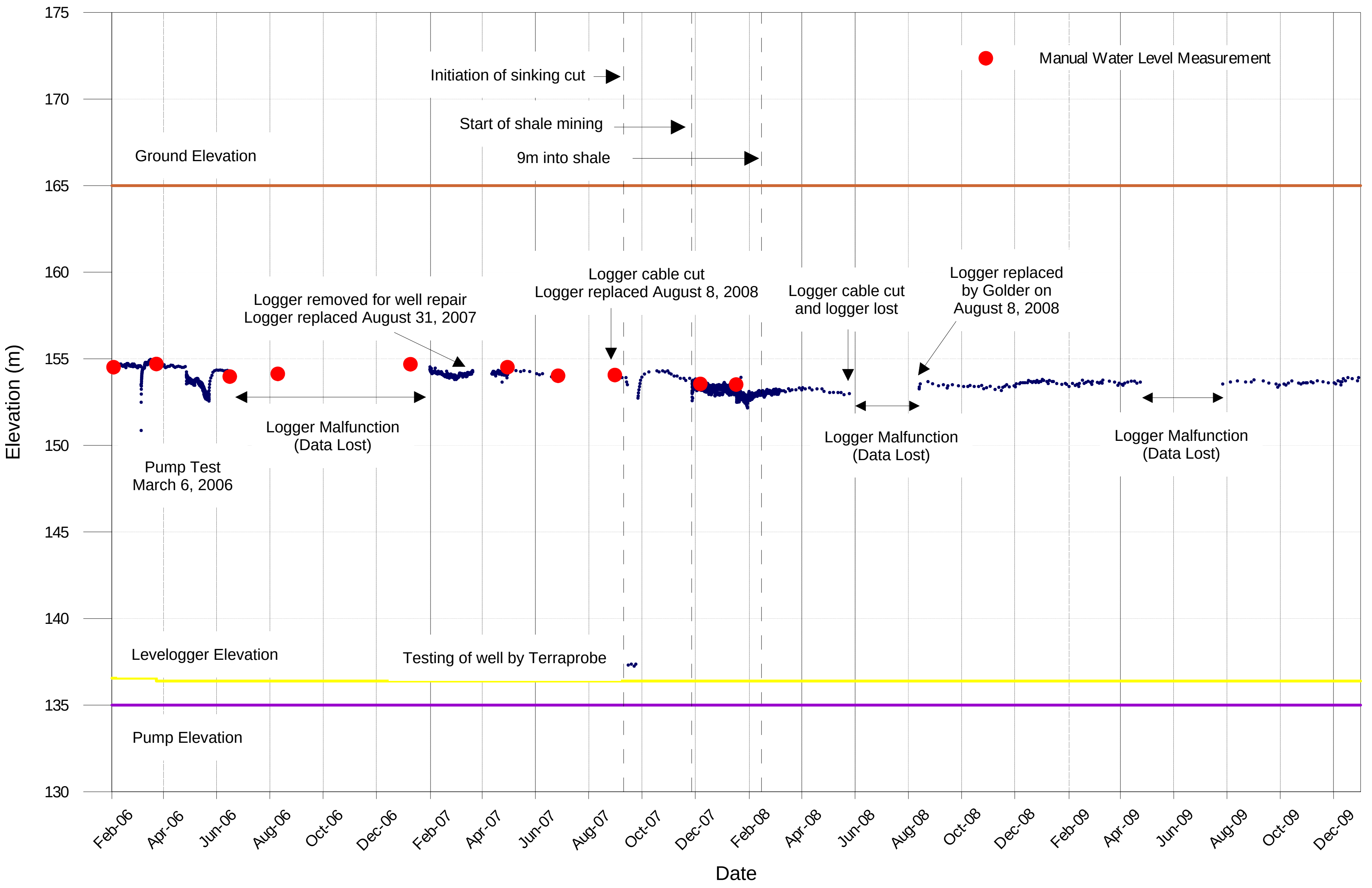


Figure C.20: Hendervale XYZ Barn Well
Tansley Quarry - Hanson Brick Ltd.

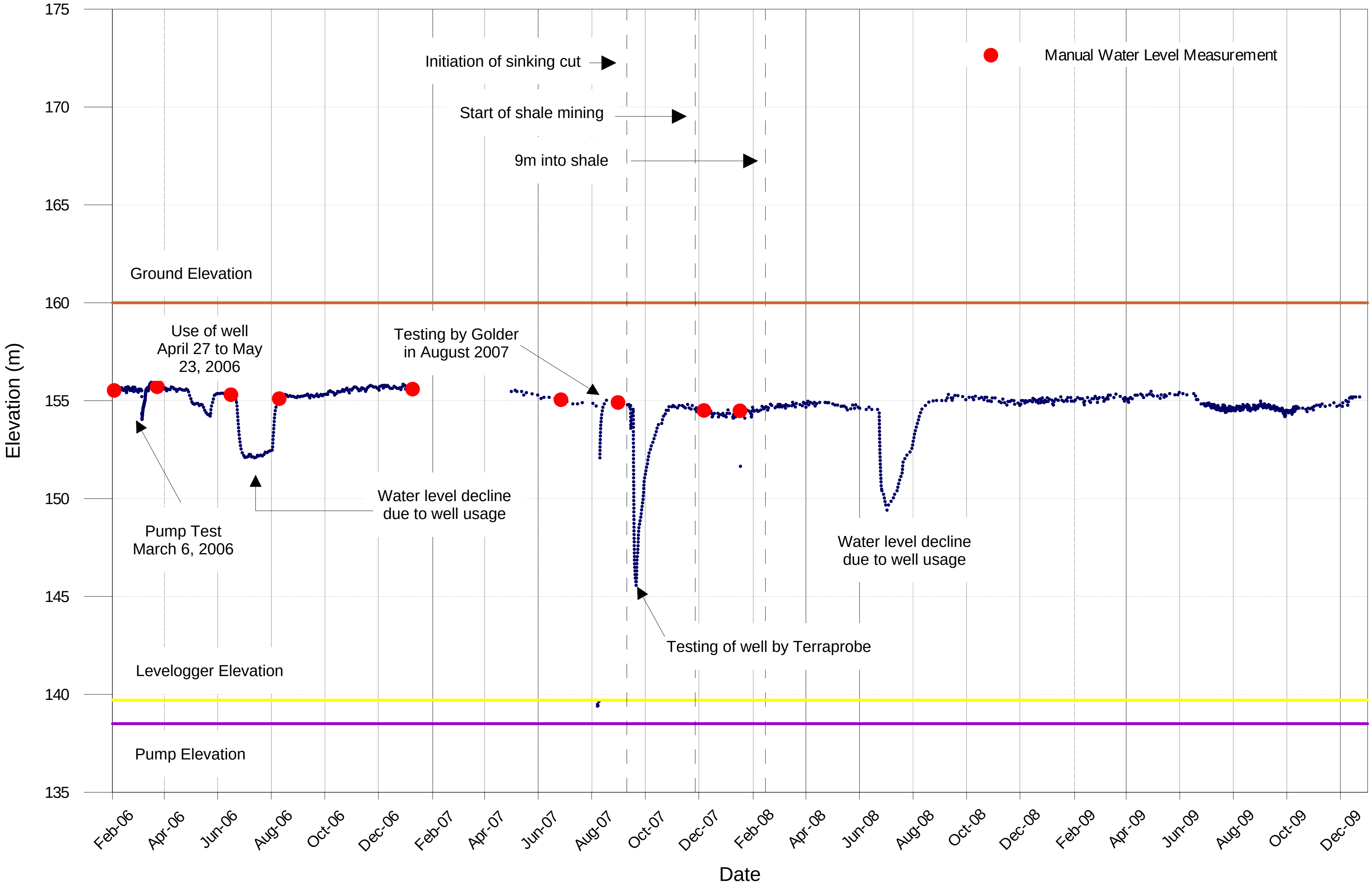


Figure C.21: Hendervale House Well
Tansley Quarry - Hanson Brick Ltd.

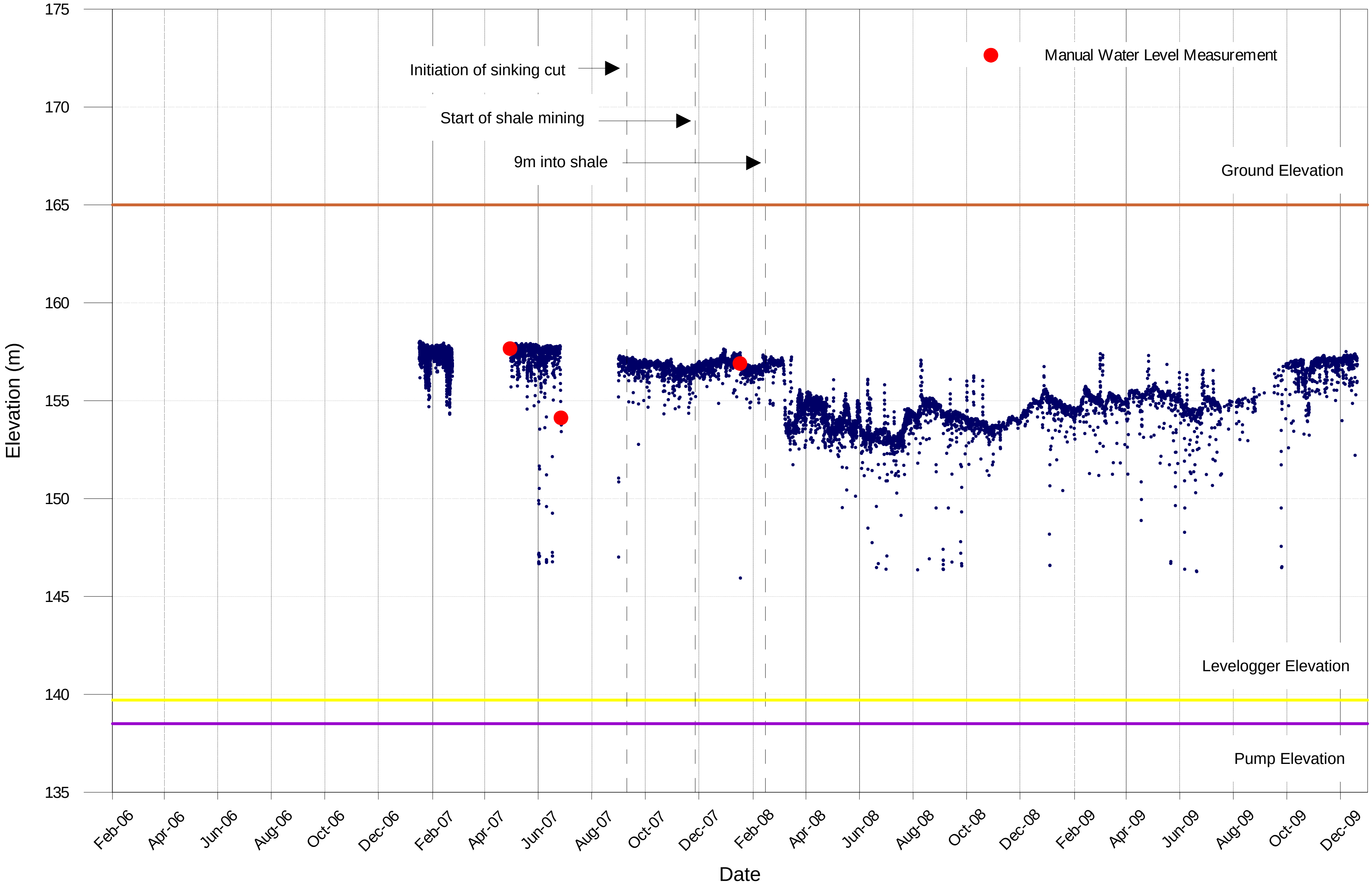


Figure C.22: Simms Well
Tansley Quarry - Hanson Brick Ltd.

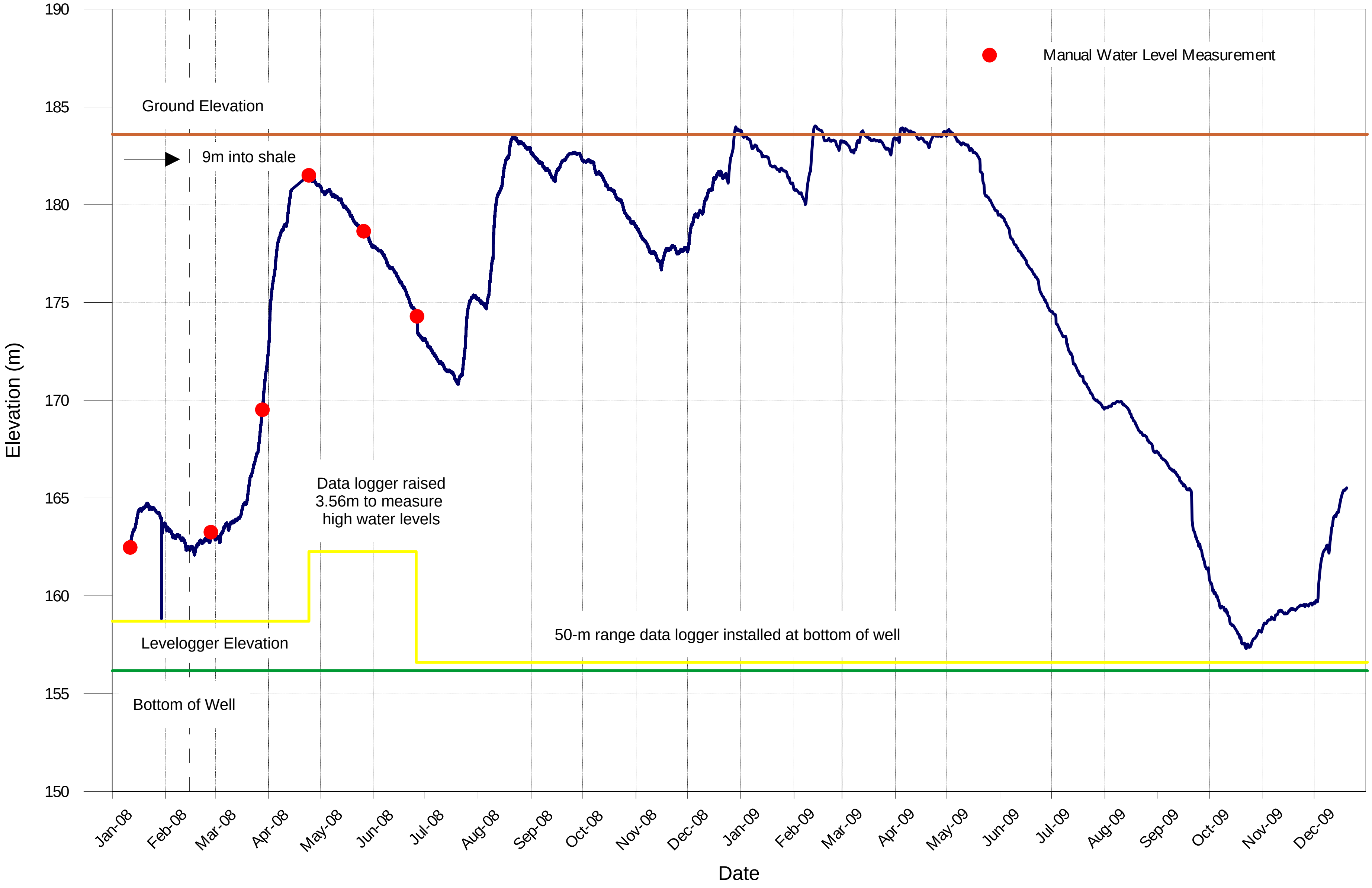


Figure C.23: Wettlaufer Well
Tansley Quarry - Hanson Brick Ltd.

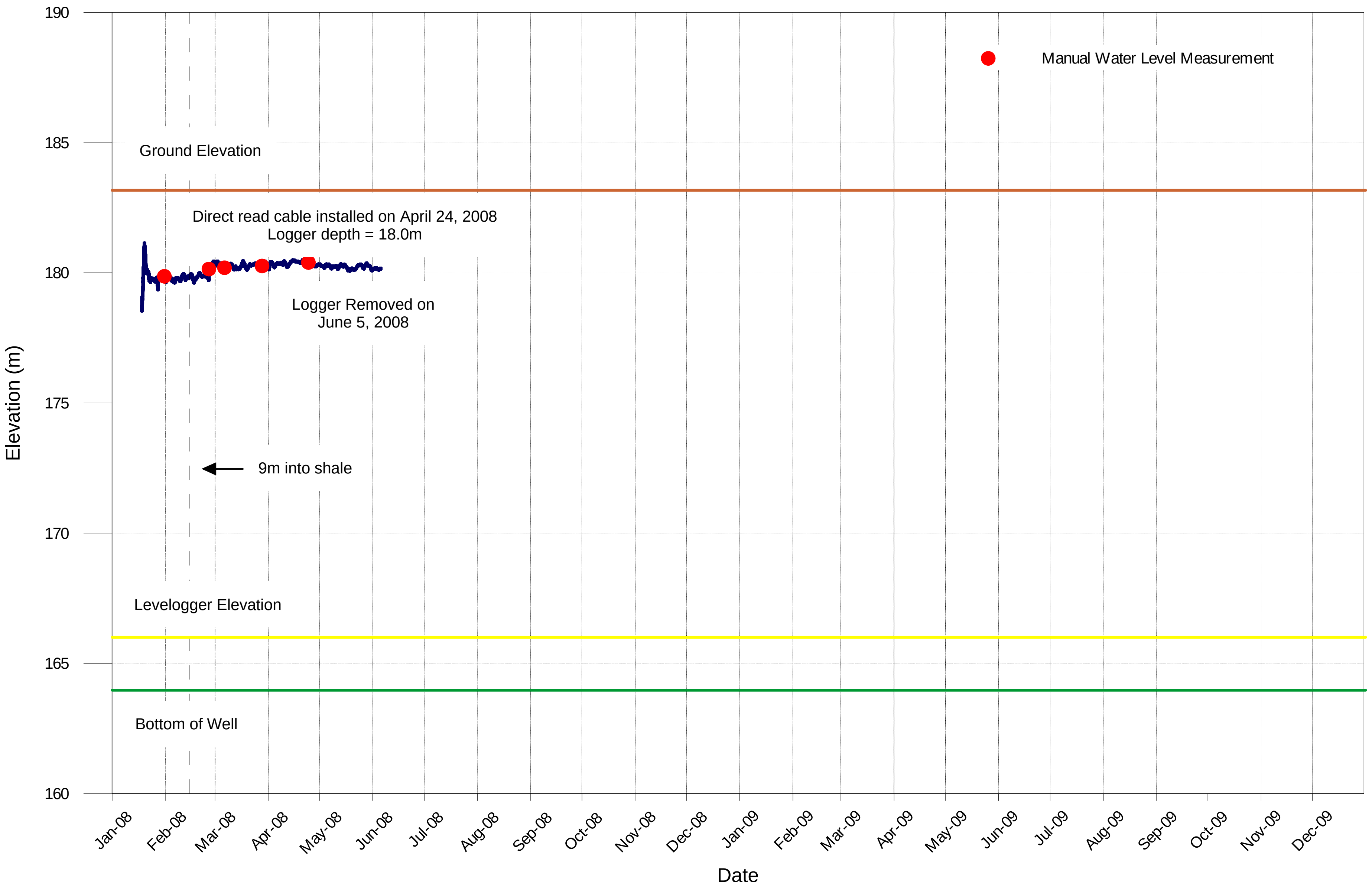


Figure C.24: Wiggins Well
Tansley Quarry - Hanson Brick Ltd.

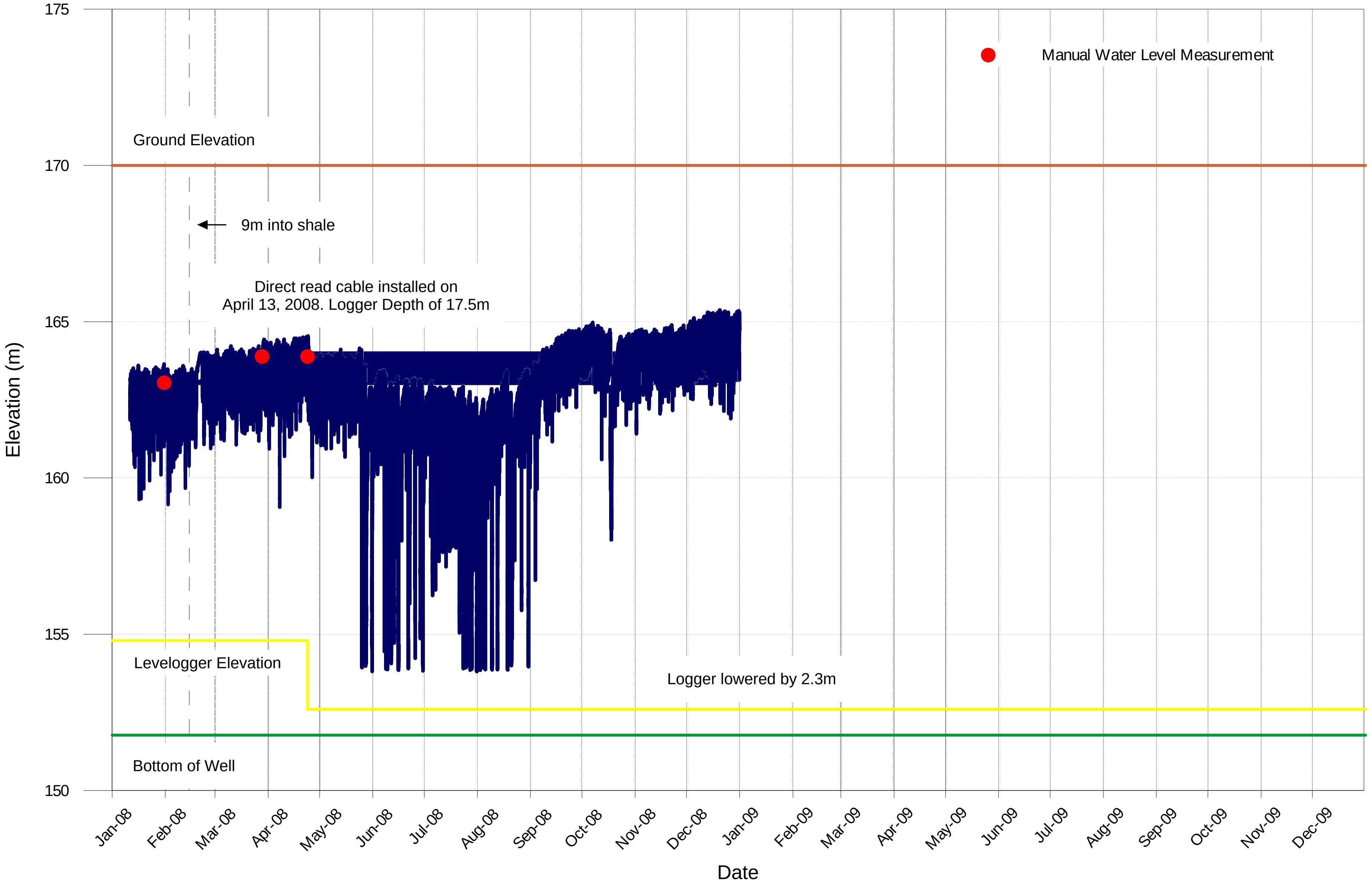


Figure C.25: Bekkers Well
Tansley Quarry - Hanson Brick Ltd.

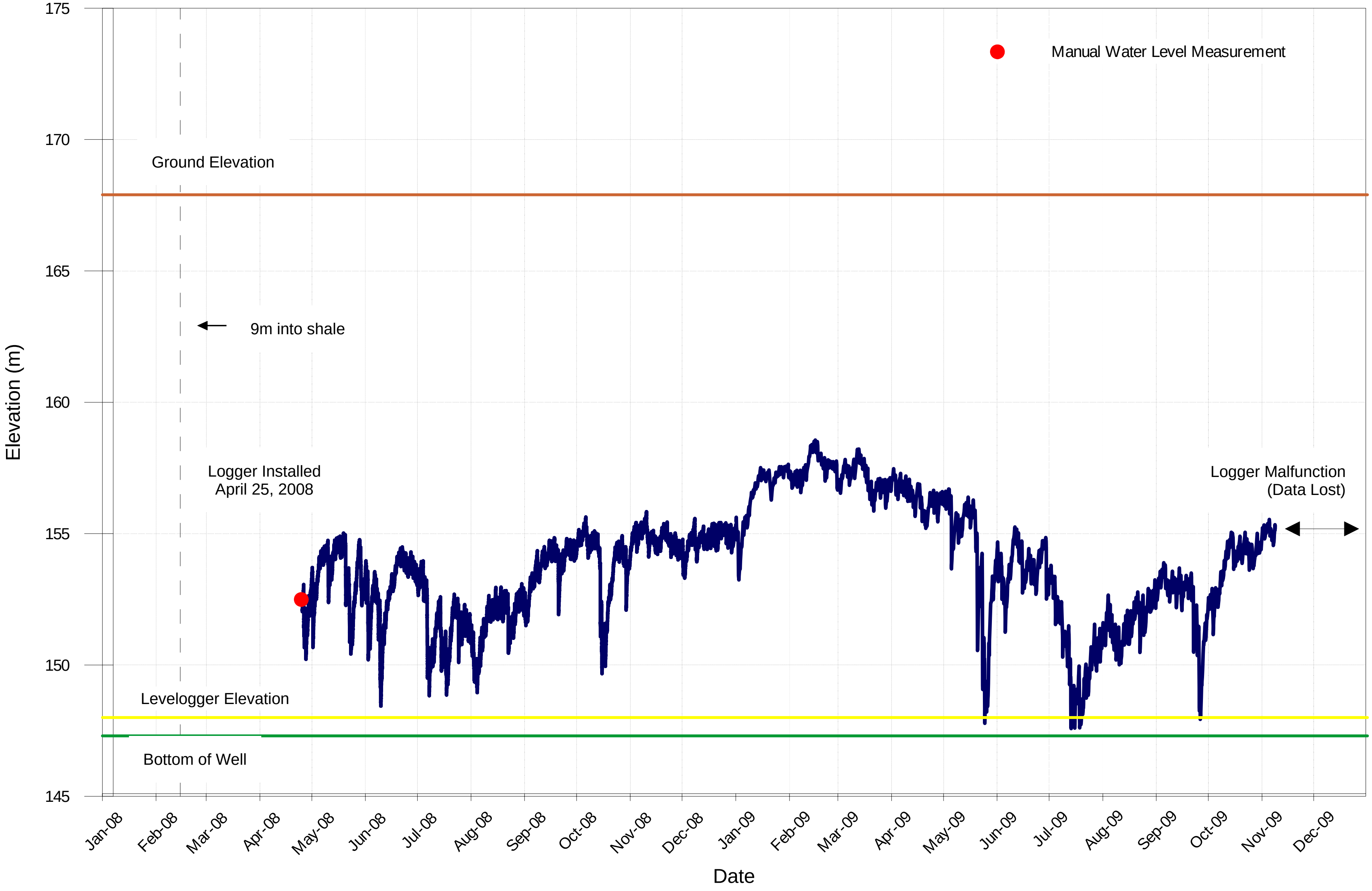
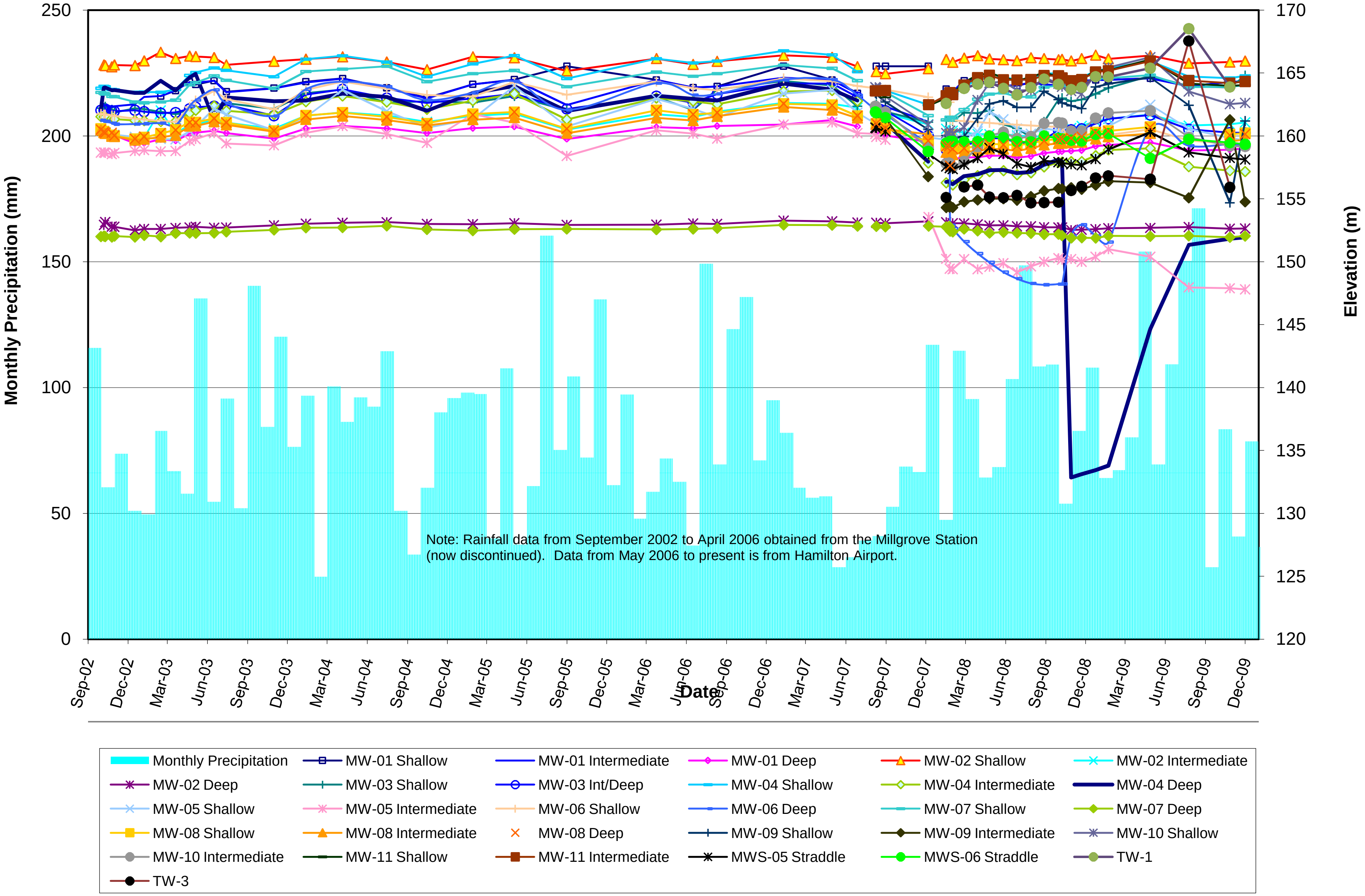


Figure C.26: Combined Static Water Levels and Precipitation with Time
Tansley Quarry - Hanson Brick Ltd.



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					MW-02 intermediate				
				Oct-08	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a		0.039	0.075	**0.11**		0.063	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	0.019	**0.123**	**0.23**	0.053	**0.079**	**0.1**	0.026	**0.28**	**0.19**	**0.27**
alkalinity	mg $CaCO_3$/L	30-500	-		376	487	508		459	125	49	34	33	36	387	630	738	666	695	225	118	133	139	141
ammonia as N	mg/L	-	-		0.36	0.14	0.23		0.16	7.5	14.2	23	21	22	0.38	0.15	0.38	0.38	0.27	1.86	2.82	2.09	1.5	1.6
antimony	mg/L	-	[0.02]		< 0.0005	0.0011	< 0.001		0.0005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.01	0.0008	0.0007	< 0.001	0.0008	< 0.0005	0.0008	< 0.0005	< 0.001	< 0.0005	< 0.0005
arsenic	mg/L	0.025	[0.005]		0.003	0.003	< 0.001		0.001	< 0.02	< 0.02	< 0.05	< 0.1	< 0.02	0.005	**0.007**	**0.006**	0.005	0.005	< 0.002	< 0.002	0.003	0.003	0.003
barium	mg/L	1	-		0.026	0.020	0.017		0.014	0.066	< 0.05	< 0.3	< 0.5	< 0.1	0.043	0.034	0.027	0.02	0.018	0.042	0.021	0.009	0.008	0.009
beryllium	mg/L	-	1.1		< 0.001	< 0.001	< 0.0005		< 0.0005	< 0.01	< 0.01	< 0.03	< 0.05	< 0.01	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
bismuth	mg/L	-	-		< 0.001	< 0.001	< 0.001		< 0.001	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	< 0.001	< 0.001	< 0.001	< 0.001	< 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	**3.26**	**5.16**	**4.2**	**6.8**	**5.7**	**0.302**	**0.269**	**0.3**	**0.3**	**0.32**	**2.04**	**2.9**	**1.9**	**1.8**	**1.8**
bromide	mg/L	-	-		< 0.5	< 0.5	< 1.0		< 1	47	124	202	214	192	< 0.5	< 0.5	< 1	< 1	< 1	2.2	4.9	3	< 1	1
cadmium	mg/L	0.005	0.0005		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.001	< 0.001	< 0.005	< 0.01	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
calcium	mg/L	-	-		137	110	110		120	789	1720	2400	2600	2400	136	154	210	200	220	110	272	230	190	200
chloride	mg/L	250	-		35	61.1	111		157	4690	11600	19400	19800	16700	39.4	23.9	25	11	10	244	438	182	113	87
chromium	mg/L	0.05	-		< 0.005	< 0.005	< 0.005		< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.001	< 0.005	< 0.005	< 0.005	< 0.005
cobalt	mg/L	-	0.0009		0.0009	0.0007	**0.018**		**0.013**	**0.0018**	< 0.001	< 0.03	< 0.05	< 0.01	0.0008	**0.0010**	**0.015**	**0.023**	**0.0072**	**0.0029**	< 0.0001	**0.0093**	**0.022**	**0.01**
copper	mg/L	1	[0.005] b		< 0.0005	0.0005	< 0.001		< 0.001	< 0.005	< 0.005	< 0.05	< 0.1	< 0.02	0.0005	< 0.0005	< 0.001	< 0.001	< 0.005	**0.0065**	< 0.005	< 0.001	< 0.001	< 0.001
fluoride	mg/L	>1.5 - <2.4	-	**NOT SAMPLED**	0.3	0.2	0.2	**NOT SAMPLED**	0.3	0.4	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.5	0.3	0.2	0.2
free cyanide	mg/L	0.2	0.005		< 0.001	< 0.001	< 0.002		< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002
hardness	mg $CaCO_3$/L	80-100	-		786	1128	1000		1100	2650	6124	8400	9300	8400	654.0	1287.0	1900	1900	2200	424	1122	1100	990	1000
iron	mg/L	0.3	0.3		**0.56**	**1.29**	0.068		0.2	**0.59**	**6.94**	**9.6**	< 10	**8**	**4.03**	**8.09**	**6.9**	**2.9**	**1.6**	0.15	**1.68**	**0.85**	**0.8**	**1.1**
lead	mg/L	0.01	[0.005] c		< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.005	< 0.005	< 0.03	< 0.05	< 0.01	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
magnesium	mg/L	-	-		107	206	190		200	165	442	550	670	580	75.9	219	330	340	400	36	106	130	130	130
manganese	mg/L	0.05	-		0.63	0.123	0.09		0.058	0.516	1.16	1.3	1.6	1	0.838	0.658	0.4	0.34	0.26	0.228	0.199	0.18	0.17	0.16
mercury	mg/L	0.001	0.0002		< 0.00005	< 0.00005	< 0.0001		0.0002	< 0.00005	0.00006	< 0.0001	< 0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1	< 0.0001
molybdenum	mg/L	-	0.04		**0.044**	0.004	0.002		0.002	0.036	0.021	< 0.05	< 0.1	0.05	**0.059**	0.022	0.008	0.005	0.003	**0.048**	0.021	0.012	0.009	0.009
nickel	mg/L	-	0.025		0.003	< 0.001	0.003		0.004	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	0.004	0.001	0.003	0.004	0.008	0.003	< 0.001	0.003	0.002	0.004
nitrate as N	mg/L	10	-		< 0.2	< 0.2	0.1		0.6	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1
nitrite as N	mg/L	1	-		< 0.2	< 0.2	0.07		< 0.01	< 20	< 20	< 0.01	< 0.01	< 0.01	< 0.2	< 0.2	0.02	< 0.01	< 0.01	< 2	< 0.2	< 0.01	< 0.01	0.03
pH	pH Units	6.5-8.5	6.5-8.5		7.93	7.86	7.90		7.6	8	7.27	7.0	7.4	6.9	7.4	7.58	7.9	8.1	7.8	8.14	7.93	8	8.1	7.9
phenol	mg/L	-	0.005		< 0.001	< 0.002	< 0.001		< 0.001	< 0.001	< 0.001	**0.020**	< 0.001	0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001
phosphate	mg/L	-	-		< 1	< 1	< 0.01		< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01
phosphorous	mg/L	-	-		-	-	< 0.05		< 0.1	-	-	< 3	< 10	< 2	< 0.05	-	< 0.05	< 0.1	< 0.1	-	-	< 0.05	< 0.1	< 0.1
total phosphorous	mg/L	-	0.01		**8.33**	**11.9**	**5.7**		**14.0**	**0.607**	**0.418**	**0.27**	**0.27**	**0.34**	**0.217**	**0.124**	**11**	**2.3**	**10.0**	**2.95**	**2.04**	**2.7**	**1.5**	**5.7**
potassium	mg/L	-	-		8.9	5.5	6.1		6.1	63.6	108	130	150	140	9.1	7.6	10	10	10	17.3	26.2	21	19	18
selenium	mg/L	0.01	0.1		< 0.002	< 0.002	< 0.002		0.002	0.023	0.036	< 0.1	< 0.2	< 0.04	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002
silicon	mg/L	-	-		5.87	6.53	8.4		8.0	2.18	3.18	< 3	< 5	3	7.12	8.53	11	10	11	3.51	4.3	5.6	5.5	6.0
silver	mg/L	-	0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.001	< 0.001	< 0.005	< 0.01	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
sodium	mg/L	200 d	-		76	51.9	54		56	2320	5530	6100	8000	6600	115	117	75	76	85	318	546	270	200	180
strontium	mg/L	-	-		2.45	2.17	2		2.3	16.2	35.8	47	55	51	2.89	3.37	4.2	4.4	4.1	2.52	7.22	10	12	11
sulphide	mg/L	0.05	-		0.07	0.02	0.02		0.03	0.01	< 0.01	< 0.02	< 0.02	< 0.02	0.43	0.07	0.14	< 0.02	< 0.02	0.18	0.01	0.05	< 0.02	< 0.02
sulphate	mg/L	500	-		501	702	389		496	1080	1780	1730	2130	1890	530	797	1070	1160	1410	542	1330	1200	1090	1080
thallium	mg/L	-	0.0003		< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.0005	< 0.0005	< 0.003	< 0.005	< 0.001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
tin	mg/L	-	-	**Note:** Well has never been sampled. Blocked since 2002.	< 0.001	< 0.001	< 0.001	**Note:** Insufficient water.	< 0.001	< 0.01	< 0.01	< 0.05	< 0.1	< 0.02	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
titanium	mg/L	-	-		< 0.005	0.008	0.007		< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	< 0.005	0.008	0.012	< 0.005	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005
TSS	mg/L	-	-		6970	20400	15000		20000	1010	375	810	770	610	100000	49900	24000	47000	14000	5300	3570	32000	2200	6500
turbidity	NTU	1	-		17.3	7.2	11900		16000	16.8	12.5	350	360	280	44	5.2	20100	18000	31000	19.1	2.5	17800	2200	7800
uranium	mg/L	0.1	[0.005]		**0.0202**	**0.0138**	**0.011**		**0.012**	**0.0152**	**0.0053**	< 0.005	< 0.01	< 0.002	**0.0145**	**0.0196**	**0.019**	**0.018**	**0.016**	**0.0153**	0.0028	0.0005	0.0002	0.0004
vanadium	mg/L	-	[0.006]		0.0038	0.002	< 0.001		< 0.001	< 0.005	< 0.05	**0.057**	< 0.1	< 0.02	0.0024	0.0018	< 0.001	0.001	0.004	0.0024	< 0.0005	< 0.001	< 0.001	0.003
zinc	mg/L	5	[0.02]		< 0.005	< 0.005	0.007		< 0.005	< 0.05	< 0.05	< 0.3	< 0.5	< 0.1	0.006	0.008	0.008	0.009	< 0.03	< 0.05	**0.023**	0.005	< 0.005	< 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 communicated 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 deep					MW-03 shallow					MW-03 Deep					MW-04 shallow				
				Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a	0.056	< 0.05	< 0.3	< 0.3	< 0.5	0.019	**0.456**	**0.15**	**0.11**	**0.14**	**0.128**	< 0.050	< 0.05	< 0.3	0.074	< 0.005	0.068	**0.28**	**0.2**	**0.32**
alkalinity	mg $CaCO_3$/L	30-500	-	111	36	36	32	51	133	104	140	114	110	40	29	56	74	88	385	419	391	413	390
ammonia as N	mg/L	-	-	7.28	13	16	17	18	0.61	0.55	1.36	1.20	1.8	9.2	11.3	13.5	4.7	5.7	0.32	0.25	0.16	< 0.05	0.53
antimony	mg/L	-	[0.02]	< 0.01	< 0.01	< 0.05	< 0.03	< 0.05	< 0.0005	< 0.0005	< 0.001	0.0026	< 0.0005	< 0.005	< 0.005	< 0.01	< 0.03	< 0.0005	< 0.0005	< 0.0005	< 0.001	0.0007	< 0.0005
arsenic	mg/L	0.025	[0.005]	< 0.02	< 0.02	< 0.05	< 0.05	< 0.1	0.004	0.004	0.003	**0.015**	0.004	< 0.02	< 0.02	< 0.01	< 0.05	< 0.005	0.004	0.006	< 0.001	< 0.001	< 0.001
barium	mg/L	1	-	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	0.038	0.031	0.012	0.011	0.010	< 0.05	< 0.05	< 0.05	< 0.3	0.017	0.083	0.082	0.06	0.065	0.058
beryllium	mg/L	-	1.1	< 0.01	< 0.01	< 0.03	< 0.03	< 0.05	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.01	< 0.01	< 0.005	< 0.03	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
bismuth	mg/L	-	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
boron	mg/L	5	0.2	**3.34**	**5.23**	**5.6**	**7.1**	**6**	**0.778**	**0.911**	**1.2**	**1.2**	**1.2**	**5.17**	**5.68**	**3.8**	**3.6**	**4.7**	**0.353**	**0.286**	0.071	0.12	0.11
bromide	mg/L	-	-	56	124	134	153	148	< 0.5	< 0.5	6	3	6	70	94	142	37	31	< 0.5	< 0.5	< 1.0	< 1.0	< 1
cadmium	mg/L	0.005	0.0005	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01	< 0.0001	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
calcium	mg/L	-	-	824	1620	2000	2000	2000	125	142	210	180	190	1220	1590	1400	540	470	65.2	64.1	88	84	78
chloride	mg/L	250	-	4920	11200	13000	12900	12400	30.5	30.8	492	281	518	6720	9780	11500	3220	2440	12.2	5.8	8.0	4.0	4
chromium	mg/L	0.05	-	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	< 0.05	< 0.05	< 0.3	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
cobalt	mg/L	-	0.0009	< 0.001	< 0.001	< 0.03	< 0.03	< 0.05	0.0004	0.0002	**0.015**	**0.021**	**0.011**	< 0.001	< 0.001	**0.005**	< 0.03	**0.0037**	**0.0011**	**0.0009**	**0.019**	**0.022**	**0.015**
copper	mg/L	1	[0.005] b	< 0.005	< 0.005	< 0.05	< 0.05	< 0.1	< 0.0005	0.0009	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01	< 0.05	< 0.001	0.0008	< 0.0005	0.001	< 0.001	< 0.001
fluoride	mg/L	>1.5 - <2.4	-	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.4	0.4	0.2	0.3	0.4	0.4	0.3	0.2	0.2	0.3
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	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002
hardness	mg $CaCO_3$/L	80-100	-	2780	5831	6700	7200	7100	577	760.5	1100	950	1000	4370	5871	5200	2200	1800	353	407.7	490	500	460
iron	mg/L	0.3	0.3	**2.16**	**6.59**	**6.9**	**6.8**	< 10	**0.67**	**1.96**	**0.54**	< 0.1	**0.7**	**3.65**	**4.46**	**4.7**	< 5	**1.2**	< 0.03	**0.52**	0.18	0.11	**0.50**
lead	mg/L	0.01	[0.005] c	< 0.005	< 0.005	< 0.03	< 0.03	< 0.05	< 0.0005	0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007
magnesium	mg/L	-	-	176	427	430	510	520	63.8	98.2	150	120	130	317	460	380	200	160	46.1	60.1	66	71	65
manganese	mg/L	0.05	-	0.575	1.03	1	1.2	1.2	0.189	0.156	0.15	0.13	0.14	0.575	0.735	0.62	0.27	0.2	1.01	0.769	0.28	0.38	0.310
mercury	mg/L	0.001	0.0002	< 0.00005	0.00008	< 0.0001	< 0.0001	< 0.0001	< 0.00005	0.00006	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0001	< 0.0001	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (	0.0001
molybdenum	mg/L	-	0.04	0.024	0.015	< 0.05	< 0.05	< 0.1	**0.048**	0.02	0.008	0.013	0.007	0.013	0.012	< 0.01	< 0.05	0.006	0.024	0.012	0.005	0.007	0.005
nickel	mg/L	-	0.025	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	0.002	< 0.001	0.003	0.002	0.003	< 0.01	< 0.01	< 0.01	< 0.05	< 0.005	0.004	0.001	0.003	0.003	0.004
nitrate as N	mg/L	10	-	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	0.3	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	11	0.3	2.5
nitrite as N	mg/L	1	-	< 20	< 20	0.02	< 0.01	< 0.01	< 0.2	< 0.2	< 0.01	0.01	0.14	< 20	< 20	0.02	< 0.01	0.01	< 0.2	< 0.2	0.1	0.01	0.25
pH	pH Units	6.5-8.5	6.5-8.5	7.77	7.23	7.2	7.4	7.2	7.76	7.93	7.90	8.00	7.7	7.44	7.28	7.30	7.80	7.7	7.79	7.8	8.2	8.4	8.0
phenol	mg/L	-	0.005	< 0.001	< 0.001	**0.011**	< 0.001	0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.023**	< 0.001	< 0.001	< 0.001	< 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	< 1	< 1	< 0.01	< 0.01	< 0.01	< 1	< 1	< 0.01	< 0.01	< 0.01
phosphorous	mg/L	-	-	-	-	< 3	< 5	< 10	< 0.05	-	< 0.05	< 0.1	< 0.1	-	-	< 0.5	< 5	< 0.1	< 0.05	< 0.05	< 0.05	< 0.1	< 0.1
total phosphorous	mg/L	-	0.01	**0.142**	**0.089**	**0.077**	**0.15**	**0.82**	**0.176**	**10.2**	**8.4**	**6.4**	**30.0**	**0.278**	**0.076**	**0.21**	**0.12**	**0.04**	**0.092**	**12**	**1.6**	**1.7**	**17.0**
potassium	mg/L	-	-	60.4	101	120	130	120	15.5	12.9	14	13	12	78.1	94.4	80	46	40	6.6	6.2	5	5.7	5.1
selenium	mg/L	0.01	0.1	0.024	0.032	< 0.1	< 0.1	< 0.2	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.033	0.03	< 0.02	< 0.1	0.01	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
silicon	mg/L	-	-	2.18	3.19	< 3	3	< 5	5.40	5.99	6.4	6	6.9	3.19	3.27	2.3	3.5	3.7	6.69	7.66	7.5	6.9	6.7
silver	mg/L	-	0.0001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
sodium	mg/L	200 d	-	2380	5590	5800	6700	6200	98.4	111	280	210	170	2920	4330	3400	1700	1300	49.5	35.9	24	34	28
strontium	mg/L	-	-	16.8	33.800	36	42	41	6.86	8.98	11	12	11	25.6	32.7	29	13	12	3.25	3.23	1.4	2	1.8
sulphide	mg/L	0.05	-	0.01	< 0.01	< 0.02	< 0.02	0.25	0.37	0.31	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.02	< 0.02	< 0.02	0.27	0.03	< 0.02	< 0.02	0.06
sulphate	mg/L	500	-	1230	1920	1950	1890	2010	651	836	884	813	953	1360	1610	1540	1230	1260	106	70.2	80	122	116
thallium	mg/L	-	0.0003	< 0.0005	< 0.0005	< 0.003	< 0.003	< 0.005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
tin	mg/L	-	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
titanium	mg/L	-	-	< 0.05	< 0.05	< 0.3	< 0.3	0.5	< 0.005	0.016	0.007	< 0.005	< 0.005	< 0.05	< 0.05	< 0.05	< 0.3	< 0.005	< 0.005	< 0.005	0.012	0.009	0.008
TSS	mg/L	-	-	214	203	240	81	800	58400	28300	24000	6500	12000	456	118	140	36	100	74300	30500	2500	2800	21000
turbidity	NTU	1	-	4.0	6.8	179	71	720	1.3	5.0	10700	3600	14000	11.1	5.2	105	27	66	13	50	1710	2600	31000
uranium	mg/L	0.1	[0.005]	**0.0099**	0.0024	< 0.005	< 0.005	< 0.01	**0.0059**	0.0015	0.0007	0.0023	0.0005	0.0021	< 0.0010	< 0.001	< 0.005	< 0.0001	**0.0074**	0.0041	**0.0058**	**0.0093**	**0.0081**
vanadium	mg/L	-	[0.006]	< 0.005	< 0.05	**0.064**	< 0.05	< 0.1	0.0014	0.0015	< 0.001	**0.007**	0.003	< 0.05	< 0.05	< 0.01	< 0.05	< 0.005	0.002	0.0014	0.002	0.003	0.001
zinc	mg/L	5	[0.02]	< 0.05	< 0.05	< 0.3	< 0.3	< 0.5	< 0.05	< 0.005	0.018	< 0.005	< 0.005	< 0.05	< 0.05	**0.23**	< 0.3	**0.034**	< 0.005	< 0.005	0.008	< 0.005	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 communicated 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-04 intermediate					MW-04 deep				MW-05 shallow					MW-05 straddle		MW-05 intermediate					MW-05 deep	
				Nov-02	May-03	Jan-07	Oct-08	Dec-09	May-03	Jan-07	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-08	Dec-09	Nov-02	May-03	Jan-07	Oct-08	Dec-09	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a	0.006	**0.289**	**0.1**	**0.14**	**0.14**	< 0.05	< 0.05	< 0.5	**0.5**	0.006	0.059	NOT SAMPLED	0.069	0.067	**0.34**	**0.32**	0.029	**0.194**	NOT SAMPLED	**0.1**	**0.13**	NOT SAMPLED	< 0.5
alkalinity	mg $CaCO_3$/L	30-500	-	55	56	56	51	50	172	126	34	66	310	344		326	275	271	296	179	180		178	264		32
ammonia as N	mg/L	-	-	4.86	4.97	8.2	5.9	6.3	8.7	23.4	25	34	0.21	0.05		0.1	0.05	0.51	0.65	1.99	1.87		1.7	1.8		43
antimony	mg/L	-	[0.02]	< 0.0005	0.0005	< 0.005	< 0.005	< 0.0005	< 0.005	< 0.01	< 0.05	< 0.03	< 0.0005	< 0.0005		0.001	<0.0005	0.001	< 0.0005	< 0.0005	< 0.0005		0.0005	< 0.0005		**0.07**
arsenic	mg/L	0.025	[0.005]	< 0.002	< 0.002	< 0.005	< 0.01	< 0.005	< 0.02	< 0.01	< 0.1	< 0.3	< 0.002	< 0.002		< 0.001	< <0.001	**0.012**	**0.013**	0.002	< 0.002		0.002	0.002		< 0.1
barium	mg/L	1	-	0.013	0.010	< 0.03	< 0.05	0.007	0.087	0.075	< 0.5	< 0.3	0.07	0.081		0.078	0.061	0.068	0.077	0.016	0.022		0.016	0.021		< 0.5
beryllium	mg/L	-	1.1	< 0.001	< 0.001	< 0.003	< 0.005	< 0.0005	< 0.01	< 0.005	< 0.05	< 0.03	< 0.001	< 0.001		< 0.001	< <0.0005	< 0.001	< 0.0005	< 0.001	< 0.001		< 0.0005	< 0.0005		< 0.05
bismuth	mg/L	-	-	< 0.001	< 0.001	< 0.005	< 0.01	< 0.001	< 0.01	< 0.01	< 0.1	< 0.05	< 0.001	< 0.001		< 0.001	< <0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001		< 0.1
boron	mg/L	5	0.2	**6.46**	**6.99**	**6**	**6.9**	**6.5**	**2.38**	**3.3**	**6.2**	**5.4**	0.134	0.014		0.025	< <0.01	**1.1**	**1.0**	**3.58**	**3.38**		**4.1**	**3.1**		**5**
bromide	mg/L	-	-	11.3	10.3	14	17	21	103	**183**	398	401	< 0.5	0.5		< 1.000	< <1	< 1	< 1	1.3	4.4		1	< 1		587
cadmium	mg/L	0.005	0.0005	< 0.0001	**0.0006**	< 0.0005	< 0.001	< 0.0001	**0.0017**	< 0.001	< 0.01	< 0.005	< 0.0001	< 0.0001		< 0.0001	< <0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		**0.01**
calcium	mg/L	-	-	433	380	450	530	510	1440	3700	6600	5300	98.7	114		120	120	63	70	88.7	181		67	67		8800
chloride	mg/L	250	-	1120	984	1320	1540	1800	9180	16800	34700	32700	14.6	5.7		13	20	8	5	150	406		105	74		50200
chromium	mg/L	0.05	-	< 0.005	< 0.005	< 0.03	< 0.05	< 0.005	< 0.05	< 0.05	< 0.5	< 0.3	< 0.005	< 0.005		< 0.005	< <0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005		< 0.5
cobalt	mg/L	-	0.0009	0.0008	0.0002	**0.019**	**0.021**	**0.0086**	< 0.001	< 0.005	< 0.05	< 0.03	0.0006	< 0.0001		**0.022**	**0.013**	**0.023**	**0.013**	< 0.0001	0.0003		**0.021**	**0.0054**		< 0.05
copper	mg/L	1	[0.005] b	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	**0.0124**	< 0.01	< 0.1	< 0.05	0.0015	0.0009		< 0.001	< <0.001	< 0.001	0.001	0.0006	0.0005		< 0.001	< 0.001		< 0.1
fluoride	mg/L	>1.5 - <2.4	-	0.6	0.7	0.5	0.6	0.5	0.3	0.2	0.1	0.1	0.2	0.1		0.1	0.1	0.3	0.3	0.7	0.7		0.7	0.5		< 0.1
free cyanide	mg/L	0.2	0.005	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 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	< 0.002		< 0.002
hardness	mg $CaCO_3$/L	80-100	-	1600	1405	1600	1900	1900	4915	13000	23000	18000	352	406.4		430	430	300	320	332	692.2		260	270		31000
iron	mg/L	0.3	0.3	0.23	**0.56**	**0.71**	< 1	**0.9**	< 0.3	**17**	**29**	24	< 0.03	0.06		< 0.1	0.1	0.25	**0.60**	0.13	**0.47**		0.26	0.2		**29**
lead	mg/L	0.01	[0.005] c	< 0.0005	< 0.0005	< 0.003	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.05	< 0.03	< 0.0005	0.0010		< 0.001	< <0.0005	< 0.001	< 0.0005	< 0.0005	< 0.0005		< 0.0005	< 0.0005		< 0.05
magnesium	mg/L	-	-	125	110	130	150	140	316	820	1500	1200	25.6	29.1		32	31	34	34	26.7	57.6		23	25		2100
manganese	mg/L	0.05	-	0.205	0.17	0.21	0.26	0.22	1.13	2.4	3.7	2.8	1.29	0.051		0.038	0.032	0.063	0.078	0.044	0.072		0.06	0.033		4.7
mercury	mg/L	0.001	0.0002	< 0.00005	< 0.00005	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.00005	0.0001	< 0.0001	< 0.0001	< 0.00005	< 0.00005		< 0.0015 (1)	< <0.0001	< 0.0015 (1)	< 0.0001	< 0.00005	< 0.00005		< 0.0001	< 0.0001		< 0.0001
molybdenum	mg/L	-	0.04	0.011	0.008	0.007	< 0.01	0.008	0.03	0.012	< 0.1	< 0.05	0.016	< 0.001		< 0.001	< <0.001	0.005	0.004	0.013	0.011		0.009	0.005		< 0.1
nickel	mg/L	-	0.025	0.007	< 0.001	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	< 0.1	< 0.05	0.002	< 0.001		0.002	0.003	0.003	0.003	< 0.001	< 0.001		0.002	0.001		< 0.1
nitrate as N	mg/L	10	-	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	0.6	1.4	< 0.1	< 0.1	< 0.2	< 0.2		0.1	< <0.1	0.1	0.3	< 0.2	< 0.2		< 0.1	0.2		< 0.1
nitrite as N	mg/L	1	-	< 2.0	< 0.2	< 0.01	< 0.01	< 0.01	< 20	0.02	< 0.01	0.02	< 0.2	< 0.2		< 0.01	0.02	0.03	0.16	< 1.0	< 0.2		< 0.01	0.22		< 0.01
pH	pH Units	6.5-8.5	6.5-8.5	7.67	7.64	7.7	7.8	7.6	7.42	7.4	7.2	6.8	7.74	7.62		8.1	7.5	8.3	7.9	7.85	7.71		8.1	7.9		6.5
phenol	mg/L	-	0.005	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	**0.025**	0.002	0.003	< 0.001	< 0.001		< 0.001	< <0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001		**0.006**
phosphate	mg/L	-	-	< 1	< 1	< 0.01	< 0.01	< 0.01	< 1	< 0.01	< 0.01	< 0.01	< 1	< 1		< 0.01	< <0.01	< 0.01	< 0.01	< 1	< 1		< 0.01	< 0.01		< 0.01
phosphorous	mg/L	-	-	< 0.05	< 0.05	< 0.3	< 1	< 0.1	< 0.5	< 0.5	< 10	< 5	< 0.05	< 0.05		< 0.1	< <0.1	< 0.1	0.1	< 0.05	< 0.05		< 0.1	< 0.1		< 10
total phosphorous	mg/L	-	0.01	**5.45**	**0.96**	**1.4**	**0.47**	< 0.1	**0.089**	**0.34**	**0.37**	**2.7**	**0.09**	**6.05**		**6**	**5**	**5.2**	**24.0**	**1.02**	**1.58**		**0.18**	**0.1**		**1.1**
potassium	mg/L	-	-	39.7	38.5	42	48	43	76.2	160	260	210	5.4	0.7		0.69	0.7	5.9	5.8	16.0	19.9		18	17		290
selenium	mg/L	0.01	0.1	0.009	< 0.002	< 0.01	< 0.02	0.012	< 0.02	< 0.02	< 0.2	0.200	< 0.002	< 0.002		< 0.002	< <0.002	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002		< 0.2
silicon	mg/L	-	-	3.27	3.64	3	3.7	3.4	3.41	2.3	< 5	4	5.37	5.29		5.7	5.6	11	11	4.03	4.21		5.4	6.0		< 5
silver	mg/L	-	0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.001	< 0.0001	< 0.001	< 0.001	< 0.01	< 0.005	< 0.0001	< 0.0001		< 0.0001	< <0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001		< 0.01
sodium	mg/L	200 d	-	682	609	780	1100	1000	3600	8000	15000	12000	18.2	5.9		6.1	6.3	24	22	171	362		180	110		18000
strontium	mg/L	-	-	14.2	11.8	11	13	13	29.9	77	130	110	1.6	0.244		0.21	0.19	6	5.5	7.02	9.57		6.8	7.8		180
sulphide	mg/L	0.05	-	0.05	0.02	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	0.25	0.04		< 0.02	< <0.02	< 0.02	< 0.02	0.01	< 0.01		< 0.02	< 0.02		0.06
sulphate	mg/L	500	-	1630	1600	1730	1670	1870	762	1070	1250	1340	103	69.6		80	90	38	46	270	276		244	136		1260
thallium	mg/L	-	0.0003	< 0.00005	< 0.00005	< 0.0003	< 0.0005	< 0.00005	< 0.0005	< 0.0005	< 0.005	< 0.003	< 0.00005	< 0.00005		< 0.0001	< <0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005		< 0.005
tin	mg/L	-	-	< 0.001	< 0.001	< 0.005	< 0.01	< 0.001	< 0.01	< 0.01	< 0.1	< 0.05	< 0.001	< 0.001		< 0.001	< <0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001	**Note:** Insufficient water	< 0.1
titanium	mg/L	-	-	< 0.005	-	< 0.03	< 0.05	< 0.005	< 0.05	< 0.05	< 0.5	< 0.3	< 0.005	< 0.005		< 0.005	< <0.005	0.011	0.006	< 0.005	0.006		< 0.005	< 0.005		< 0.5
TSS	mg/L	-	-	8680	1740	5400	1100	1100	501	1000	540	3600	91100	20800		1900	3300	15000	28000	1230	1750		350	86		1500
turbidity	NTU	1	-	11.2	24	2440	1100	1100	188	518	380	4600	6.8	48		340	3900	7000	13000	2.4	19.7		130	96		530
uranium	mg/L	0.1	[0.005]	0.0011	0.0002	< 0.0005	< 0.001	< 0.0001	**0.0075**	0.001	< 0.01	< 0.005	0.0049	0.0019		0.002	0.0019	0.0004	0.0003	0.0010	0.0005		0.0002	0.0002		< 0.01
vanadium	mg/L	-	[0.006]	< 0.0050	< 0.0050	< 0.005	< 0.01	< 0.005	< 0.05	< 0.01	< 0.1	< 0.3	0.0013	0.001		0.001	< <0.001	0.002	0.001	0.0008	< 0.005		0.002	< 0.001		< 0.1
zinc	mg/L	5	[0.02]	< 0.050	0.007	< 0.03	< 0.05	< 0.03	< 0.05	**0.073**	< 0.5	< 0.3	< 0.005	< 0.005		< 0.005	< <0.005	< 0.005	0.006	< 0.005	< 0.005		< 0.005	< 0.005		< 0.5

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 communicated 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 shallow	MW-06 straddle		MW-06 deep	MW-07 shallow		MW-07 deep		MW-08 shallow		MW-08 intermediate		MW-08 deep		MW-09 shallow		MW-09 intermediate		MW-09 deep
				Oct-08	Oct-08	Dec-09	Oct-08	Oct-08	Nov-09	Oct-08	Dec-09	Oct-08	Nov-09	Oct-08	Nov-09	Oct-08	Dec-09	Oct-08	Nov-09	Oct-08	Nov-09	Oct-08
aluminum	mg/L	0.1	[0.075] a		**0.16**	**0.71**		**0.1**	**0.38**	< 0.3	< 0.1	**0.31**	**0.24**	< 0.05	0.013	0.005	< 0.005	**0.16**	0.070	0.066	**0.61**	
alkalinity	mg CaCO$_3$/L	30-500	-		324	312		502	559	33	35	525	549	102	146	414	412	401	438	175	305	
ammonia as N	mg/L	-	-		0.47	0.66		0.65	0.56	19	18	0.87	0.55	4.5	5.5	1.9	2.3	0.38	0.10	2	2.5	
antimony	mg/L	-	[0.02]		0.0007	< 0.0005		0.0009	< 0.0005	< 0.03	< 0.01	0.0015	0.0005	< 0.005	< 0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005	< 0.0005	< 0.0005	
arsenic	mg/L	0.025	[0.005]		0.005	0.003		0.005	0.003	< 0.05	< 0.02	0.004	0.002	< 0.01	< 0.005	**0.006**	< 0.005	0.004	0.001	0.002	0.004	
barium	mg/L	1	-		0.05	0.054		0.059	0.055	< 0.3	< 0.1	0.025	0.019	< 0.05	0.011	0.012	0.013	0.058	0.061	0.058	0.067	
beryllium	mg/L	-	1.1		< 0.0005	< 0.0005		< 0.0005	< 0.0005	< 0.03	< 0.01	< 0.0005	< 0.0005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
bismuth	mg/L	-	-		< 0.001	< 0.001		< 0.001	< 0.001	< 0.05	< 0.02	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
boron	mg/L	5	0.2		**0.28**	**0.23**		**3.3**	**4.3**	**7.6**	**6.6**	**2.4**	**1.5**	**6.8**	**6.1**	**3.7**	**4.5**	**0.46**	**0.48**	**2.8**	**2.5**	
bromide	mg/L	-	-		< 1	< 1		< 1	< 1	205	203	< 1	< 1	23	23	< 1	3	< 1	< 1	2	1	
cadmium	mg/L	0.005	0.0005		< 0.0001	0.0001		< 0.0001	< 0.0001	< 0.005	< 0.002	< 0.0001	< 0.0001	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
calcium	mg/L	-	-		71	73		70	66	3200	3000	150	110	460	450	110	290	56	60	110	85	
chloride	mg/L	250	-		4	6		20	23	17500	17800	13	13	2110	2100	49	213	6	10	142	115	
chromium	mg/L	0.05	-		< 0.005	< 0.005		< 0.005	< 0.005	< 0.3	< 0.1	< 0.005	< 0.005	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
cobalt	mg/L	-	0.0009		**0.019**	**0.015**		**0.026**	**0.013**	< 0.03	< 0.01	**0.048**	**0.016**	**0.015**	**0.0077**	**0.0057**	**0.0016**	**0.011**	**0.0098**	**0.022**	**0.014**	
copper	mg/L	1	[0.005] b		< 0.001	< 0.001		< 0.001	0.001	< 0.05	< 0.02	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
fluoride	mg/L	>1.5 - <2.4	-	**NOT SAMPLED**	0.2	0.2	**NOT SAMPLED**	0.4	0.5	0.2	0.3	0.2	0.3	0.5	0.4	0.3	0.3	0.3	0.2	0.4	0.5	**NOT SAMPLED**
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	-		330	350		690	630	11000	10000	1100	940	1700	1700	620	1300	400	420	450	390	
iron	mg/L	0.3	0.3		**0.39**	**0.6**		**1**	**0.8**	**6.5**	**6**	**0.87**	**0.4**	< 1	**1**	**0.74**	**0.7**	0.12	< 0.1	**0.38**	**1**	
lead	mg/L	0.01	[0.005] c		< 0.0005	< 0.0005		< 0.0005	0.0006	< 0.03	< 0.01	< 0.0005	< 0.0005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
magnesium	mg/L	-	-		37	39		120	110	830	750	190	160	140	140	86	130	62	67	45	42	
manganese	mg/L	0.05	-		0.075	0.067		0.22	0.18	1.6	1.5	0.29	0.16	0.2	0.19	0.1	0.15	0.066	0.042	0.088	0.07	
mercury	mg/L	0.001	0.0002		< 0.0015 (1)	< 0.0001		**0.0017 (1)**	0.0022	< 0.0001	< 0.0001	**0.0036 (1)**	**0.002**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0015 (1)	< 0.0001	
molybdenum	mg/L	-	0.04		0.008	0.004		0.011	0.007	< 0.05	< 0.02	0.005	0.005	< 0.01	0.007	0.004	0.006	0.013	0.006	0.008	0.005	
nickel	mg/L	-	0.025		0.002	0.003		0.004	0.003	< 0.05	< 0.02	0.006	0.004	< 0.01	< 0.005	0.003	< 0.001	0.002	0.002	0.003	0.004	
nitrate as N	mg/L	10	-		< 0.1	0.4		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	2.1	< 0.1	< 0.1	
nitrite as N	mg/L	1	-		< 0.01	0.07		< 0.01	0.06	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.05	< 0.01	< 0.01	< 0.01	
pH	pH Units	6.5-8.5	6.5-8.5		8.3	7.8		**8.6**	7.6	7.4	7.0	8.3	7.7	7.9	7.8	8.1	7.9	8.2	7.9	8.2	7.8	
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	
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	< 5	< 2	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
total phosphorous	mg/L	-	0.01		**8.2**	**16**		**22**	**32**	**0.28**	**0.14**	**76**	**110**	**0.051**	**0.04**	**0.062**	**0.04**	**1.2**	**1.3**	**5.3**	**9**	
potassium	mg/L	-	-		7.2	7.1		8.1	7.4	160	140	20	16	45	44	24	31	18	13	23	19	
selenium	mg/L	0.01	0.1		< 0.002	< 0.002		< 0.002	< 0.002	< 0.1	< 0.04	< 0.002	< 0.002	< 0.02	< 0.01	< 0.002	< 0.01	< 0.002	< 0.002	< 0.002	< 0.002	
silicon	mg/L	-	-		8.5	10		9.5	9.5	4.6	5	9.7	8.0	4.2	3.8	6.1	5.6	8.9	8.6	6.4	7.4	
silver	mg/L	-	0.0001		< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.005	< 0.002	< 0.0001	< 0.0001	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
sodium	mg/L	200 d	-		21	18		83	70	8000	6700	95	92	1200	1200	120	620	35	36	150	110	
strontium	mg/L	-	-		5.5	5.1		3.8	3.5	63	63	15	10	12	12	16	12	7.3	5.2	14	14	
sulphide	mg/L	0.05	-		< 0.02	0.05		< 0.02	0.08	< 0.02	0.02	0.12	0.31	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.06	
sulphate	mg/L	500	-		49	54		202	193	1470	1550	706	631	1040	1040	413	522	70	70	299	254	
thallium	mg/L	-	0.0003		< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.003	< 0.001	< 0.00005	< 0.00005	< 0.0005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	
tin	mg/L	-	-	**Note:** Insufficient water	< 0.001	< 0.001	**Note:** Insufficient water	< 0.001	< 0.001	< 0.05	< 0.02	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**Note:** Insufficient water.
titanium	mg/L	-	-		< 0.005	0.018		< 0.005	0.010	< 0.3	< 0.1	0.011	0.008	< 0.05	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	0.012	
TSS	mg/L	-	-		19000	24000		46000	84000	400	460	130000	130000	92	60	32	22	1200	560	8900	16000	
turbidity	NTU	1	-		11000	23000		36000	100000	310	210	75000	140000	64	48	12	25	3100	2400	11000	20000	
uranium	mg/L	0.1	[0.005]		0.0022	0.0016		**0.0079**	**0.0059**	< 0.005	< 0.002	**0.0056**	**0.01**	< 0.001	0.0001	0.0025	0.0034	**0.0052**	0.0035	0.0008	0.0003	
vanadium	mg/L	-	[0.006]		0.001	0.003		0.001	0.002	< 0.05	< 0.02	0.002	< 0.001	< 0.01	< 0.005	< 0.001	< 0.005	0.001	0.001	0.002	0.001	
zinc	mg/L	5	[0.02]		< 0.005	0.006		< 0.005	< 0.005	< 0.3	< 0.1	< 0.03	< 0.005	< 0.05	0.006	0.006	< 0.005	0.006	0.006	< 0.005	< 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 communicated 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-10 shallow		MW-10 intermediate		MW-10 deep	MW-11 shallow		MW-11 intermediate		MW-11 deep
				Oct-08	Nov-09	Oct-08	Nov-09	Oct-08	Oct-08	Dec-09	Oct-08	Dec-09	Oct-08
aluminum	mg/L	0.1	[0.075] a	**1.2**	**0.66**	**4.8**	**0.41**	**NOT SAMPLED**	**0.7**	**0.36**	**0.13**	**0.13**	**NOT SAMPLED**
alkalinity	mg $CaCO_3$/L	30-500	-	396	475	381	394		308	321	458	431	
ammonia as N	mg/L	-	-	1.4	0.47	1.9	1.6		0.29	0.18	1.4	1.3	
antimony	mg/L	-	[0.02]	0.0014	0.0007	0.001	< 0.0005		< 0.0005	0.0006	< 0.0005	< 0.0005	
arsenic	mg/L	0.025	[0.005]	0.004	0.003	0.005	0.004		0.002	0.005	**0.012**	**0.01**	
barium	mg/L	1	-	0.088	0.093	0.073	0.063		0.074	0.054	0.021	0.020	
beryllium	mg/L	-	1.1	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 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	0.2	**0.39**	0.17	**3.1**	**1.8**		0.17	0.13	**1.3**	**1.7**	
bromide	mg/L	-	-	< 1	< 1	< 1	< 1		< 1	< 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	
calcium	mg/L	-	-	67	74	58	53		110	73	72	69	
chloride	mg/L	250	-	3	3	6	7		7	14	9	11	
chromium	mg/L	0.05	-	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	
cobalt	mg/L	-	0.0009	**0.025**	**0.027**	**0.0065**	**0.011**		**0.023**	**0.015**	**0.017**	**0.0013**	
copper	mg/L	1	[0.005] b	0.001	0.002	0.001	< 0.001		0.003	< 0.001	< 0.001	< 0.001	
fluoride	mg/L	>1.5 - <2.4	-	0.3	0.3	0.3	0.3		0.3	0.3	0.2	0.3	
free cyanide	mg/L	0.2	0.005	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	
hardness	mg $CaCO_3$/L	80-100	-	450	510	330	310		500	450	470	430	
iron	mg/L	0.3	0.3	**0.97**	**1**	**3.2**	**0.6**		**1.4**	**0.7**	**0.86**	**0.8**	
lead	mg/L	0.01	[0.005] c	< 0.0005	0.0008	0.0011	< 0.0005		0.0011	< 0.0005	< 0.0005	< 0.0005	
magnesium	mg/L	-	-	68	79	46	43		57	65	71	62	
manganese	mg/L	0.05	-	0.15	0.23	0.071	0.058		0.32	0.14	0.056	0.028	
mercury	mg/L	0.001	0.0002	< 0.0015 (1)	< 0.0015	< 0.0015 (1)	< 0.0001		< 0.0015 (1)	**0.0003**	< 0.0015 (1)	< 0.0001	
molybdenum	mg/L	-	0.04	0.014	0.004	0.006	0.004		0.022	0.009	0.003	0.003	
nickel	mg/L	-	0.025	0.004	0.006	0.003	0.002		0.005	0.005	\	< 0.001	
nitrate as N	mg/L	10	-	0.5	0.4	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	
nitrite as N	mg/L	1	-	0.02	0.03	< 0.01	0.06		< 0.01	0.03	< 0.01	< 0.01	
pH	pH Units	6.5-8.5	6.5-8.5	8.5	7.8	8.5	7.7		8.2	7.8	8.2	8.2	
phenol	mg/L	-	0.005	< 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	
phosphorous	mg/L	-	-	< 0.1	0.2	< 0.1	< 0.1		0.12	< 0.1	< 0.1	< 0.1	
total phosphorous	mg/L	-	0.01	**64**	**98**	**13**	**10**		**50**	**100**	**3.3**	**0.6**	
potassium	mg/L	-	-	18	8.6	19	15		14	8.6	17	17	
selenium	mg/L	0.01	0.1	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	
silicon	mg/L	-	-	13	10	17	7.2		8.3	11	9.3	8.4	
silver	mg/L	-	0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	
sodium	mg/L	200 d	-	65	26	69	49		53	26	62	64	
strontium	mg/L	-	-	5.1	2.6	12	11		1.2	0.98	11	10	
sulphide	mg/L	0.05	-	0.11	0.19	< 0.02	0.03		< 0.02	0.16	< 0.02	< 0.02	
sulphate	mg/L	500	-	83	58	50	60		184	92	141	148	
thallium	mg/L	-	0.0003	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	< 0.00005	< 0.00005	< 0.00005	
tin	mg/L	-	-	< 0.001	< 0.001	< 0.001	< 0.001	**Note:** Insufficient water.	< 0.001	< 0.001	< 0.001	< 0.001	**Note:** Insufficient water.
titanium	mg/L	-	-	0.041	0.011	0.22	0.010		0.006	0.010	< 0.005	< 0.005	
TSS	mg/L	-	-	150000	94000	25000	6500		98000	190000	990	780	
turbidity	NTU	1	-	50000	87000	9000	7500		44000	130000	510	520	
uranium	mg/L	0.1	[0.005]	**0.011**	0.0044	0.0022	0.0011		**0.011**	0.0046	0.0004	0.0003	
vanadium	mg/L	-	[0.006]	0.003	0.002	**0.009**	0.001		0.002	0.005	< 0.001	< 0.001	
zinc	mg/L	5	[0.02]	< 0.005	0.007	0.006	< 0.005		0.007	< 0.005	< 0.005	< 0.005	

NOTES:
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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 communicated 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			MW-03 shallow			MW-03 deep		
					Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a		**180**		**360**	**5.9**	**5.9**	**6**	**540**	**750**	**85**	**240**	**30**	**57**	**2.800**	**0.920**	**12**	**120**	**40**	**50**	**1.6**	**1.3**	**0.59**
alkalinity	mg CaCO$_3$/L	30-500	-		-		459	-	-	36	-	-	695	-	-	141	-	-	51	-	-	110	-	-	88
ammonia as N	mg/L	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
antimony	mg/L	-	[0.02]		< 0.01		< 0.005	< 0.05	< 0.005	< 0.01	< 0.01	**0.088**	< 0.005	< 0.01	< 0.005	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	0.003	< 0.01	< 0.005	< 0.005
arsenic	mg/L	0.025	[0.005]		**0.093**		**0.140**	< 0.05	**0.014**	< 0.03	**0.22**	**0.24**	**0.03**	**0.13**	**0.014**	**0.03**	< 0.05	< 0.05	< 0.02	**0.067**	**0.043**	**0.038**	< 0.05	< 0.01	< 0.01
barium	mg/L	1	-		1.6		2.8	< 0.3	0.081	< 0.1	6	6.9	0.76	3.9	0.35	0.93	0.052	< 0.05	0.3	0.85	0.33	0.36	0.053	< 0.05	< 0.05
beryllium	mg/L	-	1.1		0.012		0.021	< 0.03	< 0.005	< 0.01	0.038	0.064	< 0.005	0.017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	0.008	< 0.005	0.003	< 0.005	< 0.005	< 0.005
bismuth	mg/L	-	-		< 0.01		< 0.01	< 0.05	< 0.01	< 0.03	< 0.01	0.15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01
boron	mg/L	5	0.2		**0.37**		**0.6**	**5.7**	**6.1**	**5.4**	**0.77**	**1.6**	**0.4**	**2**	**1.9**	**1.7**	**5.9**	**5.8**	**6.1**	**1.2**	**1.3**	**1.2**	**5.4**	**3.5**	**4.8**
bromide	mg/L	-	-		-		< 1	-	-	192	-	-	< 1	-	-	1	-	-	148	-	-	6	-	-	31
cadmium	mg/L	0.005	0.0005		**0.002**		**0.004**	< 0.005	0.003	< 0.003	**0.007**	**0.011**	< 0.001	**0.003**	< 0.001	< 0.001	**0.002**	< 0.001	< 0.002	**0.002**	< 0.001	**0.001**	< 0.001	0.002	< 0.001
calcium	mg/L	-	-		1100		2700	3500	2600	2400	4600	5800	880	2200	380	610	2100	1900	1900	1800	790	1100	2100	630	510
chloride	mg/L	250	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
chromium	mg/L	0.05	-		0.36		0.6	< 0.3	< 0.05	< 0.1	1.2	1.3	0.2	0.54	0.054	0.110	< 0.05	< 0.05	< 0.1	0.3	0.096	0.110	< 0.05	< 0.05	< 0.05
cobalt	mg/L	-	0.0009		**0.16**		**0.29**	< 0.03	< 0.01	< 0.01	**0.59**	**0.69**	**0.08**	**0.26**	**0.0280**	**0.0610**	< 0.01	< 0.01	**0.0100**	**0.13**	**0.045**	**0.049**	< 0.005	< 0.005	< 0.005
copper	mg/L	1	[0.005] b	**N**	**0.32**	**N**	**0.58**	**0.066**	**0.044**	**0.050**	**1.2**	**1.4**	0.2	**0.55**	**0.059**	**0.110**	**0.1**	**0.019**	**0.040**	**0.34**	**0.12**	**0.14**	**0.033**	< 0.01	< 0.01
fluoride	mg/L	>1.5 - <2.4	-	**O**	-	**O**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.4
free cyanide	mg/L	0.2	0.005	**T**	-	**T**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
hardness	mg CaCO$_3$/L	80-100	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iron	mg/L	0.3	0.3	**S**	**360**	**S**	**660**	**27**	**17**	**18**	**1300**	**1400**	**180**	**540**	**55**	**120**	**13**	**6.4**	**29.0**	**270**	**89**	**110**	**9.8**	**3.3**	**2.0**
lead	mg/L	0.01	[0.005] c	**A**	**0.16**	**A**	**0.29**	< 0.03	0.005	< 0.01	**0.43**	**0.55**	**0.07**	**0.2**	**0.024**	**0.050**	< 0.005	< 0.005	**0.010**	**0.12**	**0.047**	**0.054**	< 0.005	< 0.005	< 0.005
magnesium	mg/L	-	-	**M**	310	**M**	620	800	660	580	790	1300	440	360	150	180	490	490	480	290	180	210	550	230	180
manganese	mg/L	0.05	-	**P**	6.7	**P**	16	2.2	1.7	1.6	37	39	5	18	2	4	1.3	1.1	1.8	14	5.4	7.8	1.1	0.38	0.26
mercury	mg/L	0.001	0.0002	**L**	< 0.0001	**L**	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0015 (1)	0.0001	< 0.0001	< 0.0001	< 0.0001
molybdenum	mg/L	-	0.04	**E**	0.024	**E**	0.02	< 0.05	0.011	< 0.03	**0.049**	< 0.1	< 0.01	0.038	0.013	0.01	0.014	< 0.01	< 0.02	0.015	0.015	0.007	< 0.01	0.012	< 0.01
nickel	mg/L	-	0.025	**D**	**0.37**	**D**	**0.7**	< 0.05	< 0.01	< 0.03	**1.4**	**1.5**	**0.2**	**0.6**	**0.058**	**0.130**	< 0.01	< 0.01	**0.050**	**0.28**	**0.087**	**0.100**	< 0.01	< 0.01	< 0.01
nitrate as N	mg/L	10	-		-		0.6	-	-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	-	0.3	-	-	< 0.1
nitrite as N	mg/L	1	-		-		< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	0.03	-	-	< 0.01	-	-	0.14	-	-	0.01
pH	pH Units	6.5-8.5	6.5-8.5		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
phenol	mg/L	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
phosphate	mg/L	-	-		-		< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	0.01	-	-	< 0.01
total phosphorous	mg/L	-	0.01		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
potassium	mg/L	-	-		66		100	170	150	140	160	200	26	97	26	28	130	120	110	49	20	20	110	48	45
selenium	mg/L	0.01	0.1		< 0.02		< 0.02	< 0.1	< 0.02	< 0.05	0.022	< 0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	0.060	< 0.02	< 0.02	0.01	< 0.1	< 0.02	< 0.02
silicon	mg/L	-	-		23		450	12	12	11	39	97	100	28	48	79	8.1	4.9	18	20	55	62	6.4	6.9	4.9
silver	mg/L	-	0.0001		0.001		**0.002**	< 0.005	< 0.001	< 0.003	**0.003**	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	0.0005	< 0.001	0.001	< 0.001
sodium	mg/L	200 d	-		46		85	8600	7500	6900	82	130	72	250	190	160	6600	6900	5600	250	190	160	5000	1700	1500
strontium	mg/L	-	-		4.2		9.0	69	52	49	14	19	5.7	15	11	12	43	41	40	13	12	13	46	17	13
sulphide	mg/L	0.05	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sulphate	mg/L	500	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
thallium	mg/L	-	0.0003		**0.0021**		**0.0041**	< 0.003	< 0.0005	< 0.001	**0.0066**	**0.014**	**0.0009**	**0.003**	**0.001**	**0.0007**	< 0.0005	< 0.0005	< 0.001	**0.0013**	< 0.0005	**0.0004**	< 0.0005	< 0.0005	< 0.0005
tin	mg/L	-	-	**Note:**	< 0.01	**Note:**	< 0.01	< 0.05	< 0.01	< 0.03	< 0.01	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01
titanium	mg/L	-	-	Well has never	1.9	Insufficient	7.1	< 0.3	0.089	0.1	4	11	1.5	2.5	0.6	0.89	< 0.05	< 0.05	0.2	1.8	0.9	0.86	< 0.05	< 0.05	< 0.05
TSS	mg/L	-	-	been sampled.	-	water.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
turbidity	NTU	1	-	Blocked	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
uranium	mg/L	0.1	0.005	since 2002.	**0.032**		**0.043**	< 0.005	< 0.001	< 0.003	**0.068**	**0.11**	**0.027**	**0.031**	0.004	**0.007**	< 0.001	< 0.001	< 0.002	**0.012**	**0.007**	0.0040	< 0.001	0.001	< 0.001
vanadium	mg/L	-	0.006		**0.39**		**0.70**	< 0.05	**0.016**	< 0.03	**1.3**	**1.6**	**0.18**	**0.52**	**0.062**	**0.1**	< 0.05	< 0.05	**0.050**	**0.27**	**0.1**	**0.1**	< 0.05	< 0.01	< 0.01
zinc	mg/L	5	0.02		**1**		**2**	< 0.3	**0.068**	< 0.1	**3.7**	**4.1**	**0.49**	**1.8**	**0.17**	**0.37**	**0.086**	< 0.05	**0.100**	**0.96**	**0.31**	**0.35**	**0.99**	**0.23**	< 0.05

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 communicated 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-04 shallow			MW-04 intermediate			MW-04 deep			MW-05 shallow			MW-05 straddle		MW-05 intermediate			MW-05 deep	
				Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Oct-08	Dec-09	Jan-07	Oct-08	Dec-09	Oct-08	Dec-09
aluminum	mg/L	0.1	[0.075] a	**35**	**37**	**230**	**38**	**12**	**10**	**8**	**9**	**41**	NOT SAMPLED	**82**	**53**	**60**	**300**	NOT SAMPLED	**2.7**	**2**	NOT SAMPLED	**14**
alkalinity	mg CaCO$_3$/L	30-500	-	-	-	390	-	-	50	-	-	66		-	275	-	296		-	264		32
ammonia as N	mg/L	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
antimony	mg/L	-	[0.02]	< 0.001	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.05	< 0.005	< 0.05		< 0.005	< 0.003	< 0.005	< 0.005		< 0.001	< 0.0005		0.05
arsenic	mg/L	0.025	[0.005]	**0.021**	0.02	**0.120**	**0.014**	< 0.01	< 0.01	< 0.05	**0.015**	< 0.1		**0.049**	**0.032**	**0.045**	**0.230**		0.005	0.010		< 0.1
barium	mg/L	1	-	0.39	0.36	2.100	0.52	0.22	0.23	< 0.3	0.16	0.6		1.5	1.0	0.7	3.5		0.051	0.10		< 0.5
beryllium	mg/L	-	1.1	0.002	< 0.005	0.016	< 0.005	< 0.005	< 0.005	< 0.03	< 0.005	< 0.05		0.005	< 0.003	< 0.005	0.017		< 0.001	< 0.0005		< 0.05
bismuth	mg/L	-	-	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1		< 0.01	< 0.005	< 0.01	< 0.01		< 0.001	< 0.001		< 0.1
boron	mg/L	5	0.2	0.098	0.16	**0.5**	**7.2**	**6.7**	**6.4**	**5**	**5.9**	**6.0**		< 0.1	< 0.05	**1.1**	**2.1**		**4**	**3**		**5**
bromide	mg/L	-	-	-	-	< 1	-	-	21	-	-	401		-	< 1	-	< 1		-	< 1		587
cadmium	mg/L	0.005	0.0005	**0.0009**	< 0.001	**0.0040**	**0.002**	< 0.001	< 0.001	< 0.005	0.007	< 0.01		**0.002**	**0.002**	0.002	**0.009**		< 0.0001	0.0001		**0.010**
calcium	mg/L	-	-	260	310	1600	760	590	630	5900	3900	6800		780	550	920	4600		80	75		8600
chloride	mg/L	250	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
chromium	mg/L	0.05	-	0.077	0.065	0.400	0.09	< 0.05	< 0.05	< 0.3	0.096	< 0.5		0.2	0.1	0.13	0.61		0.005	< 0.005		< 0.5
cobalt	mg/L	-	0.0009	**0.042**	0.037	**0.240**	**0.037**	**0.01**	**0.01**	< 0.03	< 0.03	< 0.05		**0.1**	**0.1**	**0.063**	**0.300**		**0.0022**	**0.0014**		< 0.05
copper	mg/L	1	[0.005] b	**0.074**	0.066	**0.420**	**0.1**	**0.034**	**0.030**	**0.24**	**0.13**	**0.80**		**0.47**	**0.35**	**0.16**	**0.87**		**0.01**	**0.01**		**0.10**
fluoride	mg/L	>1.5 - <2.4	-	-	-	0.3	-	-	0.5	-	-	0.1		-	0.1	-	0.3		-	0.5		< 0.1
free cyanide	mg/L	0.2	0.005	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
hardness	mg CaCO$_3$/L	80-100	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
iron	mg/L	0.3	0.3	**83**	**70**	**470**	**71**	**21**	**20**	**42**	**25**	**110**		**170**	**110**	**120**	**590**		**4.3**	**5.8**		**49.0**
lead	mg/L	0.01	[0.005] c	**0.046**	**0.061**	**0.280**	**0.03**	**0.012**	**0.014**	< 0.03	**0.013**	**0.060**		**0.12**	**0.08**	**0.05**	**0.25**		0.003	0.0029		< 0.05
magnesium	mg/L	-	-	84	100	290	180	160	170	1200	920	1600		100	73	110	470		23	24		2000
manganese	mg/L	0.05	-	2.2	2.4	13.0	2.5	1.1	1.0	4.2	2.30	6.50		14	16	7	37		0.18	0.13		5.00
mercury	mg/L	0.001	0.0002	< 0.0001	< 0.0015 (1)	0.0001	< 0.0001	< 0.0015 (1)	< 0.0001	0.0001	< 0.0001	< 0.0001		< 0.0015 (1)	< 0.0001	< 0.0015 (1)	< 0.0001		< 0.0001	< 0.0001		< 0.0001
molybdenum	mg/L	-	0.04	0.007	< 0.01	0.02	0.015	0.012	0.01	< 0.05	0.026	< 0.1		0.012	0.006	< 0.01	0.02		0.009	0.005		< 0.1
nickel	mg/L	-	0.025	**0.082**	**0.077**	**0.480**	**0.081**	0.021	0.02	< 0.05	< 0.1	< 0.1		**0.19**	**0.15**	**0.12**	**0.63**		0.004	0.003		< 0.1
nitrate as N	mg/L	10	-	-	-	2.5	-	-	< 0.1	-	-	< 0.1		-	< 0.1	-	0.3		-	0.2		< 0.1
nitrite as N	mg/L	1	-	-	-	0.25	-	-	< 0.01	-	-	0.02		-	0.02	-	0.16		-	0.22		< 0.01
pH	pH Units	6.5-8.5	6.5-8.5	-	-	8.0	-	-	-	-	-	-		-	-	-	-		-	-		-
phenol	mg/L	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
phosphate	mg/L	-	-	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01		-	< 0.01	-	< 0.01		-	< 0.01		< 0.01
total phosphorous	mg/L	-	0.01	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
potassium	mg/L	-	-	13	14	71	57	49	49	230	170	240		23	11	18	83		17	17		280
selenium	mg/L	0.01	0.1	0.002	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.02	< 0.2		< 0.02	< 0.01	< 0.02	< 0.02		< 0.002	< 0.002		< 0.2
silicon	mg/L	-	-	53	56	350	57	23	19	16	23	58		39	64	75	390		8.8	8.3		18
silver	mg/L	-	0.0001	< 0.0003	< 0.001	**0.00100**	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01		< 0.001	< 0.0005	**0.001**	**0.005**		< 0.0001	< 0.0001		< 0.01
sodium	mg/L	200 d	-	23	34	49	930	1000	1100	13000	8900	14000		6.8	6.8	25	45		170	110		17000
strontium	mg/L	-	-	2	2.5	6.0	16	12	14	120	84	130		1.2	0.85	7.8	21		6.9	8.3		180
sulphide	mg/L	0.05	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
sulphate	mg/L	500	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
thallium	mg/L	-	0.0003	**0.00044**	< 0.0005	**0.00290**	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.0005	< 0.005		**0.0013**	**0.0006**	< 0.0005	**0.0033**		< 0.00005	< 0.00005		< 0.005
tin	mg/L	-	-	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1		< 0.01	< 0.005	< 0.01	< 0.01		< 0.001	< 0.001	**Note:** Insufficient water	< 0.1
titanium	mg/L	-	-	0.78	0.7	5.3	0.64	0.22	0.25	< 0.3	0.36	0.6		1.3	0.77	0.76	5.6		0.056	0.039		< 0.5
TSS	mg/L	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
turbidity	NTU	1	-	-	-	-	-	-	-	-	-	-		-	-	-	-		-	-		-
uranium	mg/L	0.1	0.005	**0.009**	**0.012**	**0.032**	**0.006**	0.001	0.003	< 0.005	0.005	< 0.01		**0.007**	0.0042	0.005	**0.020**		0.0008	0.0002		< 0.01
vanadium	mg/L	-	0.006	**0.091**	**0.089**	**0.480**	**0.086**	**0.04**	**0.02**	< 0.05	< 0.05	< 0.1		**0.17**	**0.10**	**0.12**	**0.57**		0.006	0.004		< 0.1
zinc	mg/L	5	0.02	**0.24**	**0.22**	**1.40**	**0.26**	**0.072**	**0.100**	< 0.3	**0.2**	**0.6**		**0.66**	**0.40**	**0.47**	**2.10**		**0.03**	0.013		< 0.5

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Tansley Quarry Site, Burlington, Ontario

Parameter	Units	ODWS (June 2006)	PWQO (July 1994)	MW-06 shallow	MW-06 straddle		MW-06 deep	MW-07 shallow		MW-07 deep		MW-08 shallow		MW-08 intermediate		MW-08 deep		MW-09 shallow		MW-09 intermediate		MW-09 deep
				Oct-08	Oct-08	Dec-09	Oct-08	Oct-08	Nov-09	Oct-08	Dec-09	Oct-08	Nov-09	Oct-08	Nov-09	Oct-08	Dec-09	Oct-08	Nov-09	Oct-08	Nov-09	Oct-08
aluminum	mg/L	0.1	[0.075] a		**230**	**330**		**610**	**1200**	**6.7**	**2.0**	**1900**	**1300**	**2**	**1**	**0.88**	**0.41**	**47**	**160**	**180**	**310**	
alkalinity	mg $CaCO_3$/L	30-500	-		-	312		-	559	-	35	-	549	-	146	-	412	-	438	-	305	
ammonia as N	mg/L	-	-		-	0.66		-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	
antimony	mg/L	-	[0.02]		< 0.005	< 0.005		< 0.05	< 0.03	< 0.005	< 0.01	< 0.05	< 0.03	< 0.005	< 0.0005	< 0.001	< 0.0005	< 0.001	< 0.005	< 0.005	< 0.005	
arsenic	mg/L	0.025	[0.005]		**0.069**	**0.110**		**0.24**	**0.480**	< 0.01	< 0.03	**0.64**	**0.500**	< 0.01	< 0.005	**0.006**	< 0.005	**0.021**	**0.130**	**0.054**	**0.10**	
barium	mg/L	1	-		3.2	5.5		5.3	11.0	0.094	< 0.1	17	13	< 0.05	0.018	0.018	0.016	0.44	2.0	2.1	4	
beryllium	mg/L	-	1.1		0.014	0.020		< 0.05	0.06	< 0.005	< 0.01	**0.097**	0.08	< 0.005	< 0.0005	< 0.001	< 0.0005	0.003	0.008	0.009	0.017	
bismuth	mg/L	-	-		< 0.01	< 0.01		< 0.1	< 0.05	< 0.01	< 0.03	< 0.1	< 0.05	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	
boron	mg/L	5	0.2		**0.52**	**0.90**		**3.1**	**6.9**	**6.6**	**6.4**	**4.2**	**3.7**	**5.9**	**6.2**	**3.7**	**4.6**	**0.54**	**4.0**	**3.7**	**5.2**	
bromide	mg/L	-	-		-	< 1		-	< 1	-	203	-	< 1	-	23	-	3	-	< 1	-	1	
cadmium	mg/L	0.005	0.0005		**0.004**	**0.005**		< 0.01	**0.026**	< 0.001	**0.013**	**0.018**	**0.017**	< 0.001	< 0.0001	**0.0018**	0.0002	**0.0008**	**0.0050**	**0.002**	**0.003**	
calcium	mg/L	-	-		1700	2400		3600	8100	2700	2900	11000	8000	430	470	150	260	280	1200	1300	2200	
chloride	mg/L	250	-		-	6		-	-	-	-	-	-	-	-	-	-	-	-	-	115	
chromium	mg/L	0.05	-		0.38	0.48		1	2	< 0.05	< 0.1	3.3	2.1	< 0.05	< 0.005	0.018	< 0.005	0.12	0.41	0.36	0.52	
cobalt	mg/L	-	0.0009		**0.23**	**0.32**		**0.54**	**1.10**	**0.006**	< 0.01	**1.9**	**1.3**	< 0.005	< 0.0005	0.0007	< 0.0005	**0.049**	**0.160**	**0.16**	**0.26**	
copper	mg/L	1	[0.005] b	**NOT SAMPLED**	**0.4**	**0.5**	**NOT SAMPLED**	**1.1**	**2.3**	**0.028**	**0.060**	**3.6**	**2.3**	< 0.01	0.001	**0.037**	< 0.001	**0.054**	**0.170**	**0.15**	**0.20**	**NOT SAMPLED**
fluoride	mg/L	>1.5 - <2.4	-		-	0.2		-	0.5	-	0.3	-	0.3	-	0.4	-	0.3	-	0.2	-	0.5	
free cyanide	mg/L	0.2	0.005		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.002	
hardness	mg $CaCO_3$/L	80-100	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
iron	mg/L	0.3	0.3		**360**	**530**		**1100**	**2400**	**17**	**9**	**3500**	**2500**	**3**	**2**	**2.3**	**1.3**	**76**	**290**	**260**	**410**	
lead	mg/L	0.01	[0.005] c		**0.14**	**0.16**		**0.55**	**1.10**	**0.009**	**0.01**	**1.4**	**1.00**	< 0.005	0.0006	0.003	< 0.0005	**0.026**	**0.090**	**0.1**	**0.2**	
magnesium	mg/L	-	-		260	350		740	1400	740	730	2000	1400	120	140	92	120	99	700	190	300	
manganese	mg/L	0.05	-		16	22		30	67.0	1.6	1.5	110	82.0	0.22	0.20	0.15	0.16	2.4	7.1	10	18.0	
mercury	mg/L	0.001	0.0002		< 0.0015 (1)	< 0.0001		**0.0017 (2)**	**0.0022**	< 0.0001	< 0.0001	**0.0036 (1)**	**0.0020**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< .0015 (1	< 0.0001	< .0015 (1	< 0.0001	
molybdenum	mg/L	-	0.04		0.016	0.02		< 0.1	**0.080**	< 0.01	< 0.03	< 0.1	**0.070**	< 0.010	0.007	0.006	0.006	0.015	**0.080**	0.035	**0.050**	
nickel	mg/L	-	0.025		**0.480**	**0.730**		**1.3**	**2.5**	< 0.01	< 0.03	**4.2**	**2.8**	< 0.010	< 0.005	0.019	0.003	**0.1**	**0.3**	0.36	**0.6**	
nitrate as N	mg/L	10	-		-	0.4		-	< 0.1	-	< 0.1	-	< 0.1	-	< 0.1	-	< 0.1	-	2.1	-	< 0.1	
nitrite as N	mg/L	1	-		-	0.07		-	0.06	-	< 0.01	-	< 0.01	-	< 0.01	-	0.01	-	< 0.01	-	< 0.01	
pH	pH Units	6.5-8.5	6.5-8.5		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	
phenol	mg/L	-	-		-	-		-	-	-	-	-	-	-	-	-	-	-	< -	-	< 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		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
potassium	mg/L	-	-		75	100		160	230	140	140	410	250	43	46	27	28	30	150	88	130	
selenium	mg/L	0.01	0.1		< 0.02	< 0.02		< 0.2	< 0.1	0.021	< 0.05	< 0.2	< 0.1	< 0.02	< 0.01	< 0.002	< 0.01	< 0.002	< 0.02	< 0.02	< 0.02	
silicon	mg/L	-	-		85	430		140	970	15	10	250	940	7.6	5.8	6.8	6.4	70	310	77	420	
silver	mg/L	-	0.0001		< 0.001	< 0.001		< 0.01	< 0.005	< 0.001	< 0.003	< 0.01	< 0.005	< 0.001	**0.0003**	< 0.0001	< 0.0001	**0.0003**	< 0.001	**0.003**	**0.002**	
sodium	mg/L	200 d	-		26	31		85	110	6600	6500	140	120	1100	1100	210	540	36	310	170	200	
strontium	mg/L	-	-		10	14		14	25	56	60	53	41	12	12	17	13	8.9	48	22	34	
sulphide	mg/L	0.05	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
sulphate	mg/L	500	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
thallium	mg/L	-	0.0003		**0.0023**	**0.0031**		**0.007**	**0.012**	< 0.0005	< 0.001	**0.014**	**0.010**	< 0.0005	< 0.00005	< 0.00005	< 0.00005	**0.00038**	######	**0.0019**	**0.0026**	
tin	mg/L	-	-	**Note:** Insufficient water	< 0.01	< 0.01	**Note:** Insufficient water	< 0.1	< 0.05	< 0.01	< 0.03	< 0.1	< 0.05	< 0.01	< 0.001	0.001	< 0.001	0.001	< 0.01	< 0.01	< 0.01	**Note:** Insufficient water.
titanium	mg/L	-	-		2.3	4.7		4.9	14	0.12	< 0.1	8.8	12	0.058	0.038	0.026	0.034	0.6	2.6	1.7	4.0	
TSS	mg/L	-	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	16000	
turbidity	NTU	1	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
uranium	mg/L	0.1	0.005		**0.017**	**0.017**		**0.086**	**0.140**	0.002	< 0.003	**0.13**	**0.08**	< 0.001	0.0002	0.0029	0.0043	**0.0084**	**0.0420**	**0.01**	**0.02**	
vanadium	mg/L	-	0.006		**0.42**	**0.57**		**1.3**	**2.2**	< 0.01	< 0.03	**3.5**	**2.2**	< 0.01	< 0.005	0.002	< 0.005	**0.092**	**0.320**	**0.32**	**0.52**	
zinc	mg/L	5	0.02		**1.8**	**1.7**		**3.3**	**6.1**	**0.059**	**0.100**	**10**	**7**	< 0.05	< 0.005	**0.069**	< 0.005	**0.37**	**1.30**	**1.1**	**1.3**	

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 communicated 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-10 shallow		MW-10 intermediate		MW-10 deep	MW-11 shallow		MW-11 intermediate		MW-11 deep
				Oct-08	Nov-09	Oct-08	Nov-09	Oct-08	Oct-08	Dec-09	Oct-08	Dec-09	Oct-08
aluminum	mg/L	0.1	[0.075] a	**1000**	**1800**	**510**	**200**		**840**	**880**	**12**	**5**	
alkalinity	mg CaCO$_3$/L	30-500	-	-	475	-	394		-	321	-	431	
ammonia as N	mg/L	-	-	-	-	-	1.6		-	-	-	-	
antimony	mg/L	-	[0.02]	< 0.05	< 0.03	< 0.005	< 0.005		< 0.05	< 0.03	< 0.001	0.0006	
arsenic	mg/L	0.025	[0.005]	**0.27**	**0.59**	**0.11**	**0.06**		**0.4**	**0.4**	**0.019**	**0.015**	
barium	mg/L	1	-	13	26	6.9	3.0		18	18	0.14	0.085	
beryllium	mg/L	-	1.1	0.057	0.10	0.025	0.012		< 0.05	0.04	0.001	< 0.0005	
bismuth	mg/L	-	-	< 0.1	< 0.05	< 0.01	< 0.01		< 0.1	< 0.05	< 0.001	< 0.001	
boron	mg/L	5	0.2	**1.4**	**3.1**	**4.3**	**3.5**		**1.5**	**1.3**	**1.4**	**1.6**	
bromide	mg/L	-	-	-	< 1	-	< 1		-	< 1	-	< 1	
cadmium	mg/L	0.005	0.0005	< 0.01	**0.0190**	**0.005**	**0.002**		< 0.0100	**0.0100**	0.0002	< 0.0001	
calcium	mg/L	-	-	7800	17000	2800	1400		7600	7800	210	140	
chloride	mg/L	250	-	-	-	-	7		-	-	-	-	
chromium	mg/L	0.05	-	2	4	0.79	0.28		3.4	2.9	0.025	0.012	
cobalt	mg/L	-	0.0009	**1.1**	**2.0**	**0.51**	**0.19**		**0.88**	**0.85**	**0.012**	**0.007**	
copper	mg/L	1	[0.005] b	**1.4**	**2.5**	**0.43**	**0.16**	**N**	**2.3**	**2.3**	**0.022**	**0.011**	**N**
fluoride	mg/L	>1.5 - <2.4	-	-	0.3	-	0.3	**O**	-	0.3	-	0.3	**O**
free cyanide	mg/L	0.2	0.005	-	-	-	< 0.002	**T**	-	-	-	-	**T**
hardness	mg CaCO$_3$/L	80-100	-	-	-	-	-		-	-	-	-	
iron	mg/L	0.3	0.3	**1700**	**3200**	**780**	**280**	**S**	**1700**	**1600**	**20**	**11**	**S**
lead	mg/L	0.01	[0.005] c	**0.65**	**1**	**0.21**	**0.09**	**A**	**0.68**	**0.66**	**0.008**	0.0046	**A**
magnesium	mg/L	-	-	1200	2300	480	240	**M**	960	960	87	70	**M**
manganese	mg/L	0.05	-	71	150	27	12	**P**	79	82	1.3	0.6	**P**
mercury	mg/L	0.001	0.0002	< .0015 (1	< 0.0015	< 0.0015 (2)	< 0.0001	**L**	< 0.0015 (1)	**0.0003**	< 0.0015 (1)	< 0.0001	**L**
molybdenum	mg/L	-	0.04	< 0.1	< 0.05	0.023	0.02	**E**	< 0.1	< 0.05	0.004	0.004	**E**
nickel	mg/L	-	0.025	2.2	**4.1**	1	**0.4**	**D**	**1.8**	**1.8**	0.023	0.012	**D**
nitrate as N	mg/L	10	-	-	0.4	-	< 0.1		-	< 0.1	-	< 0.1	
nitrite as N	mg/L	1	-	-	0.03	-	0.06		-	0.03	-	< 0.01	
pH	pH Units	6.5-8.5	6.5-8.5	-	-	-	7.7		-	-	-	-	
phenol	mg/L	-	-	-	-	-	< 0.001		-	-	-	-	
phosphate	mg/L	-	-	-	< 0.01	-	< 0.01		-	< 0.01	-	< 0.01	
total phosphorous	mg/L	-	0.01	-	-	-	-		-	-	-	-	
potassium	mg/L	-	-	270	360	150	87		220	190	21	18	
selenium	mg/L	0.01	0.1	< 0.2	< 0.1	< 0.02	< 0.02		< 0.2	< 0.1	< 0.002	< 0.002	
silicon	mg/L	-	-	190	1100	130	280		86	790	27	17	
silver	mg/L	-	0.0001	< 0.01	**0.005**	**0.001**	< 0.001		< 0.01	< 0.005	< 0.0001	< 0.0001	
sodium	mg/L	200 d	-	74	67	85	82		60	54	64	64	
strontium	mg/L	-	-	24	40	27	24		16	16	12	11	
sulphide	mg/L	0.05	-	-	-	-	0.03		-	-	-	-	
sulphate	mg/L	500	-	-	-	-	60		-	-	-	-	
thallium	mg/L	-	0.0003	**0.007**	**0.012**	**0.004**	**0.002**		**0.009**	**0.007**	0.00009	0.00007	
tin	mg/L	-	-	< 0.1	< 0.05	< 0.01	< 0.01	**Note:**	< 0.100	< 0.05	< 0.001	< 0.001	**Note:**
titanium	mg/L	-	-	5.3	12	3.5	3.1	Insufficient	4.8	7.9	0.2	0.097	Insufficient
TSS	mg/L	-	-	-	-	-	6500	water.	-	-	-	-	water.
turbidity	NTU	1	-	-	-	-	-		-	-	-	-	
uranium	mg/L	0.1	0.005	**0.09**	**0.13**	**0.03**	**0.01**		**0.093**	**0.066**	0.0017	0.0009	
vanadium	mg/L	-	0.006	**1.80**	**2.70**	**0.83**	**0.33**		**1.6**	**1.6**	**0.025**	**0.011**	
zinc	mg/L	5	0.02	**5.5**	**9.6**	**2.5**	**0.9**		**4.5**	**4.4**	**0.06**	**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 communicated 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
aluminum	mg/L				0.1	0.038	0.01	0.012
alkalinity	mg CaCO$_3$/L				30-500	362	435	77
ammonia-N	mg/L					0.31	<0.05	1.0
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005
arsenic	mg/L		0.025			<0.001	<0.001	<0.001
barium	mg/L	1				0.037	0.022	0.010
beryllium	mg/L					<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001
boron	mg/L		5			0.69	0.46	1.8
bromide	mg/L					<1	<1	3
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001
calcium	mg/L					140	130	190
chloride	mg/L			250		104	49	**264**
chromium	mg/L	0.05				<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.069	0.014	0.006
fluoride	mg/L	1.5 [a]				0.2	0.2	0.2
free cyanide	mg/L					<0.002	<0.002	<0.002
hardness	mg CaCO$_3$/L				80-100	**760**	**890**	**740**
iron	mg/L			0.3		<0.05	<0.1	<0.1
lead	mg/L	0.01 [c]				0.0063	<0.0005	0.0010
magnesium	mg/L					130	140	79
manganese	mg/L			0.05		0.043	0.011	**0.15**
mercury	mg/L					<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.007	0.007	0.018
nickel	mg/L					<0.001	<0.001	<0.001
nitrate as N	mg/L	10.0 [b]				3	2.9	<0.1
nitrite as N	mg/L	1.0 [b]				0.11	<0.01	<0.01
pH	pH Units				6.5-8.5	8.1	8.2	7.8
phenol	mg/L					<0.001	<0.001	0.001
phosphate	mg/L					<0.01	<0.01	<0.01
total phosphorous	mg/L					0.005	0.01	<0.002
potassium	mg/L					13	9.6	17
selenium	mg/L	0.01				<0.002	<0.002	<0.002
silicon	mg/L					6	6.4	4.3
silver	mg/L					<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		120	83	**260**
strontium	mg/L					6.1	5	12
sulphate	mg/L			500 [d]		**563**	**543**	**838**
sulphide	mg/L					<0.02	<0.02	<0.02
thallium	mg/L					<0.05	<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					<10	<10	<10
turbidity	NTU			5 [e]		1.4	0.3	0.6
uranium	mg/L					0.0057	0.0074	0.0004
vanadium	mg/L					<0.001	<0.001	<0.001
zinc	mg/L			5		0.04	0.032	<0.03

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 fluoride 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
aluminum	mg/L				0.1	**0.12**	0.036	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 fluoride 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.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
aluminum	mg/L				0.1	<0.005	0.007	<0.01	0.029	0.005	NOT SAMPLED
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	**Note:** Cistern installed. Well not in use.
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 fluoride 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
aluminum	mg/L				0.1	<0.005	<0.005	<0.005	0.012	0.005	0.006	0.010
alkalinity	mg $CaCO_3$/L				30-500	391	394	389	400	402	417	404
ammonia-N	mg/L					0.50	0.50	0.92	1.30	0.76	0.28	1.3
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.0012	<0.0005
arsenic	mg/L		0.025			<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
barium	mg/L	1				0.014	0.014	0.013	0.013	0.014	0.014	0.014
beryllium	mg/L					<0.001	<0.001	<0.001	-	<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			2.84	2.82	2.96	3.10	3.7	2.9	3.0
bromide	mg/L					<0.5	<0.5	<0.5	0.2	<1	<1	<1
cadmium	mg/L	0.005				<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
chloride	mg/L			250		33.3	34.4	37.3	22	23	18	18
chromium	mg/L	0.05				<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
copper	mg/L			1		0.0064	0.0066	0.0035	0.011	0.027	0.022	0.016
fluoride	mg/L	1.5 [a]				0.3	0.4	0.4	0.4	0.3	0.3	0.3
free cyanide	mg/L					<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**627**	**553**	**597**	**510**	**490**	**510**	**520**
iron	mg/L			0.3		<0.03	<0.03	<0.03	0.03	**0.34**	<0.1	0.2
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005	<0.0005	0.005	0.0022	0.0016
magnesium	mg/L					84.7	75.3	79.7	70	82	75	71
manganese	mg/L			0.05		0.008	0.008	0.015	0.015	0.011	0.011	0.017
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					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
nitrate as N	mg/L	10.0 [b]				1.3	1.3	1.2	0.7	1.2	1.2	0.7
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.2	0.2	0.02	<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
phenol	mg/L					<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
phosphorous	mg/L					<0.05	<0.05	-	-	-	-	
total phosphorous	mg/L					<0.002	<0.002	0.007	<0.01	0.002	0.006	<0.002
potassium	mg/L					29.6	26.5	25.5	23	27	25	23
selenium	mg/L	0.01				<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
silver	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
sodium	mg/L			20/200 [f]		140	130	134	110	140	110	97
strontium	mg/L					14.3	14.1	13	-	15	15	14
sulphide	mg/L					<0.01	-	<0.01	0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		437	446	440	-	392	351	338
thallium	mg/L					0.00006	0.00008	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
titanium	mg/L					<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005
TSS	mg/L					2	2	2	2	<1	<10	<10
turbidity	NTU			5 [e]		0.2	0.2	1.1	0.5	3.5	0.3	2.0
uranium	mg/L					0.0003	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003
vanadium	mg/L					0.0023	0.0045	0.0026	<0.002	<0.001	<0.001	<0.001
zinc	mg/L			5		0.066	0.066	0.013	0.069	0.067	0.16	0.083

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 fluoride 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
aluminum	mg/L				0.1	<0.005	<0.005	<0.005	<0.01	<0.005	0.007	0.007
alkalinity	mg $CaCO_3$/L				30-500	356	357	362	360	380	353	360
ammonia-N	mg/L					0.43	0.5	0.5	0.47	0.63	0.54	0.54
antimony	mg/L		0.006			<0.0005	<0.0005	<0.0005	<0.002	<0.001	<0.0005	<0.0005
arsenic	mg/L		0.025			0.013	0.013	0.013	0.013	0.01	0.007	0.013
barium	mg/L	1				0.028	0.024	0.023	0.024	0.021	0.019	0.025
beryllium	mg/L					<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
bismuth	mg/L					<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
bromide	mg/L					<0.5	<0.5	<0.5	<0.1	<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001	<0.00007	<0.0001	<0.0001	<0.0001
calcium	mg/L					91.3	82.8	81.4	72	93	80	85
chloride	mg/L			250		97.8	63.5	64.4	88	66	69	83
chromium	mg/L	0.05				<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.005
cobalt	mg/L					0.0001	0.0002	0.0002	<0.005	<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.0045	0.0014	0.0015	0.002	0.019	0.025	0.018
fluoride	mg/L	1.5 [a]				0.2	0.3	0.3	0.3	0.2	0.2	0.2
free cyanide	mg/L					<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**613**	**552**	**549**	**470**	**580**	**500**	**550**
iron	mg/L			0.3		**1.81**	**1.39**	**1.35**	**0.74**	**0.6**	**0.53**	**1.3**
lead	mg/L	0.01 [c]				<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
manganese	mg/L			0.05		**0.052**	0.046	0.045	0.029	0.032	0.036	0.042
mercury	mg/L					<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.004	0.005	0.005	<0.005	0.005	0.005	0.005
nickel	mg/L					<0.001	<0.001	<0.001	0.002	<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
nitrite as N	mg/L	1.0 [b]				<0.2	<0.2	<0.2	0.0	<0.01	<0.01	0.02
pH	pH Units				6.5-8.5	7.74	7.61	7.57	7.67	8.1	8.2	8.0
phenol	mg/L					<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
phosphorous	mg/L					<0.05	-	-	-	-	-	
total phosphorous	mg/L					0.003	0.007	0.007	<0.01	<0.002	0.017	<0.002
potassium	mg/L					9.1	9.2	9.2	7.5	10	9.9	9.4
selenium	mg/L	0.01				<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
silver	mg/L					<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
strontium	mg/L					4.37	4.55	4.59	4.60	5.1	5.3	5.6
sulphide	mg/L					0.01	0.01		<0.02	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		187	213	215	190	210	229	197
thallium	mg/L					0.00007	<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
titanium	mg/L					<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005
TSS	mg/L					4	10	9	2	<1	<10	<10
turbidity	NTU			5 [e]		2.2	**9.7**	**9.7**	**12**	3.5	2	**8**
uranium	mg/L					0.0015	0.0011	0.0011	0.0012	0.0011	0.0009	0.0012
vanadium	mg/L					0.002	0.0025	0.0017	<0.002	<0.001	<0.001	<0.001
zinc	mg/L			5		0.007	0.01	0.01	0.007	0.026	0.009	0.006

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 fluoride 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
aluminum	mg/L				0.1	0.007	0.005	0.006
alkalinity	mg $CaCO_3$/L				30-500	385	361	356
ammonia-N	mg/L					0.5	0.39	0.42
antimony	mg/L		0.006			<0.001	<0.0005	<0.0005
arsenic	mg/L		0.025			0.016	0.014	0.014
barium	mg/L	1				0.032	0.037	0.029
beryllium	mg/L					<0.0005	<0.0005	<0.0005
bismuth	mg/L					<0.001	<0.001	<0.001
boron	mg/L		5			0.52	0.44	0.48
bromide	mg/L					<1	<1	<1
cadmium	mg/L	0.005				<0.0001	<0.0001	<0.0001
calcium	mg/L					100.0	92	90
chloride	mg/L			250		97	83	131
chromium	mg/L	0.05				<0.005	<0.005	<0.005
cobalt	mg/L					<0.0005	<0.0005	<0.0005
copper	mg/L			1		0.001	0.003	0.006
fluoride	mg/L	1.5 [a]				0.2	0.2	0.2
free cyanide	mg/L					<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**610**	**510**	**580**
iron	mg/L			0.3		**1.4**	**1.1**	**1.3**
lead	mg/L	0.01 [c]				<0.0005	<0.0005	<0.0005
magnesium	mg/L					85	68	78
manganese	mg/L			0.05		0.028	0.032	0.029
mercury	mg/L					<0.0001	<0.0001	<0.0001
molybdenum	mg/L					0.003	0.002	0.002
nickel	mg/L					<0.001	<0.001	<0.001
nitrate as N	mg/L	10.0 [b]				<0.1	<0.1	<0.1
nitrite as N	mg/L	1.0 [b]				<0.01	<0.01	<0.01
pH	pH Units				6.5-8.5	8.1	8.1	7.9
phenol	mg/L					<0.001	<0.001	<0.001
phosphate	mg/L					<0.01	<0.01	<0.01
phosphorous	mg/L					-	-	
total phosphorous	mg/L					<0.002	0.014	<0.002
potassium	mg/L					8.4	7.9	7.4
selenium	mg/L	0.01				<0.002	<0.002	<0.002
silicon	mg/L					11	10	9.6
silver	mg/L					<0.0001	<0.0001	<0.0001
sodium	mg/L			20/200 [f]		54.0	45	46
strontium	mg/L					4.20	4.3	4.3
sulphide	mg/L					<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		141	104	144
thallium	mg/L					<0.00005	<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					<3	<10	<10
turbidity	NTU			5 [e]		**12.7**	**8.5**	**17**
uranium	mg/L					0.0011	0.0009	0.0013
vanadium	mg/L					<0.001	<0.001	<0.001
zinc	mg/L			5		0.008	0.006	0.007

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

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 fluoride 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 - 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
aluminum	mg/L				0.1	<0.005	0.013	0.044	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
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		

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

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

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 fluoride 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 - 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
aluminum	mg/L				0.1	<0.005	0.017	0.03	**NOT SAMPLED**	**NOT SAMPLED**
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	**Note:** Well inaccessible	**Note:** Well not in use
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 fluoride 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.

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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.14
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
aluminum	mg/L				0.1	<0.01	<0.03	<0.05	<0.005
alkalinity	mg $CaCO_3$/L				30-500	200	198	189	168
ammonia-N	mg/L					2.2	1.64	1.8	2.0
antimony	mg/L		0.006			<0.002	<0.005	<0.005	<0.0005
arsenic	mg/L		0.025			0.004	<0.005	<0.01	<0.005
barium	mg/L	1				0.013	<0.03	<0.05	0.012
beryllium	mg/L					<0.001	<0.003	<0.005	<0.0005
bismuth	mg/L					-	<0.005	<0.01	<0.001
boron	mg/L		5			4.2	**5.3**	4.5	5.0
bromide	mg/L					16	16	19	18
cadmium	mg/L	0.005				0.00007	<0.0005	<0.001	<0.0001
calcium	mg/L					320	380	340	360
chloride	mg/L			250		**1600**	**1590**	**1660**	**1620**
chromium	mg/L	0.05				<0.002	<0.03	<0.05	<0.005
cobalt	mg/L					<0.0005	<0.003	<0.005	<0.0005
copper	mg/L			1		0.027	0.026	0.035	0.034
fluoride	mg/L	1.5 [a]				0.47	0.3	0.3	0.4
free cyanide	mg/L					<0.002	<0.002	<0.002	<0.002
hardness	mg $CaCO_3$/L				80-100	**1300**	**1500**	**1300**	**1400**
iron	mg/L			0.3		0.29	**0.6**	<1	**0.4**
lead	mg/L	0.01 [c]				0.0008	<0.003	<0.005	<0.0005
magnesium	mg/L					120	130	130	130
manganese	mg/L			0.05		**13**	**0.14**	**0.11**	**0.061**
mercury	mg/L					<0.00005	<0.0001	<0.0001	<0.0001
molybdenum	mg/L					-	0.006	<0.01	0.006
nickel	mg/L					<0.002	<0.005	<0.01	<0.005
nitrate as N	mg/L	10.0 [b]				0.65	0.2	3	1.6
nitrite as N	mg/L	1.0 [b]				0.078	0.04	0.01	0.05
pH	pH Units				6.5-8.5	7.5	7.8	8.1	7.7
phenol	mg/L					<0.001	<0.001	<0.001	<0.001
phosphate	mg/L					0.5	<0.01	<0.01	<0.01
phosphorous	mg/L					-	-	-	
total phosphorous	mg/L					<0.01	0.003	0.014	<0.002
potassium	mg/L					34	40	38	38
selenium	mg/L	0.01				**0.012**	<0.01	<0.02	<0.01
silicon	mg/L					-	4.6	4.5	3.9
silver	mg/L					<0.0001	<0.0005	<0.001	<0.0001
sodium	mg/L			20/200 [f]		**760**	**920**	**870**	**880**
strontium	mg/L					-	21	20	21
sulphide	mg/L					0.1	<0.02	<0.02	<0.02
sulphate	mg/L			500 [d]		**820**	**865**	**802**	**907**
thallium	mg/L					<0.0002	<0.0003	<0.0005	<0.00005
tin	mg/L					-	<0.005	<0.01	<0.001
titanium	mg/L					-	<0.030	<0.05	<0.005
TSS	mg/L					2	2	<10	<10
turbidity	NTU			5 [e]		1.1	**5.6**	2.1	2.7
uranium	mg/L					<0.0002	<0.0005	<0.001	0.0001
vanadium	mg/L					<0.002	<0.005	<0.01	<0.005
zinc	mg/L			5		0.19	0.18	0.053	0.078

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 fluoride 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.

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[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 - 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
aluminum	mg/L				0.1	<0.005	0.034	0.014	<0.005	0.005	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.
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:

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[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. #: 17201801, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/15
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G1919
Received: 2009/11/30, 16:40

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	7	N/A	2009/12/04	CAM SOP-00448	SM 2320B
Anions	7	N/A	2009/12/04	CAM SOP-00435	SM 4110B
Free Cyanide	7	N/A	2009/12/04	Ont SOP-0094	EPA 9012 Modified
Fluoride	7	2009/12/04	2009/12/04	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	7	N/A	2009/12/07	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	7	2009/12/03	2009/12/03	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	7	N/A	2009/12/05	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	7	N/A	2009/12/05	CAM SOP-00447	EPA 6020
Ammonia-N	7	N/A	2009/12/07	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/03	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	4	N/A	2009/12/04	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2009/12/07	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	7	N/A	2009/12/04	CAM SOP-00448	SM 4500H
Phenols (4AAP)	7	N/A	2009/12/03	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	7	N/A	2009/12/07	CAM SOP-00461	SM 4500 P-F
Sulphide	7	N/A	2009/12/07	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	7	2009/12/04	2009/12/07	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	7	N/A	2009/12/02	CAM SOP-00428	SM 2540D
Turbidity	7	N/A	2009/12/03	CAM SOP-00417	APHA 2130

(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. #: 17201801, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/15
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EM8709			EM8710		
Sampling Date		2009/11/30			2009/11/30		
COC Number		172018-0			172018-0		
	Units	**MW7-SHALLOW**	**RDL**	**QC Batch**	**MW10-SHALLOW**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	630	1	2024548	510	1	2024548
Inorganics							
Total Ammonia-N	mg/L	0.56	0.05	2026743	0.47	0.05	2026743
Fluoride (F-)	mg/L	0.5	0.1	2027849	0.3	0.1	2027849
Free Cyanide	mg/L	<0.002	0.002	2026039	<0.002	0.002	2026039
Orthophosphate (P)	mg/L	<0.01	0.01	2027777	<0.01	0.01	2027777
pH	pH	7.6		2027848	7.8		2027848
Phenols-4AAP	mg/L	<0.001	0.001	2024854	<0.001	0.001	2024854
Total Phosphorus	mg/L	32	2	2027251	98	5	2027251
Total Suspended Solids	mg/L	84000	10	2025063	94000	10	2025063
Sulphide	mg/L	0.08	0.02	2027899	0.19	0.02	2027899
Turbidity	NTU	100000	5	2025656	87000	2.5	2025656
Alkalinity (Total as CaCO3)	mg/L	559	1	2027838	475	1	2027838
Nitrite (N)	mg/L	0.06	0.01	2026446	0.03	0.01	2027208
Dissolved Chloride (Cl)	mg/L	23	1	2027791	3	1	2027791
Nitrate (N)	mg/L	<0.1	0.1	2026446	0.4	0.1	2027208
Nitrate + Nitrite	mg/L	0.1	0.1	2026446	0.4	0.1	2027208
Dissolved Bromide (Br-)	mg/L	<1	1	2027791	<1	1	2027791
Dissolved Sulphate (SO4)	mg/L	193	1	2027791	58	1	2027791

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EM8711			EM8712		
Sampling Date		2009/11/30			2009/11/30		
COC Number		172018-0			172018-0		
	Units	**MW10-INT**	**RDL**	**QC Batch**	**MW9-SHALLOW**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	310	1	2024548	420	1	2024548
Inorganics							
Total Ammonia-N	mg/L	1.6	0.05	2026743	0.10	0.05	2026743
Fluoride (F-)	mg/L	0.3	0.1	2027849	0.2	0.1	2027849
Free Cyanide	mg/L	<0.002	0.002	2026039	<0.002	0.002	2026039
Orthophosphate (P)	mg/L	<0.01	0.01	2027777	<0.01	0.01	2027777
pH	pH	7.7		2027848	7.9		2027848
Phenols-4AAP	mg/L	<0.001	0.001	2024854	<0.001	0.001	2024854
Total Phosphorus	mg/L	10	2	2027251	1.3	0.2	2027251
Total Suspended Solids	mg/L	6500	10	2025063	560	10	2025063
Sulphide	mg/L	0.03	0.02	2027899	<0.02	0.02	2027899
Turbidity	NTU	7500	0.3	2025656	2400	0.1	2025656
Alkalinity (Total as CaCO3)	mg/L	394	1	2027838	438	1	2027838
Nitrite (N)	mg/L	0.06	0.01	2027208	<0.01	0.01	2026446
Dissolved Chloride (Cl)	mg/L	7	1	2027791	10	1	2027791
Nitrate (N)	mg/L	<0.1	0.1	2027208	2.1	0.1	2026446
Nitrate + Nitrite	mg/L	0.1	0.1	2027208	2.1	0.1	2026446
Dissolved Bromide (Br-)	mg/L	<1	1	2027791	<1	1	2027791
Dissolved Sulphate (SO4)	mg/L	60	1	2027791	70	1	2027791

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EM8713			EM8714		
Sampling Date		2009/11/30			2009/11/30		
COC Number		172018-0			172018-0		
	Units	**MW9-INT**	**RDL**	**QC Batch**	**MW8-SHALLOW**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	390	1	2024548	940	1	2024548
Inorganics							
Total Ammonia-N	mg/L	2.5	0.05	2026743	0.55	0.05	2026743
Fluoride (F-)	mg/L	0.5	0.1	2027849	0.3	0.1	2027849
Free Cyanide	mg/L	<0.002	0.002	2026039	<0.002	0.002	2026039
Orthophosphate (P)	mg/L	<0.01	0.01	2027777	<0.01	0.01	2027777
pH	pH	7.8		2027848	7.7		2027848
Phenols-4AAP	mg/L	<0.001	0.001	2024854	<0.001	0.001	2024854
Total Phosphorus	mg/L	9	2	2027251	110	5	2027251
Total Suspended Solids	mg/L	16000	10	2025063	130000	10	2025063
Sulphide	mg/L	0.06	0.02	2027899	0.31	0.02	2027899
Turbidity	NTU	20000	1	2025656	140000	5	2025656
Alkalinity (Total as CaCO3)	mg/L	305	1	2027838	549	1	2027838
Nitrite (N)	mg/L	<0.01	0.01	2026023	<0.01	0.01	2027208
Dissolved Chloride (Cl)	mg/L	115	1	2027791	13	1	2027791
Nitrate (N)	mg/L	<0.1	0.1	2026023	<0.1	0.1	2027208
Nitrate + Nitrite	mg/L	<0.1	0.1	2026023	<0.1	0.1	2027208
Dissolved Bromide (Br-)	mg/L	1	1	2027791	<1	1	2027791
Dissolved Sulphate (SO4)	mg/L	254	1	2027791	631	5	2027791

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EM8715		
Sampling Date		2009/11/30		
COC Number		172018-0		
	Units	**MW8-INT**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	1700	1	2024548
Inorganics				
Total Ammonia-N	mg/L	5.5	0.1	2026743
Fluoride (F-)	mg/L	0.4	0.1	2027849
Free Cyanide	mg/L	<0.002	0.002	2026039
Orthophosphate (P)	mg/L	<0.01	0.01	2027777
pH	pH	7.8		2027848
Phenols-4AAP	mg/L	<0.001	0.001	2024854
Total Phosphorus	mg/L	0.04	0.02	2027251
Total Suspended Solids	mg/L	60	10	2024796
Sulphide	mg/L	<0.02	0.02	2027899
Turbidity	NTU	48	0.1	2025656
Alkalinity (Total as CaCO3)	mg/L	146	1	2027838
Nitrite (N)	mg/L	<0.01	0.01	2026668
Dissolved Chloride (Cl)	mg/L	2100	20	2027791
Nitrate (N)	mg/L	<0.1	0.1	2026668
Nitrate + Nitrite	mg/L	<0.1	0.1	2026668
Dissolved Bromide (Br-)	mg/L	23	1	2027791
Dissolved Sulphate (SO4)	mg/L	1040	10	2027791

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8709		EM8710		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW7-SHALLOW**	**RDL**	**MW10-SHALLOW**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/L	0.0022 (1)	0.0015	<0.0015 (1)	0.0015	2026030
Dissolved Aluminum (Al)	mg/L	0.38	0.005	0.66	0.005	2027774
Total Aluminum (Al)	mg/L	1200	0.5	1800	0.5	2027721
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	0.0007	0.0005	2027774
Total Antimony (Sb)	mg/L	<0.03	0.03	<0.03	0.03	2027721
Dissolved Arsenic (As)	mg/L	0.003	0.001	0.003	0.001	2027774
Total Arsenic (As)	mg/L	0.48	0.05	0.59	0.05	2027721
Dissolved Barium (Ba)	mg/L	0.055	0.005	0.093	0.005	2027774
Total Barium (Ba)	mg/L	11	0.3	26	0.3	2027721
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Beryllium (Be)	mg/L	0.06	0.03	0.10	0.03	2027721
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Bismuth (Bi)	mg/L	<0.05	0.05	<0.05	0.05	2027721
Dissolved Boron (B)	mg/L	4.3	0.01	0.17	0.01	2027774
Total Boron (B)	mg/L	6.9	0.5	3.1	0.5	2027721
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Cadmium (Cd)	mg/L	0.026	0.005	0.019	0.005	2027721
Dissolved Calcium (Ca)	mg/L	66	0.2	74	0.2	2027774
Total Calcium (Ca)	mg/L	8100	10	17000	10	2027721
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	<0.005	0.005	2027774
Total Chromium (Cr)	mg/L	2.0	0.3	3.5	0.3	2027721
Dissolved Cobalt (Co)	mg/L	0.013	0.0005	0.027	0.0005	2027774
Total Cobalt (Co)	mg/L	1.1	0.03	2.0	0.03	2027721
Dissolved Copper (Cu)	mg/L	0.001	0.001	0.002	0.001	2027774
Total Copper (Cu)	mg/L	2.3	0.05	2.5	0.05	2027721
Dissolved Iron (Fe)	mg/L	0.8	0.1	1.0	0.1	2027774
Total Iron (Fe)	mg/L	2400	5	3200	5	2027721
Dissolved Lead (Pb)	mg/L	0.0006	0.0005	0.0008	0.0005	2027774
Total Lead (Pb)	mg/L	1.1	0.03	1.1	0.03	2027721
Dissolved Lithium (Li)	mg/L	0.11	0.005	0.062	0.005	2027774
Total Lithium (Li)	mg/L	3.6	0.3	6.2	0.3	2027721

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Sample bottle contained visible sediment. Sample was shaken to obtain representative aliquot. Results may be biased high due to analyte present in sediment.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8709		EM8710		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW7-SHALLOW**	**RDL**	**MW10-SHALLOW**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	mg/L	110	0.05	79	0.05	2027774
Total Magnesium (Mg)	mg/L	1400	3	2300	3	2027721
Dissolved Manganese (Mn)	mg/L	0.18	0.002	0.23	0.002	2027774
Total Manganese (Mn)	mg/L	67	0.1	150	0.1	2027721
Dissolved Molybdenum (Mo)	mg/L	0.007	0.001	0.004	0.001	2027774
Total Molybdenum (Mo)	mg/L	0.08	0.05	<0.05	0.05	2027721
Dissolved Nickel (Ni)	mg/L	0.003	0.001	0.006	0.001	2027774
Total Nickel (Ni)	mg/L	2.5	0.05	4.1	0.3	2027721
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	0.2	0.1	2027774
Dissolved Potassium (K)	mg/L	7.4	0.2	8.6	0.2	2027774
Total Potassium (K)	mg/L	230	10	360	10	2027721
Dissolved Selenium (Se)	mg/L	<0.002	0.002	<0.002	0.002	2027774
Total Selenium (Se)	mg/L	<0.1	0.1	<0.1	0.1	2027721
Dissolved Silicon (Si)	mg/L	9.5	0.05	10	0.05	2027774
Total Silicon (Si)	mg/L	970	3	1100	3	2027721
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Silver (Ag)	mg/L	<0.005	0.005	0.005	0.005	2027721
Dissolved Sodium (Na)	mg/L	70	0.1	26	0.1	2027774
Total Sodium (Na)	mg/L	110	5	67	5	2027721
Dissolved Strontium (Sr)	mg/L	3.5	0.001	2.6	0.001	2027774
Total Strontium (Sr)	mg/L	25	0.05	40	0.05	2027721
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Tellurium (Te)	mg/L	<0.05	0.05	<0.05	0.05	2027721
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	<0.00005	0.00005	2027774
Total Thallium (Tl)	mg/L	0.012	0.003	0.012	0.003	2027721
Dissolved Thorium (Th)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Thorium (Th)	mg/L	0.58	0.05	0.79	0.05	2027721
Dissolved Tin (Sn)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Tin (Sn)	mg/L	<0.05	0.05	<0.05	0.05	2027721
Dissolved Titanium (Ti)	mg/L	0.010	0.005	0.011	0.005	2027774
Total Titanium (Ti)	mg/L	14	0.3	12	0.3	2027721
Dissolved Tungsten (W)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Tungsten (W)	mg/L	<0.05	0.05	<0.05	0.05	2027721

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8709		EM8710		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW7-SHALLOW**	**RDL**	**MW10-SHALLOW**	**RDL**	**QC Batch**
Dissolved Uranium (U)	mg/L	0.0059	0.0001	0.0044	0.0001	2027774
Total Uranium (U)	mg/L	0.14	0.005	0.13	0.005	2027721
Dissolved Vanadium (V)	mg/L	0.002	0.001	0.002	0.001	2027774
Total Vanadium (V)	mg/L	2.2	0.05	2.7	0.05	2027721
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	0.007	0.005	2027774
Total Zinc (Zn)	mg/L	6.1	0.3	9.6	0.3	2027721
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Zirconium (Zr)	mg/L	0.29	0.05	0.43	0.05	2027721

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8711	EM8712		EM8713		
Sampling Date		2009/11/30	2009/11/30		2009/11/30		
COC Number		172018-0	172018-0		172018-0		
	Units	**MW10-INT**	**MW9-SHALLOW**	**RDL**	**MW9-INT**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	<0.0001	0.0001	<0.0001	0.0001	2026030
Dissolved Aluminum (Al)	mg/L	0.41	0.070	0.005	0.61	0.005	2027774
Total Aluminum (Al)	mg/L	200	160	0.05	310	0.3	2027721
Dissolved Antimony (Sb)	mg/L	<0.0005	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Antimony (Sb)	mg/L	<0.005	<0.005	0.005	<0.005	0.005	2027721
Dissolved Arsenic (As)	mg/L	0.004	0.001	0.001	0.004	0.001	2027774
Total Arsenic (As)	mg/L	0.06	0.13	0.01	0.10	0.01	2027721
Dissolved Barium (Ba)	mg/L	0.063	0.061	0.005	0.067	0.005	2027774
Total Barium (Ba)	mg/L	3.0	2.0	0.05	4.1	0.05	2027721
Dissolved Beryllium (Be)	mg/L	<0.0005	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Beryllium (Be)	mg/L	0.012	0.008	0.005	0.017	0.005	2027721
Dissolved Bismuth (Bi)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Bismuth (Bi)	mg/L	<0.01	<0.01	0.01	<0.01	0.01	2027721
Dissolved Boron (B)	mg/L	1.8	0.48	0.01	2.5	0.01	2027774
Total Boron (B)	mg/L	3.5	4.0	0.1	5.2	0.1	2027721
Dissolved Cadmium (Cd)	mg/L	<0.0001	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Cadmium (Cd)	mg/L	0.002	0.005	0.001	0.003	0.001	2027721
Dissolved Calcium (Ca)	mg/L	53	60	0.2	85	0.2	2027774
Total Calcium (Ca)	mg/L	1400	1200	2	2200	2	2027721
Dissolved Chromium (Cr)	mg/L	<0.005	<0.005	0.005	<0.005	0.005	2027774
Total Chromium (Cr)	mg/L	0.28	0.41	0.05	0.52	0.05	2027721
Dissolved Cobalt (Co)	mg/L	0.011	0.0098	0.0005	0.014	0.0005	2027774
Total Cobalt (Co)	mg/L	0.19	0.16	0.005	0.26	0.005	2027721
Dissolved Copper (Cu)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Copper (Cu)	mg/L	0.16	0.17	0.01	0.20	0.01	2027721
Dissolved Iron (Fe)	mg/L	0.6	<0.1	0.1	1.0	0.1	2027774
Total Iron (Fe)	mg/L	280	290	1	410	1	2027721
Dissolved Lead (Pb)	mg/L	<0.0005	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Lead (Pb)	mg/L	0.090	0.090	0.005	0.15	0.005	2027721
Dissolved Lithium (Li)	mg/L	0.077	0.053	0.005	0.14	0.005	2027774
Total Lithium (Li)	mg/L	0.75	0.97	0.05	1.1	0.05	2027721
Dissolved Magnesium (Mg)	mg/L	43	67	0.05	42	0.05	2027774

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8711	EM8712		EM8713		
Sampling Date		2009/11/30	2009/11/30		2009/11/30		
COC Number		172018-0	172018-0		172018-0		
	Units	**MW10-INT**	**MW9-SHALLOW**	**RDL**	**MW9-INT**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	240	700	0.5	300	0.5	2027721
Dissolved Manganese (Mn)	mg/L	0.058	0.042	0.002	0.070	0.002	2027774
Total Manganese (Mn)	mg/L	12	7.1	0.02	18	0.02	2027721
Dissolved Molybdenum (Mo)	mg/L	0.004	0.006	0.001	0.005	0.001	2027774
Total Molybdenum (Mo)	mg/L	0.02	0.08	0.01	0.05	0.01	2027721
Dissolved Nickel (Ni)	mg/L	0.002	0.002	0.001	0.004	0.001	2027774
Total Nickel (Ni)	mg/L	0.39	0.33	0.01	0.61	0.01	2027721
Dissolved Phosphorus (P)	mg/L	<0.1	<0.1	0.1	<0.1	0.1	2027774
Dissolved Potassium (K)	mg/L	15	13	0.2	19	0.2	2027774
Total Potassium (K)	mg/L	87	150	2	130	2	2027721
Dissolved Selenium (Se)	mg/L	<0.002	<0.002	0.002	<0.002	0.002	2027774
Total Selenium (Se)	mg/L	<0.02	<0.02	0.02	<0.02	0.02	2027721
Dissolved Silicon (Si)	mg/L	7.2	8.6	0.05	7.4	0.05	2027774
Total Silicon (Si)	mg/L	280	310	0.5	420	0.5	2027721
Dissolved Silver (Ag)	mg/L	<0.0001	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Silver (Ag)	mg/L	<0.001	<0.001	0.001	0.002	0.001	2027721
Dissolved Sodium (Na)	mg/L	49	36	0.1	110	0.1	2027774
Total Sodium (Na)	mg/L	82	310	1	200	1	2027721
Dissolved Strontium (Sr)	mg/L	11	5.2	0.001	14	0.001	2027774
Total Strontium (Sr)	mg/L	24	48	0.01	34	0.01	2027721
Dissolved Tellurium (Te)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Tellurium (Te)	mg/L	<0.01	<0.01	0.01	<0.01	0.01	2027721
Dissolved Thallium (Tl)	mg/L	<0.00005	<0.00005	0.00005	<0.00005	0.00005	2027774
Total Thallium (Tl)	mg/L	0.0020	0.0015	0.0005	0.0026	0.0005	2027721
Dissolved Thorium (Th)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Thorium (Th)	mg/L	0.07	0.06	0.01	0.10	0.01	2027721
Dissolved Tin (Sn)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Tin (Sn)	mg/L	<0.01	<0.01	0.01	<0.01	0.01	2027721
Dissolved Titanium (Ti)	mg/L	0.010	<0.005	0.005	0.012	0.005	2027774
Total Titanium (Ti)	mg/L	3.1	2.6	0.05	4.0	0.05	2027721
Dissolved Tungsten (W)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Tungsten (W)	mg/L	<0.01	<0.01	0.01	<0.01	0.01	2027721
Dissolved Uranium (U)	mg/L	0.0011	0.0035	0.0001	0.0003	0.0001	2027774

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8711	EM8712		EM8713		
Sampling Date		2009/11/30	2009/11/30		2009/11/30		
COC Number		172018-0	172018-0		172018-0		
	Units	**MW10-INT**	**MW9-SHALLOW**	**RDL**	**MW9-INT**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.013	0.042	0.001	0.015	0.001	2027721
Dissolved Vanadium (V)	mg/L	0.001	0.001	0.001	0.001	0.001	2027774
Total Vanadium (V)	mg/L	0.33	0.32	0.01	0.52	0.01	2027721
Dissolved Zinc (Zn)	mg/L	<0.005	0.006	0.005	<0.005	0.005	2027774
Total Zinc (Zn)	mg/L	0.89	1.3	0.05	1.3	0.05	2027721
Dissolved Zirconium (Zr)	mg/L	<0.001	<0.001	0.001	<0.001	0.001	2027774
Total Zirconium (Zr)	mg/L	0.08	0.10	0.01	0.11	0.01	2027721

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8714		EM8715		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW8-SHALLOW**	**RDL**	**MW8-INT**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/L	0.0020 (1)	0.0015	<0.0001	0.0001	2026030
Dissolved Aluminum (Al)	mg/L	0.24	0.005	0.013	0.005	2027774
Total Aluminum (Al)	mg/L	1300	0.5	0.91	0.005	2027721
Dissolved Antimony (Sb)	mg/L	0.0005	0.0005	<0.0005	0.0005	2027774
Total Antimony (Sb)	mg/L	<0.03	0.03	<0.0005	0.0005	2027721
Dissolved Arsenic (As)	mg/L	0.002	0.001	<0.005 (2)	0.005	2027774
Total Arsenic (As)	mg/L	0.50	0.05	<0.005 (2)	0.005	2027721
Dissolved Barium (Ba)	mg/L	0.019	0.005	0.011	0.005	2027774
Total Barium (Ba)	mg/L	13	0.3	0.018	0.005	2027721
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Beryllium (Be)	mg/L	0.08	0.03	<0.0005	0.0005	2027721
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Bismuth (Bi)	mg/L	<0.05	0.05	<0.001	0.001	2027721
Dissolved Boron (B)	mg/L	1.5	0.01	6.1	0.01	2027774
Total Boron (B)	mg/L	3.7	0.5	6.2	0.01	2027721
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Cadmium (Cd)	mg/L	0.017	0.005	<0.0001	0.0001	2027721
Dissolved Calcium (Ca)	mg/L	110	0.2	450	0.2	2027774
Total Calcium (Ca)	mg/L	8000	10	470	0.2	2027721
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	<0.005	0.005	2027774
Total Chromium (Cr)	mg/L	2.1	0.3	<0.005	0.005	2027721
Dissolved Cobalt (Co)	mg/L	0.016	0.0005	0.0077	0.0005	2027774
Total Cobalt (Co)	mg/L	1.3	0.03	<0.0005	0.0005	2027721
Dissolved Copper (Cu)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Copper (Cu)	mg/L	2.3	0.05	0.001	0.001	2027721
Dissolved Iron (Fe)	mg/L	0.4	0.1	1.0	0.1	2027774
Total Iron (Fe)	mg/L	2500	5	2.0	0.1	2027721
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2027774
Total Lead (Pb)	mg/L	1.0	0.03	0.0006	0.0005	2027721
Dissolved Lithium (Li)	mg/L	0.18	0.005	1.1	0.05	2027774

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Sample bottle contained visible sediment. Sample was shaken to obtain representative aliquot. Results may be biased high due to analyte present in sediment.
(2) Detection Limit was raised due to matrix interferences.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8714		EM8715		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW8-SHALLOW**	**RDL**	**MW8-INT**	**RDL**	**QC Batch**
Total Lithium (Li)	mg/L	3.9	0.3	1.1	0.005	2027721
Dissolved Magnesium (Mg)	mg/L	160	0.05	140	0.05	2027774
Total Magnesium (Mg)	mg/L	1400	3	140	0.05	2027721
Dissolved Manganese (Mn)	mg/L	0.16	0.002	0.19	0.002	2027774
Total Manganese (Mn)	mg/L	82	0.1	0.20	0.002	2027721
Dissolved Molybdenum (Mo)	mg/L	0.005	0.001	0.007	0.001	2027774
Total Molybdenum (Mo)	mg/L	0.07	0.05	0.007	0.001	2027721
Dissolved Nickel (Ni)	mg/L	0.004	0.001	<0.005 (1)	0.005	2027774
Total Nickel (Ni)	mg/L	2.8	0.05	<0.005 (1)	0.005	2027721
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	<0.1	0.1	2027774
Dissolved Potassium (K)	mg/L	16	0.2	44	0.2	2027774
Total Potassium (K)	mg/L	250	10	46	0.2	2027721
Dissolved Selenium (Se)	mg/L	<0.002	0.002	<0.01 (1)	0.01	2027774
Total Selenium (Se)	mg/L	<0.1	0.1	<0.01 (1)	0.01	2027721
Dissolved Silicon (Si)	mg/L	8.0	0.05	3.8	0.05	2027774
Total Silicon (Si)	mg/L	940	3	5.8	0.05	2027721
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2027774
Total Silver (Ag)	mg/L	<0.005	0.005	0.0003	0.0001	2027721
Dissolved Sodium (Na)	mg/L	92	0.1	1200	1	2027774
Total Sodium (Na)	mg/L	120	5	1100	1	2027721
Dissolved Strontium (Sr)	mg/L	10	0.001	12	0.001	2027774
Total Strontium (Sr)	mg/L	41	0.05	12	0.001	2027721
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Tellurium (Te)	mg/L	<0.05	0.05	<0.001	0.001	2027721
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	<0.00005	0.00005	2027774
Total Thallium (Tl)	mg/L	0.010	0.003	<0.00005	0.00005	2027721
Dissolved Thorium (Th)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Thorium (Th)	mg/L	0.52	0.05	<0.001	0.001	2027721
Dissolved Tin (Sn)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Tin (Sn)	mg/L	<0.05	0.05	<0.001	0.001	2027721
Dissolved Titanium (Ti)	mg/L	0.008	0.005	<0.005	0.005	2027774
Total Titanium (Ti)	mg/L	12	0.3	0.038	0.005	2027721
Dissolved Tungsten (W)	mg/L	<0.001	0.001	<0.001	0.001	2027774

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G1919
Report Date: 2010/01/15

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EM8714		EM8715		
Sampling Date		2009/11/30		2009/11/30		
COC Number		172018-0		172018-0		
	Units	**MW8-SHALLOW**	**RDL**	**MW8-INT**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	<0.05	0.05	<0.001	0.001	2027721
Dissolved Uranium (U)	mg/L	0.010	0.0001	0.0001	0.0001	2027774
Total Uranium (U)	mg/L	0.083	0.005	0.0002	0.0001	2027721
Dissolved Vanadium (V)	mg/L	<0.001	0.001	<0.005 (1)	0.005	2027774
Total Vanadium (V)	mg/L	2.2	0.05	<0.005 (1)	0.005	2027721
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	0.006	0.005	2027774
Total Zinc (Zn)	mg/L	6.8	0.3	<0.005	0.005	2027721
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	<0.001	0.001	2027774
Total Zirconium (Zr)	mg/L	0.29	0.05	0.002	0.001	2027721

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	8.0°C
Package 2	7.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised report: Reporting units adjusted to mg/L, per request. Sample identification correction made.

Sample EM8709-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EM8710-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EM8711-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EM8712-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EM8713-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EM8714-01: 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: MA9G1919

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2024796 HAG	QC Standard	Total Suspended Solids	2009/12/02		101	%	85 - 115
	Method Blank	Total Suspended Solids	2009/12/02	<10		mg/L	
	RPD	Total Suspended Solids	2009/12/02	NC		%	25
2024854 BMO	Matrix Spike	Phenols-4AAP	2009/12/03		102	%	75 - 125
	Spiked Blank	Phenols-4AAP	2009/12/03		98	%	75 - 125
	Method Blank	Phenols-4AAP	2009/12/03	<0.001		mg/L	
	RPD	Phenols-4AAP	2009/12/03	NC		%	25
2025063 JDO	QC Standard	Total Suspended Solids	2009/12/02		96	%	85 - 115
	Method Blank	Total Suspended Solids	2009/12/02	<10		mg/L	
	RPD	Total Suspended Solids	2009/12/02	NC		%	25
2025656 KTH	QC Standard	Turbidity	2009/12/03		100	%	85 - 115
	Method Blank	Turbidity	2009/12/03	<0.1		NTU	
	RPD	Turbidity	2009/12/03	2.2		%	25
2026023 CCI	Matrix Spike	Nitrite (N)	2009/12/03		103	%	75 - 125
		Nitrate (N)	2009/12/03		94	%	75 - 125
	Spiked Blank	Nitrite (N)	2009/12/03		105	%	80 - 120
		Nitrate (N)	2009/12/03		100	%	80 - 120
	Method Blank	Nitrite (N)	2009/12/03	<0.01		mg/L	
		Nitrate (N)	2009/12/03	<0.1		mg/L	
		Nitrate + Nitrite	2009/12/03	<0.1		mg/L	
	RPD	Nitrite (N)	2009/12/03	NC		%	25
		Nitrate (N)	2009/12/03	NC		%	25
		Nitrate + Nitrite	2009/12/03	NC		%	25
2026030 RON	Matrix Spike	Mercury (Hg)	2009/12/03		92	%	80 - 120
	Spiked Blank	Mercury (Hg)	2009/12/03		109	%	80 - 120
	Method Blank	Mercury (Hg)	2009/12/03	<0.0001		mg/L	
	RPD	Mercury (Hg)	2009/12/03	NC		%	25
2026039 LHA	Matrix Spike [EM8715-06]	Free Cyanide	2009/12/04		102	%	80 - 120
	Spiked Blank	Free Cyanide	2009/12/04		104	%	80 - 120
	Method Blank	Free Cyanide	2009/12/04	<0.002		mg/L	
	RPD [EM8715-06]	Free Cyanide	2009/12/04	NC		%	25
2026446 CCI	Matrix Spike	Nitrite (N)	2009/12/07		107	%	75 - 125
		Nitrate (N)	2009/12/07		102	%	75 - 125
	Spiked Blank	Nitrite (N)	2009/12/07		107	%	80 - 120
		Nitrate (N)	2009/12/07		107	%	80 - 120
	Method Blank	Nitrite (N)	2009/12/07	<0.01		mg/L	
		Nitrate (N)	2009/12/07	<0.1		mg/L	
		Nitrate + Nitrite	2009/12/07	<0.1		mg/L	
	RPD	Nitrite (N)	2009/12/07	NC		%	25
		Nitrate (N)	2009/12/07	1		%	25
		Nitrate + Nitrite	2009/12/07	0.9		%	25
2026668 CCI	Matrix Spike	Nitrite (N)	2009/12/04		103	%	75 - 125
		Nitrate (N)	2009/12/04		92	%	75 - 125
	Spiked Blank	Nitrite (N)	2009/12/04		104	%	80 - 120
		Nitrate (N)	2009/12/04		99	%	80 - 120
	Method Blank	Nitrite (N)	2009/12/04	<0.01		mg/L	
		Nitrate (N)	2009/12/04	<0.1		mg/L	
		Nitrate + Nitrite	2009/12/04	<0.1		mg/L	
	RPD	Nitrite (N)	2009/12/04	NC		%	25
		Nitrate (N)	2009/12/04	1.1		%	25
		Nitrate + Nitrite	2009/12/04	1.1		%	25
2026743 ADB	Matrix Spike	Total Ammonia-N	2009/12/07		96	%	80 - 120
	Spiked Blank	Total Ammonia-N	2009/12/07		100	%	80 - 120
	Method Blank	Total Ammonia-N	2009/12/07	<0.05		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2026743 ADB	RPD	Total Ammonia-N	2009/12/07	NC		%	25
2027208 CCI	Matrix Spike	Nitrite (N)	2009/12/04		102	%	75 - 125
		Nitrate (N)	2009/12/04		98	%	75 - 125
	Spiked Blank	Nitrite (N)	2009/12/04		102	%	80 - 120
		Nitrate (N)	2009/12/04		98	%	80 - 120
	Method Blank	Nitrite (N)	2009/12/04	<0.01		mg/L	
		Nitrate (N)	2009/12/04	<0.1		mg/L	
		Nitrate + Nitrite	2009/12/04	<0.1		mg/L	
	RPD	Nitrite (N)	2009/12/04	NC		%	25
		Nitrate (N)	2009/12/04	NC		%	25
		Nitrate + Nitrite	2009/12/04	NC		%	25
2027251 AHA	Matrix Spike	Total Phosphorus	2009/12/07		106	%	75 - 125
	QC Standard	Total Phosphorus	2009/12/07		107	%	85 - 115
	Spiked Blank	Total Phosphorus	2009/12/07		106	%	75 - 125
	Method Blank	Total Phosphorus	2009/12/07	<0.02		mg/L	
	RPD	Total Phosphorus	2009/12/07	NC		%	25
2027721 HRE	Matrix Spike	Total Aluminum (Al)	2009/12/05		93	%	80 - 120
		Total Antimony (Sb)	2009/12/05		105	%	80 - 120
		Total Arsenic (As)	2009/12/05		102	%	80 - 120
		Total Barium (Ba)	2009/12/05		99	%	80 - 120
		Total Beryllium (Be)	2009/12/05		101	%	75 - 125
		Total Bismuth (Bi)	2009/12/05		95	%	75 - 125
		Total Boron (B)	2009/12/05		104	%	75 - 125
		Total Cadmium (Cd)	2009/12/05		102	%	80 - 120
		Total Calcium (Ca)	2009/12/05		NC	%	75 - 125
		Total Chromium (Cr)	2009/12/05		97	%	80 - 120
		Total Cobalt (Co)	2009/12/05		98	%	80 - 120
		Total Copper (Cu)	2009/12/05		95	%	80 - 120
		Total Iron (Fe)	2009/12/05		102	%	80 - 120
		Total Lead (Pb)	2009/12/05		97	%	80 - 120
		Total Lithium (Li)	2009/12/05		99	%	75 - 125
		Total Magnesium (Mg)	2009/12/05		NC	%	80 - 120
		Total Manganese (Mn)	2009/12/05		99	%	80 - 120
		Total Molybdenum (Mo)	2009/12/05		NC	%	80 - 120
		Total Nickel (Ni)	2009/12/05		96	%	80 - 120
		Total Potassium (K)	2009/12/05		103	%	75 - 125
		Total Selenium (Se)	2009/12/05		100	%	75 - 125
		Total Silicon (Si)	2009/12/05		97	%	75 - 125
		Total Silver (Ag)	2009/12/05		93	%	80 - 120
		Total Sodium (Na)	2009/12/05		NC	%	75 - 125
		Total Strontium (Sr)	2009/12/05		NC	%	80 - 120
		Total Tellurium (Te)	2009/12/05		101	%	75 - 125
		Total Thallium (Tl)	2009/12/05		97	%	80 - 120
		Total Thorium (Th)	2009/12/05		100	%	75 - 125
		Total Tin (Sn)	2009/12/05		103	%	75 - 125
		Total Titanium (Ti)	2009/12/05		106	%	75 - 125
		Total Tungsten (W)	2009/12/05		103	%	75 - 125
		Total Uranium (U)	2009/12/05		101	%	80 - 120
		Total Vanadium (V)	2009/12/05		97	%	80 - 120
		Total Zinc (Zn)	2009/12/05		95	%	80 - 120
		Total Zirconium (Zr)	2009/12/05		103	%	75 - 125
	Spiked Blank	Total Aluminum (Al)	2009/12/05		107	%	80 - 120
		Total Antimony (Sb)	2009/12/05		103	%	82 - 120
		Total Arsenic (As)	2009/12/05		105	%	86 - 119
		Total Barium (Ba)	2009/12/05		102	%	83 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027721	HRE	Spiked Blank	Total Beryllium (Be)	2009/12/05		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/05		98	%	78 - 120
			Total Boron (B)	2009/12/05		103	%	78 - 133
			Total Cadmium (Cd)	2009/12/05		104	%	85 - 116
			Total Calcium (Ca)	2009/12/05		103	%	75 - 125
			Total Chromium (Cr)	2009/12/05		103	%	80 - 120
			Total Cobalt (Co)	2009/12/05		102	%	82 - 117
			Total Copper (Cu)	2009/12/05		102	%	80 - 117
			Total Iron (Fe)	2009/12/05		103	%	80 - 120
			Total Lead (Pb)	2009/12/05		100	%	80 - 120
			Total Lithium (Li)	2009/12/05		101	%	86 - 131
			Total Magnesium (Mg)	2009/12/05		106	%	80 - 120
			Total Manganese (Mn)	2009/12/05		102	%	80 - 120
			Total Molybdenum (Mo)	2009/12/05		103	%	82 - 117
			Total Nickel (Ni)	2009/12/05		101	%	81 - 117
			Total Potassium (K)	2009/12/05		105	%	75 - 125
			Total Selenium (Se)	2009/12/05		104	%	82 - 118
			Total Silicon (Si)	2009/12/05		103	%	67 - 140
			Total Silver (Ag)	2009/12/05		96	%	80 - 120
			Total Sodium (Na)	2009/12/05		105	%	75 - 125
			Total Strontium (Sr)	2009/12/05		100	%	83 - 120
			Total Tellurium (Te)	2009/12/05		101	%	80 - 116
			Total Thallium (Tl)	2009/12/05		100	%	80 - 129
			Total Thorium (Th)	2009/12/05		103	%	80 - 125
			Total Tin (Sn)	2009/12/05		102	%	83 - 119
			Total Titanium (Ti)	2009/12/05		105	%	60 - 125
			Total Tungsten (W)	2009/12/05		102	%	81 - 123
			Total Uranium (U)	2009/12/05		103	%	82 - 120
			Total Vanadium (V)	2009/12/05		101	%	82 - 118
			Total Zinc (Zn)	2009/12/05		102	%	80 - 120
			Total Zirconium (Zr)	2009/12/05		103	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/05	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/05	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/05	<0.001		mg/L	
			Total Barium (Ba)	2009/12/05	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/05	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/05	<0.001		mg/L	
			Total Boron (B)	2009/12/05	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/05	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/05	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/05	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/05	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/05	<0.001		mg/L	
			Total Iron (Fe)	2009/12/05	<0.1		mg/L	
			Total Lead (Pb)	2009/12/05	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/05	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/05	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/05	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/05	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/05	<0.001		mg/L	
			Total Potassium (K)	2009/12/05	<0.2		mg/L	
			Total Selenium (Se)	2009/12/05	<0.002		mg/L	
			Total Silicon (Si)	2009/12/05	<0.05		mg/L	
			Total Silver (Ag)	2009/12/05	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/05	<0.1		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027721	HRE	Method Blank	Total Strontium (Sr)	2009/12/05	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/05	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/05	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/05	<0.001		mg/L	
			Total Tin (Sn)	2009/12/05	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/05	<0.005		mg/L	
			Total Tungsten (W)	2009/12/05	<0.001		mg/L	
			Total Uranium (U)	2009/12/05	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/05	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/05	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/05	<0.001		mg/L	
		RPD	Total Aluminum (Al)	2009/12/05	2.9		%	25
			Total Copper (Cu)	2009/12/05	2.1		%	25
			Total Zinc (Zn)	2009/12/05	1.1		%	25
2027774	HRE	Matrix Spike	Dissolved Aluminum (Al)	2009/12/05		97	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/05		103	%	80 - 120
			Dissolved Arsenic (As)	2009/12/05		103	%	80 - 120
			Dissolved Barium (Ba)	2009/12/05		98	%	80 - 120
			Dissolved Beryllium (Be)	2009/12/05		100	%	80 - 120
			Dissolved Bismuth (Bi)	2009/12/05		92	%	80 - 120
			Dissolved Boron (B)	2009/12/05		99	%	80 - 120
			Dissolved Cadmium (Cd)	2009/12/05		101	%	80 - 120
			Dissolved Calcium (Ca)	2009/12/05		NC	%	80 - 120
			Dissolved Chromium (Cr)	2009/12/05		99	%	80 - 120
			Dissolved Cobalt (Co)	2009/12/05		99	%	80 - 120
			Dissolved Copper (Cu)	2009/12/05		97	%	80 - 120
			Dissolved Iron (Fe)	2009/12/05		100	%	80 - 120
			Dissolved Lead (Pb)	2009/12/05		95	%	80 - 120
			Dissolved Lithium (Li)	2009/12/05		98	%	80 - 120
			Dissolved Magnesium (Mg)	2009/12/05		NC	%	80 - 120
			Dissolved Manganese (Mn)	2009/12/05		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2009/12/05		104	%	80 - 120
			Dissolved Nickel (Ni)	2009/12/05		100	%	80 - 120
			Dissolved Phosphorus (P)	2009/12/05		104	%	80 - 120
			Dissolved Potassium (K)	2009/12/05		103	%	80 - 120
			Dissolved Selenium (Se)	2009/12/05		100	%	80 - 120
			Dissolved Silicon (Si)	2009/12/05		106	%	80 - 120
			Dissolved Silver (Ag)	2009/12/05		98	%	80 - 120
			Dissolved Sodium (Na)	2009/12/05		NC	%	80 - 120
			Dissolved Strontium (Sr)	2009/12/05		99	%	80 - 120
			Dissolved Tellurium (Te)	2009/12/05		99	%	80 - 120
			Dissolved Thallium (Tl)	2009/12/05		96	%	80 - 120
			Dissolved Thorium (Th)	2009/12/05		98	%	80 - 120
			Dissolved Tin (Sn)	2009/12/05		101	%	80 - 120
			Dissolved Titanium (Ti)	2009/12/05		106	%	80 - 120
			Dissolved Tungsten (W)	2009/12/05		97	%	80 - 120
			Dissolved Uranium (U)	2009/12/05		100	%	80 - 120
			Dissolved Vanadium (V)	2009/12/05		100	%	80 - 120
			Dissolved Zinc (Zn)	2009/12/05		98	%	80 - 120
			Dissolved Zirconium (Zr)	2009/12/05		102	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2009/12/05		97	%	90 - 110
			Dissolved Antimony (Sb)	2009/12/05		101	%	90 - 110
			Dissolved Arsenic (As)	2009/12/05		103	%	90 - 110
			Dissolved Barium (Ba)	2009/12/05		100	%	90 - 110
			Dissolved Beryllium (Be)	2009/12/05		101	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027774 HRE	Spiked Blank	Dissolved Bismuth (Bi)	2009/12/05		97	%	90 - 110
		Dissolved Boron (B)	2009/12/05		102	%	90 - 110
		Dissolved Cadmium (Cd)	2009/12/05		101	%	90 - 110
		Dissolved Calcium (Ca)	2009/12/05		100	%	90 - 110
		Dissolved Chromium (Cr)	2009/12/05		100	%	90 - 110
		Dissolved Cobalt (Co)	2009/12/05		101	%	90 - 110
		Dissolved Copper (Cu)	2009/12/05		100	%	90 - 110
		Dissolved Iron (Fe)	2009/12/05		101	%	90 - 110
		Dissolved Lead (Pb)	2009/12/05		99	%	90 - 110
		Dissolved Lithium (Li)	2009/12/05		100	%	90 - 110
		Dissolved Magnesium (Mg)	2009/12/05		100	%	90 - 110
		Dissolved Manganese (Mn)	2009/12/05		98	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/05		102	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/05		100	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/05		99	%	90 - 110
		Dissolved Potassium (K)	2009/12/05		102	%	90 - 110
		Dissolved Selenium (Se)	2009/12/05		102	%	90 - 110
		Dissolved Silicon (Si)	2009/12/05		103	%	90 - 110
		Dissolved Silver (Ag)	2009/12/05		99	%	90 - 110
		Dissolved Sodium (Na)	2009/12/05		100	%	90 - 110
		Dissolved Strontium (Sr)	2009/12/05		98	%	90 - 110
		Dissolved Tellurium (Te)	2009/12/05		101	%	90 - 110
		Dissolved Thallium (Tl)	2009/12/05		99	%	90 - 110
		Dissolved Thorium (Th)	2009/12/05		101	%	90 - 110
		Dissolved Tin (Sn)	2009/12/05		100	%	90 - 110
		Dissolved Titanium (Ti)	2009/12/05		105	%	90 - 110
		Dissolved Tungsten (W)	2009/12/05		101	%	90 - 110
		Dissolved Uranium (U)	2009/12/05		103	%	90 - 110
		Dissolved Vanadium (V)	2009/12/05		100	%	90 - 110
		Dissolved Zinc (Zn)	2009/12/05		101	%	90 - 110
		Dissolved Zirconium (Zr)	2009/12/05		101	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2009/12/05	<0.005		mg/L	
		Dissolved Antimony (Sb)	2009/12/05	<0.0005		mg/L	
		Dissolved Arsenic (As)	2009/12/05	<0.001		mg/L	
		Dissolved Barium (Ba)	2009/12/05	<0.005		mg/L	
		Dissolved Beryllium (Be)	2009/12/05	<0.0005		mg/L	
		Dissolved Bismuth (Bi)	2009/12/05	<0.001		mg/L	
		Dissolved Boron (B)	2009/12/05	<0.01		mg/L	
		Dissolved Cadmium (Cd)	2009/12/05	<0.0001		mg/L	
		Dissolved Calcium (Ca)	2009/12/05	<0.2		mg/L	
		Dissolved Chromium (Cr)	2009/12/05	<0.005		mg/L	
		Dissolved Cobalt (Co)	2009/12/05	<0.0005		mg/L	
		Dissolved Copper (Cu)	2009/12/05	<0.001		mg/L	
		Dissolved Iron (Fe)	2009/12/05	<0.1		mg/L	
		Dissolved Lead (Pb)	2009/12/05	<0.0005		mg/L	
		Dissolved Lithium (Li)	2009/12/05	<0.005		mg/L	
		Dissolved Magnesium (Mg)	2009/12/05	<0.05		mg/L	
		Dissolved Manganese (Mn)	2009/12/05	<0.002		mg/L	
		Dissolved Molybdenum (Mo)	2009/12/05	<0.001		mg/L	
		Dissolved Nickel (Ni)	2009/12/05	<0.001		mg/L	
		Dissolved Phosphorus (P)	2009/12/05	<0.1		mg/L	
		Dissolved Potassium (K)	2009/12/05	<0.2		mg/L	
		Dissolved Selenium (Se)	2009/12/05	<0.002		mg/L	
		Dissolved Silicon (Si)	2009/12/05	<0.05		mg/L	
		Dissolved Silver (Ag)	2009/12/05	<0.0001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027774	HRE	Method Blank	Dissolved Sodium (Na)	2009/12/05	<0.1		mg/L	
			Dissolved Strontium (Sr)	2009/12/05	<0.001		mg/L	
			Dissolved Tellurium (Te)	2009/12/05	<0.001		mg/L	
			Dissolved Thallium (Tl)	2009/12/05	<0.00005		mg/L	
			Dissolved Thorium (Th)	2009/12/05	<0.001		mg/L	
			Dissolved Tin (Sn)	2009/12/05	<0.001		mg/L	
			Dissolved Titanium (Ti)	2009/12/05	<0.005		mg/L	
			Dissolved Tungsten (W)	2009/12/05	<0.001		mg/L	
			Dissolved Uranium (U)	2009/12/05	<0.0001		mg/L	
			Dissolved Vanadium (V)	2009/12/05	<0.001		mg/L	
			Dissolved Zinc (Zn)	2009/12/05	<0.005		mg/L	
			Dissolved Zirconium (Zr)	2009/12/05	<0.001		mg/L	
		RPD	Dissolved Antimony (Sb)	2009/12/05	NC		%	25
			Dissolved Arsenic (As)	2009/12/05	NC		%	25
			Dissolved Barium (Ba)	2009/12/05	1.8		%	25
			Dissolved Beryllium (Be)	2009/12/05	NC		%	25
			Dissolved Boron (B)	2009/12/05	NC		%	25
			Dissolved Cadmium (Cd)	2009/12/05	NC		%	25
			Dissolved Chromium (Cr)	2009/12/05	NC		%	25
			Dissolved Cobalt (Co)	2009/12/05	NC		%	25
			Dissolved Copper (Cu)	2009/12/05	NC		%	25
			Dissolved Lead (Pb)	2009/12/05	NC		%	25
			Dissolved Molybdenum (Mo)	2009/12/05	NC		%	25
			Dissolved Nickel (Ni)	2009/12/05	NC		%	25
			Dissolved Selenium (Se)	2009/12/05	NC		%	25
			Dissolved Silver (Ag)	2009/12/05	NC		%	25
			Dissolved Sodium (Na)	2009/12/05	0.5		%	25
			Dissolved Tellurium (Te)	2009/12/05	NC		%	25
			Dissolved Thallium (Tl)	2009/12/05	NC		%	25
			Dissolved Thorium (Th)	2009/12/05	NC		%	25
			Dissolved Vanadium (V)	2009/12/05	NC		%	25
			Dissolved Zinc (Zn)	2009/12/05	NC		%	25
2027777	DRM	Matrix Spike	Orthophosphate (P)	2009/12/07		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/07		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/07	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/07	NC		%	25
2027791	FD	Matrix Spike	Dissolved Chloride (Cl)	2009/12/04		NC (1)	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/04		99	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/04		99	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/04		96	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/04		99	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/04		97	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/04	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/04	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/04	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/12/04	1.4		%	25
			Dissolved Sulphate (SO4)	2009/12/04	5.9		%	25
2027838	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/04		92	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/04	<1		mg/L	
		RPD [EM8712-01]	Alkalinity (Total as CaCO3)	2009/12/04	0.6		%	25
2027849	YPA	Matrix Spike [EM8712-01]	Fluoride (F-)	2009/12/04		83	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/04		106	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/04	<0.1		mg/L	
		RPD [EM8712-01]	Fluoride (F-)	2009/12/04	NC		%	25

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G1919

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027899	SAC	Matrix Spike	Sulphide	2009/12/07		93	%	75 - 125
		Spiked Blank	Sulphide	2009/12/07		90	%	85 - 115
		Method Blank	Sulphide	2009/12/07	<0.02		mg/L	
		RPD	Sulphide	2009/12/07	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.

Validation Signature Page

Maxxam Job #: A9G1919

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. SCC and CALA have approved this reporting process and electronic report format.

Site: TANSLEY QUARRY
Your C.O.C. #: 17201802, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G2609
Received: 2009/12/01, 16:52

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	9	N/A	2009/12/07	CAM SOP-00448	SM 2320B
Alkalinity	1	N/A	2009/12/10	CAM SOP-00448	SM 2320B
Anions	9	N/A	2009/12/08	CAM SOP-00435	SM 4110B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	10	N/A	2009/12/04	Ont SOP-0094	EPA 9012 Modified
Fluoride	10	2009/12/07	2009/12/07	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	10	N/A	2009/12/09	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	10	2009/12/07	2009/12/07	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	9	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	1	N/A	2009/12/12	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	10	N/A	2009/12/08	CAM SOP-00447	EPA 6020
Ammonia-N	10	N/A	2009/12/07	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	5	N/A	2009/12/07	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	5	N/A	2009/12/08	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	10	N/A	2009/12/07	CAM SOP-00448	SM 4500H
Phenols (4AAP)	9	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	10	N/A	2009/12/08	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/07	CAM SOP-00455	SM 4500-S G
Sulphide	9	N/A	2009/12/08	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	10	2009/12/08	2009/12/08	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	10	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	10	N/A	2009/12/04	CAM SOP-00417	APHA 2130

(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. #: 17201802, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN2108			EN2109		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW5 SHALLOW**	**RDL**	**QC Batch**	**MW5 STRADDLE**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	430	1	2026214	320	1	2026214
Inorganics							
Total Ammonia-N	mg/L	0.05	0.05	2027690	0.65	0.05	2027690
Fluoride (F-)	mg/L	0.1	0.1	2029660	0.3	0.1	2029660
Free Cyanide	mg/L	<0.002	0.002	2027320	<0.002	0.002	2027320
Orthophosphate (P)	mg/L	<0.01	0.01	2030021	<0.01	0.01	2030021
pH	pH	7.5		2029648	7.9		2029648
Phenols-4AAP	mg/L	<0.001	0.001	2027173	<0.001	0.001	2027173
Total Phosphorus	mg/L	4.9	0.2	2029930	24	0.2	2029930
Total Suspended Solids	mg/L	3300	10	2027120	28000	10	2027120
Sulphide	mg/L	<0.02	0.02	2027941	<0.02	0.02	2027941
Turbidity	NTU	3900	0.2	2027238	13000	0.5	2027238
Alkalinity (Total as CaCO3)	mg/L	275	1	2029625	296	1	2029625
Nitrite (N)	mg/L	0.02	0.01	2027658	0.16	0.01	2027443
Dissolved Chloride (Cl)	mg/L	20	1	2029664	5	1	2029664
Nitrate (N)	mg/L	<0.1	0.1	2027658	0.3	0.1	2027443
Nitrate + Nitrite	mg/L	<0.1	0.1	2027658	0.5	0.1	2027443
Dissolved Bromide (Br-)	mg/L	<1	1	2029664	<1	1	2029664
Dissolved Sulphate (SO4)	mg/L	90	1	2029664	46	1	2029664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G2609
Report Date: 2010/01/05

Project name: TANSLEY QUARRY

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN2110			EN2111		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW5 INT**	**RDL**	**QC Batch**	**MW6 STRADDLE**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	270	1	2026214	350	1	2026214
Inorganics							
Total Ammonia-N	mg/L	1.8	0.05	2027690	0.66	0.05	2027690
Fluoride (F-)	mg/L	0.5	0.1	2029660	0.2	0.1	2029660
Free Cyanide	mg/L	<0.002	0.002	2027320	<0.002	0.002	2027320
Orthophosphate (P)	mg/L	<0.01	0.01	2029979	<0.01	0.01	2029979
pH	pH	7.9		2029648	7.8		2029648
Phenols-4AAP	mg/L	<0.001	0.001	2027173	<0.001	0.001	2027173
Total Phosphorus	mg/L	0.10	0.02	2029930	16	0.2	2029930
Total Suspended Solids	mg/L	86	10	2027120	24000	10	2027120
Sulphide	mg/L	<0.02	0.02	2027941	0.05	0.02	2027941
Turbidity	NTU	96	0.1	2027245	23000	1	2027238
Alkalinity (Total as CaCO3)	mg/L	264	1	2029625	312	1	2029625
Nitrite (N)	mg/L	0.22	0.01	2027443	0.07	0.01	2027658
Dissolved Chloride (Cl)	mg/L	74	1	2029664	6	1	2029664
Nitrate (N)	mg/L	0.2	0.1	2027443	0.4	0.1	2027658
Nitrate + Nitrite	mg/L	0.4	0.1	2027443	0.5	0.1	2027658
Dissolved Bromide (Br-)	mg/L	<1	1	2029664	<1	1	2029664
Dissolved Sulphate (SO4)	mg/L	136	1	2029664	54	1	2029664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN2112			EN2113		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW1 INT**	**RDL**	**QC Batch**	**MW1 DEEP**	**RDL**	**QC Batch**

Calculated Parameters							
Hardness (CaCO3)	mg/L	1100	1	2026214	8400	1	2026214
Inorganics							
Total Ammonia-N	mg/L	0.16	0.05	2027690	22	0.5	2027690
Fluoride (F-)	mg/L	0.3	0.1	2029660	0.3	0.1	2029660
Free Cyanide	mg/L	<0.002	0.002	2027320	<0.002	0.002	2027320
Orthophosphate (P)	mg/L	<0.01	0.01	2030021	<0.01	0.01	2030021
pH	pH	7.6		2029648	6.9		2029648
Phenols-4AAP	mg/L	<0.001	0.001	2027173	0.001	0.001	2027173
Total Phosphorus	mg/L	14	0.2	2029930	0.34	0.02	2029930
Total Suspended Solids	mg/L	20000	10	2027120	610	10	2027120
Sulphide	mg/L	0.03	0.02	2027941	<0.02	0.02	2027919
Turbidity	NTU	16000	0.5	2027245	280	0.1	2027238
Alkalinity (Total as CaCO3)	mg/L	459	1	2029625	36	1	2029625
Nitrite (N)	mg/L	<0.01	0.01	2027658	<0.01	0.01	2027443
Dissolved Chloride (Cl)	mg/L	157	1	2029664	16700	200	2029664
Nitrate (N)	mg/L	0.6	0.1	2027658	<0.1	0.1	2027443
Nitrate + Nitrite	mg/L	0.6	0.1	2027658	<0.1	0.1	2027443
Dissolved Bromide (Br-)	mg/L	<1	1	2029664	192	10	2029664
Dissolved Sulphate (SO4)	mg/L	496	1	2029664	1890	10	2029664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN2114			EN2115		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW3 SHALLOW**	**RDL**	**QC Batch**	**MW7 DEEP**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	1000	1	2026214	10000	1	2026214
Inorganics							
Total Ammonia-N	mg/L	1.8	0.05	2027690	18	0.5	2027690
Fluoride (F-)	mg/L	0.2	0.1	2029660	0.3	0.1	2029660
Free Cyanide	mg/L	<0.002	0.002	2027320	<0.002	0.002	2027320
Orthophosphate (P)	mg/L	<0.01	0.01	2029979	<0.01	0.01	2029979
pH	pH	7.7		2029648	7.0		2029648
Phenols-4AAP	mg/L	<0.001	0.001	2027173	<0.001	0.001	2027173
Total Phosphorus	mg/L	30	0.2	2029930	0.14	0.02	2029930
Total Suspended Solids	mg/L	12000	10	2027120	460	10	2027120
Sulphide	mg/L	<0.02	0.02	2027941	0.02	0.02	2027941
Turbidity	NTU	14000	0.5	2027238	210	0.1	2027238
Alkalinity (Total as CaCO3)	mg/L	110	1	2029625	35	1	2029625
Nitrite (N)	mg/L	0.14	0.01	2027658	<0.01	0.01	2027443
Dissolved Chloride (Cl)	mg/L	518	5	2029664	17800	200	2029664
Nitrate (N)	mg/L	0.3	0.1	2027658	<0.1	0.1	2027443
Nitrate + Nitrite	mg/L	0.5	0.1	2027658	<0.1	0.1	2027443
Dissolved Bromide (Br-)	mg/L	6	1	2029664	203	10	2029664
Dissolved Sulphate (SO4)	mg/L	953	5	2029664	1550	10	2029664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN2116			EN2117		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW11 SHALLOW**	**RDL**	**QC Batch**	**DUP #1**	**RDL**	**QC Batch**

Calculated Parameters							
Hardness (CaCO3)	mg/L	450	1	2026214	850	1	2026214
Inorganics							
Total Ammonia-N	mg/L	0.18	0.05	2027690	1.5	0.05	2027690
Fluoride (F-)	mg/L	0.3	0.1	2029660	0.2	0.1	2029660
Free Cyanide	mg/L	<0.002	0.002	2027320	<0.002	0.002	2027320
Orthophosphate (P)	mg/L	<0.01	0.01	2030021	<0.01	0.01	2029979
pH	pH	7.8		2029648	7.7		2029648
Phenols-4AAP	mg/L	<0.001	0.001	2027173		0.001	
Total Phosphorus	mg/L	100	2	2029930	14	0.2	2029930
Total Suspended Solids	mg/L	190000	10	2027120	20000	10	2027120
Sulphide	mg/L	0.16	0.02	2027941	0.04	0.02	2027986
Turbidity	NTU	130000	4	2027238	19000	0.5	2027238
Alkalinity (Total as CaCO3)	mg/L	321	1	2029625	112	1	2033115
Nitrite (N)	mg/L	0.03	0.01	2027443	0.17	0.01	2027658
Dissolved Chloride (Cl)	mg/L	14	1	2029664	461	10	2032469
Nitrate (N)	mg/L	<0.1	0.1	2027443	0.2	0.1	2027658
Nitrate + Nitrite	mg/L	<0.1	0.1	2027443	0.4	0.1	2027658
Dissolved Bromide (Br-)	mg/L	<1	1	2029664	5	1	2032469
Dissolved Sulphate (SO4)	mg/L	92	1	2029664	921	10	2032469

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2108		EN2109		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW5 SHALLOW**	**RDL**	**MW5 STRADDLE**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2028762
Dissolved Aluminum (Al)	mg/L	0.067	0.005	0.32	0.005	2030495
Total Aluminum (Al)	mg/L	53	0.03	300	0.3	2029024
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2030495
Total Antimony (Sb)	mg/L	<0.003	0.003	<0.005	0.005	2029024
Dissolved Arsenic (As)	mg/L	<0.001	0.001	0.013	0.001	2030495
Total Arsenic (As)	mg/L	0.032	0.005	0.23	0.01	2029024
Dissolved Barium (Ba)	mg/L	0.061	0.005	0.077	0.005	2030495
Total Barium (Ba)	mg/L	1.0	0.03	3.5	0.05	2029024
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2030495
Total Beryllium (Be)	mg/L	<0.003	0.003	0.017	0.005	2029024
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Bismuth (Bi)	mg/L	<0.005	0.005	<0.01	0.01	2029024
Dissolved Boron (B)	mg/L	<0.01	0.01	1.0	0.01	2030495
Total Boron (B)	mg/L	<0.05	0.05	2.1	0.1	2029024
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2030495
Total Cadmium (Cd)	mg/L	0.0022	0.0005	0.009	0.001	2029024
Dissolved Calcium (Ca)	mg/L	120	0.2	70	0.2	2030495
Total Calcium (Ca)	mg/L	550	1	4600	2	2029024
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	<0.005	0.005	2030495
Total Chromium (Cr)	mg/L	0.12	0.03	0.61	0.05	2029024
Dissolved Cobalt (Co)	mg/L	0.013	0.0005	0.013	0.0005	2030495
Total Cobalt (Co)	mg/L	0.067	0.003	0.30	0.005	2029024
Dissolved Copper (Cu)	mg/L	<0.001	0.001	0.001	0.001	2030495
Total Copper (Cu)	mg/L	0.35	0.005	0.87	0.01	2029024
Dissolved Iron (Fe)	mg/L	0.1	0.1	0.6	0.1	2030495
Total Iron (Fe)	mg/L	110	0.5	590	5	2029024
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2030495
Total Lead (Pb)	mg/L	0.079	0.003	0.25	0.005	2029024
Dissolved Lithium (Li)	mg/L	0.010	0.005	0.029	0.005	2030495
Total Lithium (Li)	mg/L	0.13	0.03	0.92	0.05	2029024
Dissolved Magnesium (Mg)	mg/L	31	0.05	34	0.05	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G2609
Report Date: 2010/01/05

Project name: TANSLEY QUARRY

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2108		EN2109		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW5 SHALLOW**	**RDL**	**MW5 STRADDLE**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	73	0.3	470	0.5	2029024
Dissolved Manganese (Mn)	mg/L	0.032	0.002	0.078	0.002	2030495
Total Manganese (Mn)	mg/L	16	0.01	37	0.02	2029024
Dissolved Molybdenum (Mo)	mg/L	<0.001	0.001	0.004	0.001	2030495
Total Molybdenum (Mo)	mg/L	0.006	0.005	0.02	0.01	2029024
Dissolved Nickel (Ni)	mg/L	0.003	0.001	0.003	0.001	2030495
Total Nickel (Ni)	mg/L	0.15	0.005	0.63	0.01	2029024
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	0.1	0.1	2030495
Dissolved Potassium (K)	mg/L	0.7	0.2	5.8	0.2	2030495
Total Potassium (K)	mg/L	11	1	83	2	2029024
Dissolved Selenium (Se)	mg/L	<0.002	0.002	<0.002	0.002	2030495
Total Selenium (Se)	mg/L	<0.01	0.01	<0.02	0.02	2029024
Dissolved Silicon (Si)	mg/L	5.6	0.05	11	0.05	2030495
Total Silicon (Si)	mg/L	64	0.3	390	0.5	2029024
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2030495
Total Silver (Ag)	mg/L	<0.0005	0.0005	0.005	0.001	2029024
Dissolved Sodium (Na)	mg/L	6.3	0.1	22	0.1	2030495
Total Sodium (Na)	mg/L	6.8	0.5	45	1	2029024
Dissolved Strontium (Sr)	mg/L	0.19	0.001	5.5	0.001	2030495
Total Strontium (Sr)	mg/L	0.85	0.005	21	0.01	2029024
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Tellurium (Te)	mg/L	<0.005	0.005	<0.01	0.01	2029024
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	<0.00005	0.00005	2030495
Total Thallium (Tl)	mg/L	0.0006	0.0003	0.0033	0.0005	2029024
Dissolved Thorium (Th)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Thorium (Th)	mg/L	0.007	0.005	0.15	0.01	2029024
Dissolved Tin (Sn)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Tin (Sn)	mg/L	<0.005	0.005	<0.01	0.01	2029024
Dissolved Titanium (Ti)	mg/L	<0.005	0.005	0.006	0.005	2030495
Total Titanium (Ti)	mg/L	0.77	0.03	5.6	0.3	2029024
Dissolved Tungsten (W)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Tungsten (W)	mg/L	<0.005	0.005	0.03	0.01	2029024
Dissolved Uranium (U)	mg/L	0.0019	0.0001	0.0003	0.0001	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2108		EN2109		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW5 SHALLOW**	**RDL**	**MW5 STRADDLE**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0042	0.0005	0.020	0.001	2029024
Dissolved Vanadium (V)	mg/L	<0.001	0.001	0.001	0.001	2030495
Total Vanadium (V)	mg/L	0.10	0.005	0.57	0.01	2029024
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	0.006	0.005	2030495
Total Zinc (Zn)	mg/L	0.40	0.03	2.1	0.05	2029024
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	<0.001	0.001	2030495
Total Zirconium (Zr)	mg/L	0.013	0.005	0.13	0.01	2029024

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2110			EN2111		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW5 INT**	**RDL**	**QC Batch**	**MW6 STRADDLE**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2028762	<0.0001	0.0001	2028762
Dissolved Aluminum (Al)	mg/L	0.13	0.005	2030495	0.71	0.005	2030495
Total Aluminum (Al)	mg/L	1.7	0.005	2029024	330	0.3	2029024
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	2030495	<0.0005	0.0005	2030495
Total Antimony (Sb)	mg/L	<0.0005	0.0005	2029024	<0.005	0.005	2029024
Dissolved Arsenic (As)	mg/L	0.002	0.001	2030495	0.003	0.001	2030495
Total Arsenic (As)	mg/L	0.010	0.001	2029024	0.11	0.01	2029024
Dissolved Barium (Ba)	mg/L	0.021	0.005	2030495	0.054	0.005	2030495
Total Barium (Ba)	mg/L	0.10	0.005	2029024	5.5	0.05	2029024
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	2030495	<0.0005	0.0005	2030495
Total Beryllium (Be)	mg/L	<0.0005	0.0005	2029024	0.020	0.005	2029024
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Bismuth (Bi)	mg/L	<0.001	0.001	2029024	<0.01	0.01	2029024
Dissolved Boron (B)	mg/L	3.1	0.01	2030495	0.23	0.01	2030495
Total Boron (B)	mg/L	3.0	0.01	2029024	0.9	0.1	2029024
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	2030495	<0.0001	0.0001	2030495
Total Cadmium (Cd)	mg/L	0.0001	0.0001	2029024	0.005	0.001	2029024
Dissolved Calcium (Ca)	mg/L	67	0.2	2030495	73	0.2	2030495
Total Calcium (Ca)	mg/L	75	0.2	2029024	2400	2	2029024
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	2030495	<0.005	0.005	2030495
Total Chromium (Cr)	mg/L	<0.005	0.005	2029024	0.48	0.05	2029024
Dissolved Cobalt (Co)	mg/L	0.0054	0.0005	2034128	0.015	0.0005	2030495
Total Cobalt (Co)	mg/L	0.0014	0.0005	2034087	0.32	0.005	2029024
Dissolved Copper (Cu)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Copper (Cu)	mg/L	0.008	0.001	2029024	0.48	0.01	2029024
Dissolved Iron (Fe)	mg/L	0.2	0.1	2030495	0.6	0.1	2030495
Total Iron (Fe)	mg/L	5.8	0.1	2029024	530	5	2029024
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	2030495	<0.0005	0.0005	2030495
Total Lead (Pb)	mg/L	0.0029	0.0005	2029024	0.16	0.005	2029024
Dissolved Lithium (Li)	mg/L	0.10	0.005	2030495	0.019	0.005	2030495
Total Lithium (Li)	mg/L	0.12	0.005	2029024	1.1	0.05	2029024
Dissolved Magnesium (Mg)	mg/L	25	0.05	2030495	39	0.05	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2110			EN2111		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW5 INT**	**RDL**	**QC Batch**	**MW6 STRADDLE**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	24	0.05	2029024	350	0.5	2029024
Dissolved Manganese (Mn)	mg/L	0.033	0.002	2030495	0.067	0.002	2030495
Total Manganese (Mn)	mg/L	0.13	0.002	2029024	22	0.02	2029024
Dissolved Molybdenum (Mo)	mg/L	0.005	0.001	2030495	0.004	0.001	2030495
Total Molybdenum (Mo)	mg/L	0.005	0.001	2029024	0.02	0.01	2029024
Dissolved Nickel (Ni)	mg/L	0.001	0.001	2030495	0.003	0.001	2030495
Total Nickel (Ni)	mg/L	0.003	0.001	2029024	0.73	0.01	2029024
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	2030495	<0.1	0.1	2030495
Dissolved Potassium (K)	mg/L	17	0.2	2030495	7.1	0.2	2030495
Total Potassium (K)	mg/L	17	0.2	2029024	100	2	2029024
Dissolved Selenium (Se)	mg/L	<0.002	0.002	2030495	<0.002	0.002	2030495
Total Selenium (Se)	mg/L	<0.002	0.002	2029024	<0.02	0.02	2029024
Dissolved Silicon (Si)	mg/L	6.0	0.05	2030495	10	0.05	2030495
Total Silicon (Si)	mg/L	8.3	0.05	2029024	430	0.5	2029024
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	2030495	<0.0001	0.0001	2030495
Total Silver (Ag)	mg/L	<0.0001	0.0001	2029024	<0.001	0.001	2029024
Dissolved Sodium (Na)	mg/L	110	0.1	2030495	18	0.1	2030495
Total Sodium (Na)	mg/L	110	0.1	2029024	31	1	2029024
Dissolved Strontium (Sr)	mg/L	7.8	0.001	2030495	5.1	0.001	2030495
Total Strontium (Sr)	mg/L	8.3	0.001	2029024	14	0.01	2029024
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Tellurium (Te)	mg/L	<0.001	0.001	2029024	<0.01	0.01	2029024
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	2030495	<0.00005	0.00005	2030495
Total Thallium (Tl)	mg/L	<0.00005	0.00005	2029024	0.0031	0.0005	2029024
Dissolved Thorium (Th)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Thorium (Th)	mg/L	0.003	0.001	2029024	0.11	0.01	2029024
Dissolved Tin (Sn)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Tin (Sn)	mg/L	<0.001	0.001	2029024	<0.01	0.01	2029024
Dissolved Titanium (Ti)	mg/L	<0.005	0.005	2030495	0.018	0.005	2030495
Total Titanium (Ti)	mg/L	0.039	0.005	2029024	4.7	0.3	2029024
Dissolved Tungsten (W)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2030495
Total Tungsten (W)	mg/L	<0.001	0.001	2029024	<0.01	0.01	2029024
Dissolved Uranium (U)	mg/L	0.0002	0.0001	2030495	0.0016	0.0001	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2110			EN2111		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW5 INT**	**RDL**	**QC Batch**	**MW6 STRADDLE**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0002	0.0001	2029024	0.017	0.001	2029024
Dissolved Vanadium (V)	mg/L	<0.001	0.001	2030495	0.003	0.001	2030495
Total Vanadium (V)	mg/L	0.004	0.001	2029024	0.57	0.01	2029024
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	2030495	0.006	0.005	2030495
Total Zinc (Zn)	mg/L	0.013	0.005	2029024	1.7	0.05	2029024
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	2030495	0.001	0.001	2030495
Total Zirconium (Zr)	mg/L	0.004	0.001	2029024	0.11	0.01	2029024

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2112		EN2113		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW1 INT**	**RDL**	**MW1 DEEP**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/L	0.0002	0.0001	<0.0001	0.0001	2028762
Dissolved Aluminum (Al)	mg/L	0.063	0.005	<0.1	0.1	2030495
Total Aluminum (Al)	mg/L	360	0.3	6.1	0.1	2029024
Dissolved Antimony (Sb)	mg/L	0.0005	0.0005	<0.01	0.01	2030495
Total Antimony (Sb)	mg/L	<0.005	0.005	<0.01	0.01	2029024
Dissolved Arsenic (As)	mg/L	0.001	0.001	<0.02	0.02	2030495
Total Arsenic (As)	mg/L	0.14	0.01	<0.03	0.03	2029024
Dissolved Barium (Ba)	mg/L	0.014	0.005	<0.1	0.1	2030495
Total Barium (Ba)	mg/L	2.8	0.05	<0.1	0.1	2029024
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	<0.01	0.01	2030495
Total Beryllium (Be)	mg/L	0.021	0.005	<0.01	0.01	2029024
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Bismuth (Bi)	mg/L	<0.01	0.01	<0.03	0.03	2029024
Dissolved Boron (B)	mg/L	0.16	0.01	5.7	0.2	2030495
Total Boron (B)	mg/L	0.6	0.1	5.4	0.3	2029024
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.002	0.002	2030495
Total Cadmium (Cd)	mg/L	0.004	0.001	<0.003	0.003	2029024
Dissolved Calcium (Ca)	mg/L	120	0.2	2400	4	2030495
Total Calcium (Ca)	mg/L	2700	2	2400	5	2029024
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	<0.1	0.1	2030495
Total Chromium (Cr)	mg/L	0.62	0.05	<0.1	0.1	2029024
Dissolved Cobalt (Co)	mg/L	0.013	0.0005	<0.01	0.01	2030495
Total Cobalt (Co)	mg/L	0.29	0.005	<0.01	0.01	2029024
Dissolved Copper (Cu)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Copper (Cu)	mg/L	0.58	0.01	0.05	0.03	2029024
Dissolved Iron (Fe)	mg/L	0.2	0.1	8	2	2030495
Total Iron (Fe)	mg/L	660	5	18	3	2029024
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	<0.01	0.01	2030495
Total Lead (Pb)	mg/L	0.29	0.005	<0.01	0.01	2029024
Dissolved Lithium (Li)	mg/L	0.13	0.005	5.7	0.1	2030495
Total Lithium (Li)	mg/L	1.0	0.05	5.7	0.1	2029024
Dissolved Magnesium (Mg)	mg/L	200	0.05	580	1	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2112		EN2113		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW1 INT**	**RDL**	**MW1 DEEP**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	620	0.5	580	1	2029024
Dissolved Manganese (Mn)	mg/L	0.058	0.002	1.4	0.04	2030495
Total Manganese (Mn)	mg/L	16	0.02	1.6	0.05	2029024
Dissolved Molybdenum (Mo)	mg/L	0.002	0.001	0.05	0.02	2030495
Total Molybdenum (Mo)	mg/L	0.02	0.01	<0.03	0.03	2029024
Dissolved Nickel (Ni)	mg/L	0.004	0.001	<0.02	0.02	2030495
Total Nickel (Ni)	mg/L	0.67	0.01	<0.03	0.03	2029024
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	<2	2	2030495
Dissolved Potassium (K)	mg/L	6.1	0.2	140	4	2030495
Total Potassium (K)	mg/L	100	2	140	5	2029024
Dissolved Selenium (Se)	mg/L	0.002	0.002	<0.04	0.04	2030495
Total Selenium (Se)	mg/L	<0.02	0.02	<0.05	0.05	2029024
Dissolved Silicon (Si)	mg/L	8.0	0.05	3	1	2030495
Total Silicon (Si)	mg/L	450	0.5	11	1	2029024
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	<0.002	0.002	2030495
Total Silver (Ag)	mg/L	0.002	0.001	<0.003	0.003	2029024
Dissolved Sodium (Na)	mg/L	56	0.1	6600	2	2030495
Total Sodium (Na)	mg/L	85	1	6900	3	2029024
Dissolved Strontium (Sr)	mg/L	2.3	0.001	51	0.02	2030495
Total Strontium (Sr)	mg/L	9.0	0.01	49	0.03	2029024
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Tellurium (Te)	mg/L	<0.01	0.01	<0.03	0.03	2029024
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	<0.001	0.001	2030495
Total Thallium (Tl)	mg/L	0.0041	0.0005	<0.001	0.001	2029024
Dissolved Thorium (Th)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Thorium (Th)	mg/L	0.15	0.01	<0.03	0.03	2029024
Dissolved Tin (Sn)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Tin (Sn)	mg/L	<0.01	0.01	<0.03	0.03	2029024
Dissolved Titanium (Ti)	mg/L	<0.005	0.005	<0.1	0.1	2030495
Total Titanium (Ti)	mg/L	7.1	0.3	0.1	0.1	2029024
Dissolved Tungsten (W)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Tungsten (W)	mg/L	<0.01	0.01	<0.03	0.03	2029024
Dissolved Uranium (U)	mg/L	0.012	0.0001	<0.002	0.002	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2112		EN2113		
Sampling Date		2009/12/01		2009/12/01		
COC Number		172018-0		172018-0		
	Units	**MW1 INT**	**RDL**	**MW1 DEEP**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.043	0.001	<0.003	0.003	2029024
Dissolved Vanadium (V)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Vanadium (V)	mg/L	0.70	0.01	<0.03	0.03	2029024
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	<0.1	0.1	2030495
Total Zinc (Zn)	mg/L	1.7	0.05	<0.1	0.1	2029024
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	<0.02	0.02	2030495
Total Zirconium (Zr)	mg/L	0.11	0.01	<0.03	0.03	2029024

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2114			EN2115		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW3 SHALLOW**	**RDL**	**QC Batch**	**MW7 DEEP**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2028762	<0.0001	0.0001	2028762
Dissolved Aluminum (Al)	mg/L	0.14	0.005	2030495	<0.1	0.1	2030495
Total Aluminum (Al)	mg/L	50	0.03	2029024	2.0	0.1	2029024
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	2030495	<0.01	0.01	2030495
Total Antimony (Sb)	mg/L	<0.003	0.003	2029024	<0.01	0.01	2029024
Dissolved Arsenic (As)	mg/L	0.004	0.001	2030495	<0.02	0.02	2030495
Total Arsenic (As)	mg/L	0.038	0.005	2029024	<0.03	0.03	2029024
Dissolved Barium (Ba)	mg/L	0.010	0.005	2030495	<0.1	0.1	2030495
Total Barium (Ba)	mg/L	0.36	0.03	2029024	<0.1	0.1	2029024
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	2030495	<0.01	0.01	2030495
Total Beryllium (Be)	mg/L	<0.003	0.003	2029024	<0.01	0.01	2029024
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Bismuth (Bi)	mg/L	<0.005	0.005	2029024	<0.03	0.03	2029024
Dissolved Boron (B)	mg/L	1.2	0.01	2030495	6.6	0.2	2030495
Total Boron (B)	mg/L	1.2	0.05	2029024	6.4	0.3	2029024
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	2030495	<0.002	0.002	2030495
Total Cadmium (Cd)	mg/L	0.0010	0.0005	2029024	0.013	0.003	2029024
Dissolved Calcium (Ca)	mg/L	190	0.2	2030495	3000	4	2030495
Total Calcium (Ca)	mg/L	1100	1	2029024	2900	5	2029024
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	2030495	<0.1	0.1	2030495
Total Chromium (Cr)	mg/L	0.11	0.03	2029024	<0.1	0.1	2029024
Dissolved Cobalt (Co)	mg/L	0.011	0.0005	2030495	<0.01	0.01	2030495
Total Cobalt (Co)	mg/L	0.049	0.003	2029024	<0.01	0.01	2029024
Dissolved Copper (Cu)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Copper (Cu)	mg/L	0.14	0.005	2029024	0.06	0.03	2029024
Dissolved Iron (Fe)	mg/L	0.7	0.1	2030495	6	2	2030495
Total Iron (Fe)	mg/L	110	0.5	2029024	9	3	2029024
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	2030495	<0.01	0.01	2030495
Total Lead (Pb)	mg/L	0.054	0.003	2029024	0.01	0.01	2029024
Dissolved Lithium (Li)	mg/L	0.10	0.005	2030495	6.2	0.1	2030495
Total Lithium (Li)	mg/L	0.24	0.03	2029024	5.9	0.1	2029024
Dissolved Magnesium (Mg)	mg/L	130	0.05	2030495	750	1	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2114			EN2115		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW3 SHALLOW**	**RDL**	**QC Batch**	**MW7 DEEP**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	210	0.3	2029024	730	1	2029024
Dissolved Manganese (Mn)	mg/L	0.14	0.002	2030495	1.5	0.04	2030495
Total Manganese (Mn)	mg/L	7.8	0.01	2029024	1.5	0.05	2029024
Dissolved Molybdenum (Mo)	mg/L	0.007	0.001	2030495	<0.02	0.02	2030495
Total Molybdenum (Mo)	mg/L	0.007	0.005	2029024	<0.03	0.03	2029024
Dissolved Nickel (Ni)	mg/L	0.003	0.001	2030495	<0.02	0.02	2030495
Total Nickel (Ni)	mg/L	0.10	0.005	2029024	<0.03	0.03	2029024
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	2030495	<2	2	2030495
Dissolved Potassium (K)	mg/L	12	0.2	2030495	140	4	2030495
Total Potassium (K)	mg/L	20	1	2029024	140	5	2029024
Dissolved Selenium (Se)	mg/L	<0.002	0.002	2030495	<0.04	0.04	2030495
Total Selenium (Se)	mg/L	<0.01	0.01	2029024	<0.05	0.05	2029024
Dissolved Silicon (Si)	mg/L	6.9	0.05	2030495	5	1	2030495
Total Silicon (Si)	mg/L	62	0.3	2029024	10	1	2029024
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	2030495	<0.002	0.002	2030495
Total Silver (Ag)	mg/L	<0.0005	0.0005	2029024	<0.003	0.003	2029024
Dissolved Sodium (Na)	mg/L	170	0.1	2034128	6700	2	2030495
Total Sodium (Na)	mg/L	160	0.5	2034087	6500	3	2029024
Dissolved Strontium (Sr)	mg/L	11	0.001	2030495	63	0.02	2030495
Total Strontium (Sr)	mg/L	13	0.005	2029024	60	0.03	2029024
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Tellurium (Te)	mg/L	<0.005	0.005	2029024	<0.03	0.03	2029024
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	2030495	<0.001	0.001	2030495
Total Thallium (Tl)	mg/L	0.0004	0.0003	2029024	<0.001	0.001	2029024
Dissolved Thorium (Th)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Thorium (Th)	mg/L	0.010	0.005	2029024	<0.03	0.03	2029024
Dissolved Tin (Sn)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Tin (Sn)	mg/L	<0.005	0.005	2029024	<0.03	0.03	2029024
Dissolved Titanium (Ti)	mg/L	<0.005	0.005	2030495	<0.1	0.1	2030495
Total Titanium (Ti)	mg/L	0.86	0.03	2029024	<0.1	0.1	2029024
Dissolved Tungsten (W)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Tungsten (W)	mg/L	<0.005	0.005	2029024	<0.03	0.03	2029024
Dissolved Uranium (U)	mg/L	0.0005	0.0001	2030495	<0.002	0.002	2030495

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2114			EN2115		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW3 SHALLOW**	**RDL**	**QC Batch**	**MW7 DEEP**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0040	0.0005	2029024	<0.003	0.003	2029024
Dissolved Vanadium (V)	mg/L	0.003	0.001	2030495	<0.02	0.02	2030495
Total Vanadium (V)	mg/L	0.10	0.005	2029024	<0.03	0.03	2029024
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	2030495	<0.1	0.1	2030495
Total Zinc (Zn)	mg/L	0.35	0.03	2029024	0.1	0.1	2029024
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	2030495	<0.02	0.02	2030495
Total Zirconium (Zr)	mg/L	0.014	0.005	2029024	<0.03	0.03	2029024

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2116			EN2117		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW11 SHALLOW**	**RDL**	**QC Batch**	**DUP #1**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	0.0003	0.0001	2028762	<0.0001	0.0001	2028762
Dissolved Aluminum (Al)	mg/L	0.36	0.005	2030495	0.45	0.005	2034128
Total Aluminum (Al)	mg/L	880	0.3	2029024	190	0.05	2029024
Dissolved Antimony (Sb)	mg/L	0.0006	0.0005	2030495	<0.0005	0.0005	2034128
Total Antimony (Sb)	mg/L	<0.03	0.03	2029024	<0.005	0.005	2029024
Dissolved Arsenic (As)	mg/L	0.005	0.001	2030495	0.004	0.001	2034128
Total Arsenic (As)	mg/L	0.37	0.05	2029024	0.10	0.01	2029024
Dissolved Barium (Ba)	mg/L	0.054	0.005	2030495	0.009	0.005	2034128
Total Barium (Ba)	mg/L	18	0.3	2029024	1.4	0.05	2029024
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	2030495	<0.0005	0.0005	2034128
Total Beryllium (Be)	mg/L	0.04	0.03	2029024	0.010	0.005	2029024
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Bismuth (Bi)	mg/L	<0.05	0.05	2029024	<0.01	0.01	2029024
Dissolved Boron (B)	mg/L	0.13	0.01	2030495	1.1	0.01	2034128
Total Boron (B)	mg/L	1.3	0.5	2029024	2.1	0.1	2029024
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	2030495	<0.0001	0.0001	2034128
Total Cadmium (Cd)	mg/L	0.010	0.005	2029024	0.003	0.001	2029024
Dissolved Calcium (Ca)	mg/L	73	0.2	2030495	160	0.2	2034128
Total Calcium (Ca)	mg/L	7800	10	2029024	2800	2	2029024
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	2030495	<0.005	0.005	2034128
Total Chromium (Cr)	mg/L	2.9	0.3	2029024	0.40	0.05	2029024
Dissolved Cobalt (Co)	mg/L	0.015	0.0005	2030495	0.0008	0.0005	2034128
Total Cobalt (Co)	mg/L	0.85	0.03	2029024	0.16	0.005	2029024
Dissolved Copper (Cu)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Copper (Cu)	mg/L	2.3	0.05	2029024	0.47	0.01	2029024
Dissolved Iron (Fe)	mg/L	0.7	0.1	2030495	0.7	0.1	2034128
Total Iron (Fe)	mg/L	1600	5	2029024	340	1	2029024
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	2030495	<0.0005	0.0005	2034128
Total Lead (Pb)	mg/L	0.66	0.03	2029024	0.17	0.005	2029024
Dissolved Lithium (Li)	mg/L	0.028	0.005	2030495	0.095	0.005	2034128
Total Lithium (Li)	mg/L	2.3	0.3	2029024	0.78	0.05	2029024
Dissolved Magnesium (Mg)	mg/L	65	0.05	2030495	110	0.05	2034128

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN2116			EN2117		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW11 SHALLOW**	**RDL**	**QC Batch**	**DUP #1**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	960	3	2029024	460	0.5	2029024
Dissolved Manganese (Mn)	mg/L	0.14	0.002	2030495	0.11	0.002	2034128
Total Manganese (Mn)	mg/L	82	0.1	2029024	19	0.02	2029024
Dissolved Molybdenum (Mo)	mg/L	0.009	0.001	2030495	0.006	0.001	2034128
Total Molybdenum (Mo)	mg/L	<0.05	0.05	2029024	0.02	0.01	2029024
Dissolved Nickel (Ni)	mg/L	0.005	0.001	2030495	<0.001	0.001	2034128
Total Nickel (Ni)	mg/L	1.8	0.05	2029024	0.36	0.01	2029024
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	2030495	<0.1	0.1	2034128
Dissolved Potassium (K)	mg/L	8.6	0.2	2030495	11	0.2	2034128
Total Potassium (K)	mg/L	190	10	2029024	74	2	2029024
Dissolved Selenium (Se)	mg/L	<0.002	0.002	2030495	<0.002	0.002	2034128
Total Selenium (Se)	mg/L	<0.1	0.1	2029024	<0.02	0.02	2029024
Dissolved Silicon (Si)	mg/L	11	0.05	2030495	6.4	0.05	2034128
Total Silicon (Si)	mg/L	790	3	2029024	270	0.5	2029024
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	2030495	<0.0001	0.0001	2034128
Total Silver (Ag)	mg/L	<0.005	0.005	2029024	0.002	0.001	2029024
Dissolved Sodium (Na)	mg/L	26	0.1	2030495	160	0.1	2034128
Total Sodium (Na)	mg/L	54	5	2029024	450	1	2029024
Dissolved Strontium (Sr)	mg/L	0.98	0.001	2030495	11	0.001	2034128
Total Strontium (Sr)	mg/L	16	0.05	2029024	25	0.01	2029024
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Tellurium (Te)	mg/L	<0.05	0.05	2029024	<0.01	0.01	2029024
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	2030495	<0.00005	0.00005	2034128
Total Thallium (Tl)	mg/L	0.007	0.003	2029024	0.0022	0.0005	2029024
Dissolved Thorium (Th)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Thorium (Th)	mg/L	0.17	0.05	2029024	0.06	0.01	2029024
Dissolved Tin (Sn)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Tin (Sn)	mg/L	<0.05	0.05	2029024	<0.01	0.01	2029024
Dissolved Titanium (Ti)	mg/L	0.010	0.005	2030495	0.03 (1)	0.03	2034128
Total Titanium (Ti)	mg/L	7.9	0.3	2029024	4.8	0.05	2029024
Dissolved Tungsten (W)	mg/L	<0.001	0.001	2030495	<0.001	0.001	2034128
Total Tungsten (W)	mg/L	<0.05	0.05	2029024	<0.01	0.01	2029024

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		EN2116			EN2117		
Sampling Date		2009/12/01			2009/12/01		
COC Number		172018-0			172018-0		
	Units	**MW11 SHALLOW**	**RDL**	**QC Batch**	**DUP #1**	**RDL**	**QC Batch**
Dissolved Uranium (U)	mg/L	0.0046	0.0001	2030495	0.0004	0.0001	2034128
Total Uranium (U)	mg/L	0.066	0.005	2029024	0.016	0.001	2029024
Dissolved Vanadium (V)	mg/L	0.005	0.001	2030495	0.002	0.001	2034128
Total Vanadium (V)	mg/L	1.6	0.05	2029024	0.38	0.01	2029024
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	2030495	<0.03 (1)	0.03	2034128
Total Zinc (Zn)	mg/L	4.4	0.3	2029024	1.1	0.05	2029024
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	2030495	0.001	0.001	2034128
Total Zirconium (Zr)	mg/L	0.19	0.05	2029024	0.08	0.01	2029024

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	7.3°C
Package 2	10.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised report: Reporting units adjusted to mg/L, per request.

Sample EN2108-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2109-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2110-01: Result for dissolved cobalt are greater than total cobalt. Results have been confrimed by re-analysis.

Sample EN2111-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2112-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2113-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2114-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Elevated ion balance result was confirmed by re-analysis.

Sample EN2115-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2116-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN2117-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Elevated ion balance result was confirmed by re-analysis.

Results relate only to the items tested.

Quality Assurance Report

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027120	HAG	QC Standard	Total Suspended Solids	2009/12/04		98	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/04	3.1		%	25
2027173	BMO	Matrix Spike [EN2108-09]	Phenols-4AAP	2009/12/04		117	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD [EN2108-09]	Phenols-4AAP	2009/12/04	NC		%	25
2027238	VRO	QC Standard	Turbidity	2009/12/04		100	%	85 - 115
		Method Blank	Turbidity	2009/12/04	<0.1		NTU	
		RPD	Turbidity	2009/12/04	0.7		%	25
2027245	VRO	QC Standard	Turbidity	2009/12/04		100	%	85 - 115
		Method Blank	Turbidity	2009/12/04	<0.1		NTU	
		RPD	Turbidity	2009/12/04	NC		%	25
2027320	LHA	Matrix Spike	Free Cyanide	2009/12/04		85	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/04		98	%	80 - 120
		Method Blank	Free Cyanide	2009/12/04	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/04	NC		%	25
2027443	CCI	Matrix Spike [EN2113-01]	Nitrite (N)	2009/12/08		91	%	75 - 125
			Nitrate (N)	2009/12/08		94	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/08		104	%	80 - 120
			Nitrate (N)	2009/12/08		99	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/08	<0.01		mg/L	
			Nitrate (N)	2009/12/08	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/08	<0.1		mg/L	
		RPD [EN2113-01]	Nitrite (N)	2009/12/08	NC		%	25
			Nitrate (N)	2009/12/08	NC		%	25
			Nitrate + Nitrite	2009/12/08	NC		%	25
2027658	CCI	Matrix Spike	Nitrite (N)	2009/12/07		104	%	75 - 125
			Nitrate (N)	2009/12/07		104	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/07		108	%	80 - 120
			Nitrate (N)	2009/12/07		105	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/07	<0.01		mg/L	
			Nitrate (N)	2009/12/07	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/07	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/07	NC		%	25
			Nitrate (N)	2009/12/07	NC		%	25
2027690	ADB	Matrix Spike	Total Ammonia-N	2009/12/07		97	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/07		100	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/07	<0.05		mg/L	
		RPD	Total Ammonia-N	2009/12/07	NC		%	25
2027919	SAC	Matrix Spike	Sulphide	2009/12/08		87	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		103	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD	Sulphide	2009/12/08	NC		%	25
2027941	SAC	Matrix Spike	Sulphide	2009/12/08		87	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		99	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD	Sulphide	2009/12/08	NC		%	25
2027986	SAC	Matrix Spike	Sulphide	2009/12/07		93	%	75 - 125
		Spiked Blank	Sulphide	2009/12/07		96	%	85 - 115
		Method Blank	Sulphide	2009/12/07	<0.02		mg/L	
		RPD	Sulphide	2009/12/07	NC		%	25
2028762	MC	Matrix Spike	Mercury (Hg)	2009/12/07		99	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2028762	MC	Spiked Blank	Mercury (Hg)	2009/12/07		104	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2029024	ADA	Matrix Spike	Total Aluminum (Al)	2009/12/08		106	%	80 - 120
			Total Antimony (Sb)	2009/12/08		106	%	80 - 120
			Total Arsenic (As)	2009/12/08		101	%	80 - 120
			Total Barium (Ba)	2009/12/08		99	%	80 - 120
			Total Beryllium (Be)	2009/12/08		102	%	75 - 125
			Total Bismuth (Bi)	2009/12/08		99	%	75 - 125
			Total Boron (B)	2009/12/08		101	%	75 - 125
			Total Cadmium (Cd)	2009/12/08		102	%	80 - 120
			Total Calcium (Ca)	2009/12/08		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/08		100	%	80 - 120
			Total Cobalt (Co)	2009/12/08		99	%	80 - 120
			Total Copper (Cu)	2009/12/08		97	%	80 - 120
			Total Iron (Fe)	2009/12/08		101	%	80 - 120
			Total Lead (Pb)	2009/12/08		99	%	80 - 120
			Total Lithium (Li)	2009/12/08		99	%	75 - 125
			Total Magnesium (Mg)	2009/12/08		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/08		99	%	80 - 120
			Total Molybdenum (Mo)	2009/12/08		102	%	80 - 120
			Total Nickel (Ni)	2009/12/08		102	%	80 - 120
			Total Potassium (K)	2009/12/08		101	%	75 - 125
			Total Selenium (Se)	2009/12/08		101	%	75 - 125
			Total Silicon (Si)	2009/12/08		93	%	75 - 125
			Total Silver (Ag)	2009/12/08		95	%	80 - 120
			Total Sodium (Na)	2009/12/08		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/08		99	%	80 - 120
			Total Tellurium (Te)	2009/12/08		101	%	75 - 125
			Total Thallium (Tl)	2009/12/08		99	%	80 - 120
			Total Thorium (Th)	2009/12/08		106	%	75 - 125
			Total Tin (Sn)	2009/12/08		105	%	75 - 125
			Total Titanium (Ti)	2009/12/08		100	%	75 - 125
			Total Tungsten (W)	2009/12/08		100	%	75 - 125
			Total Uranium (U)	2009/12/08		100	%	80 - 120
			Total Vanadium (V)	2009/12/08		101	%	80 - 120
			Total Zinc (Zn)	2009/12/08		99	%	80 - 120
			Total Zirconium (Zr)	2009/12/08		106	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/08		103	%	80 - 120
			Total Antimony (Sb)	2009/12/08		104	%	82 - 120
			Total Arsenic (As)	2009/12/08		100	%	86 - 119
			Total Barium (Ba)	2009/12/08		101	%	83 - 115
			Total Beryllium (Be)	2009/12/08		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/08		97	%	78 - 120
			Total Boron (B)	2009/12/08		101	%	78 - 133
			Total Cadmium (Cd)	2009/12/08		103	%	85 - 116
			Total Calcium (Ca)	2009/12/08		101	%	75 - 125
			Total Chromium (Cr)	2009/12/08		101	%	80 - 120
			Total Cobalt (Co)	2009/12/08		98	%	82 - 117
			Total Copper (Cu)	2009/12/08		100	%	80 - 117
			Total Iron (Fe)	2009/12/08		102	%	80 - 120
			Total Lead (Pb)	2009/12/08		99	%	80 - 120
			Total Lithium (Li)	2009/12/08		101	%	86 - 131
			Total Magnesium (Mg)	2009/12/08		102	%	80 - 120
			Total Manganese (Mn)	2009/12/08		101	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2029024	ADA	Spiked Blank	Total Molybdenum (Mo)	2009/12/08		99	%	82 - 117
			Total Nickel (Ni)	2009/12/08		101	%	81 - 117
			Total Potassium (K)	2009/12/08		102	%	75 - 125
			Total Selenium (Se)	2009/12/08		102	%	82 - 118
			Total Silicon (Si)	2009/12/08		93	%	67 - 140
			Total Silver (Ag)	2009/12/08		95	%	80 - 120
			Total Sodium (Na)	2009/12/08		100	%	75 - 125
			Total Strontium (Sr)	2009/12/08		101	%	83 - 120
			Total Tellurium (Te)	2009/12/08		102	%	80 - 116
			Total Thallium (Tl)	2009/12/08		99	%	80 - 129
			Total Thorium (Th)	2009/12/08		99	%	80 - 125
			Total Tin (Sn)	2009/12/08		101	%	83 - 119
			Total Titanium (Ti)	2009/12/08		99	%	60 - 125
			Total Tungsten (W)	2009/12/08		98	%	81 - 123
			Total Uranium (U)	2009/12/08		100	%	82 - 120
			Total Vanadium (V)	2009/12/08		100	%	82 - 118
			Total Zinc (Zn)	2009/12/08		100	%	80 - 120
			Total Zirconium (Zr)	2009/12/08		103	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/08	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/08	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/08	<0.001		mg/L	
			Total Barium (Ba)	2009/12/08	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/08	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/08	<0.001		mg/L	
			Total Boron (B)	2009/12/08	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/08	0.0002,	RDL=0.0001	mg/L	
			Total Calcium (Ca)	2009/12/08	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/08	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/08	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/08	<0.001		mg/L	
			Total Iron (Fe)	2009/12/08	<0.1		mg/L	
			Total Lead (Pb)	2009/12/08	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/08	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/08	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/08	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/08	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/08	<0.001		mg/L	
			Total Potassium (K)	2009/12/08	<0.2		mg/L	
			Total Selenium (Se)	2009/12/08	<0.002		mg/L	
			Total Silicon (Si)	2009/12/08	<0.05		mg/L	
			Total Silver (Ag)	2009/12/08	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/08	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/08	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/08	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/08	0.00007,	RDL=0.00005	mg/L	
			Total Thorium (Th)	2009/12/08	<0.001		mg/L	
			Total Tin (Sn)	2009/12/08	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/08	<0.005		mg/L	
			Total Tungsten (W)	2009/12/08	<0.001		mg/L	
			Total Uranium (U)	2009/12/08	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/08	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/08	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/08	<0.001		mg/L	
		RPD	Total Calcium (Ca)	2009/12/08	0.2		%	25
			Total Iron (Fe)	2009/12/08	4.1		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2029024	ADA	RPD	Total Magnesium (Mg)	2009/12/08	0.2		%	25
			Total Manganese (Mn)	2009/12/08	0.8		%	25
			Total Potassium (K)	2009/12/08	0.7		%	25
			Total Sodium (Na)	2009/12/08	0.05		%	25
2029625	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/07		94	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/07	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2009/12/07	1.5		%	25
2029660	YPA	Matrix Spike	Fluoride (F-)	2009/12/07		108	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/07		111	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/07	<0.1		mg/L	
		RPD	Fluoride (F-)	2009/12/07	NC		%	25
2029664	FD	Matrix Spike [EN2114-01]	Dissolved Chloride (Cl)	2009/12/08		NC	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/08		99	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/08		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/08		94	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/08		103	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/08		97	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/08	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/08	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/08	<1		mg/L	
		RPD [EN2114-01]	Dissolved Chloride (Cl)	2009/12/08	2.0		%	25
			Dissolved Bromide (Br-)	2009/12/08	1.9		%	25
			Dissolved Sulphate (SO4)	2009/12/08	2.1		%	25
2029930	AHA	Matrix Spike	Total Phosphorus	2009/12/08		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/08		108	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/08		104	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/08	<0.02		mg/L	
		RPD	Total Phosphorus	2009/12/08	0.6		%	25
2029979	DRM	Matrix Spike	Orthophosphate (P)	2009/12/08		110	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/08		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/08	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/08	NC		%	25
2030021	DRM	Matrix Spike	Orthophosphate (P)	2009/12/08		109	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/08		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/08	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/08	NC		%	25
2030495	HRE	Matrix Spike	Dissolved Aluminum (Al)	2009/12/09		98	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/09		107	%	80 - 120
			Dissolved Arsenic (As)	2009/12/09		106	%	80 - 120
			Dissolved Barium (Ba)	2009/12/09		102	%	80 - 120
			Dissolved Beryllium (Be)	2009/12/09		109	%	80 - 120
			Dissolved Bismuth (Bi)	2009/12/09		100	%	80 - 120
			Dissolved Boron (B)	2009/12/09		112	%	80 - 120
			Dissolved Cadmium (Cd)	2009/12/09		106	%	80 - 120
			Dissolved Calcium (Ca)	2009/12/09		NC	%	80 - 120
			Dissolved Chromium (Cr)	2009/12/09		102	%	80 - 120
			Dissolved Cobalt (Co)	2009/12/09		102	%	80 - 120
			Dissolved Copper (Cu)	2009/12/09		101	%	80 - 120
			Dissolved Iron (Fe)	2009/12/09		108	%	80 - 120
			Dissolved Lead (Pb)	2009/12/09		100	%	80 - 120
			Dissolved Lithium (Li)	2009/12/09		105	%	80 - 120
			Dissolved Magnesium (Mg)	2009/12/09		104	%	80 - 120
			Dissolved Manganese (Mn)	2009/12/09		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2009/12/09		108	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030495	HRE	Matrix Spike	Dissolved Nickel (Ni)	2009/12/09		104	%	80 - 120
			Dissolved Phosphorus (P)	2009/12/09		108	%	80 - 120
			Dissolved Potassium (K)	2009/12/09		106	%	80 - 120
			Dissolved Selenium (Se)	2009/12/09		95	%	80 - 120
			Dissolved Silicon (Si)	2009/12/09		107	%	80 - 120
			Dissolved Silver (Ag)	2009/12/09		85	%	80 - 120
			Dissolved Sodium (Na)	2009/12/09		103	%	80 - 120
			Dissolved Strontium (Sr)	2009/12/09		NC	%	80 - 120
			Dissolved Tellurium (Te)	2009/12/09		90	%	80 - 120
			Dissolved Thallium (Tl)	2009/12/09		99	%	80 - 120
			Dissolved Thorium (Th)	2009/12/09		103	%	80 - 120
			Dissolved Tin (Sn)	2009/12/09		107	%	80 - 120
			Dissolved Titanium (Ti)	2009/12/09		107	%	80 - 120
			Dissolved Tungsten (W)	2009/12/09		103	%	80 - 120
			Dissolved Uranium (U)	2009/12/09		105	%	80 - 120
			Dissolved Vanadium (V)	2009/12/09		105	%	80 - 120
			Dissolved Zinc (Zn)	2009/12/09		104	%	80 - 120
			Dissolved Zirconium (Zr)	2009/12/09		106	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2009/12/09		100	%	90 - 110
			Dissolved Antimony (Sb)	2009/12/09		103	%	90 - 110
			Dissolved Arsenic (As)	2009/12/09		102	%	90 - 110
			Dissolved Barium (Ba)	2009/12/09		99	%	90 - 110
			Dissolved Beryllium (Be)	2009/12/09		103	%	90 - 110
			Dissolved Bismuth (Bi)	2009/12/09		100	%	90 - 110
			Dissolved Boron (B)	2009/12/09		101	%	90 - 110
			Dissolved Cadmium (Cd)	2009/12/09		103	%	90 - 110
			Dissolved Calcium (Ca)	2009/12/09		104	%	90 - 110
			Dissolved Chromium (Cr)	2009/12/09		100	%	90 - 110
			Dissolved Cobalt (Co)	2009/12/09		99	%	90 - 110
			Dissolved Copper (Cu)	2009/12/09		99	%	90 - 110
			Dissolved Iron (Fe)	2009/12/09		104	%	90 - 110
			Dissolved Lead (Pb)	2009/12/09		98	%	90 - 110
			Dissolved Lithium (Li)	2009/12/09		100	%	90 - 110
			Dissolved Magnesium (Mg)	2009/12/09		103	%	90 - 110
			Dissolved Manganese (Mn)	2009/12/09		105	%	90 - 110
			Dissolved Molybdenum (Mo)	2009/12/09		103	%	90 - 110
			Dissolved Nickel (Ni)	2009/12/09		98	%	90 - 110
			Dissolved Phosphorus (P)	2009/12/09		103	%	90 - 110
			Dissolved Potassium (K)	2009/12/09		103	%	90 - 110
			Dissolved Selenium (Se)	2009/12/09		105	%	90 - 110
			Dissolved Silicon (Si)	2009/12/09		103	%	90 - 110
			Dissolved Silver (Ag)	2009/12/09		100	%	90 - 110
			Dissolved Sodium (Na)	2009/12/09		100	%	90 - 110
			Dissolved Strontium (Sr)	2009/12/09		101	%	90 - 110
			Dissolved Tellurium (Te)	2009/12/09		104	%	90 - 110
			Dissolved Thallium (Tl)	2009/12/09		97	%	90 - 110
			Dissolved Thorium (Th)	2009/12/09		100	%	90 - 110
			Dissolved Tin (Sn)	2009/12/09		102	%	90 - 110
			Dissolved Titanium (Ti)	2009/12/09		104	%	90 - 110
			Dissolved Tungsten (W)	2009/12/09		100	%	90 - 110
			Dissolved Uranium (U)	2009/12/09		100	%	90 - 110
			Dissolved Vanadium (V)	2009/12/09		102	%	90 - 110
			Dissolved Zinc (Zn)	2009/12/09		103	%	90 - 110
			Dissolved Zirconium (Zr)	2009/12/09		100	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2009/12/09	<0.005		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030495	HRE	Method Blank	Dissolved Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Dissolved Arsenic (As)	2009/12/09	<0.001		mg/L	
			Dissolved Barium (Ba)	2009/12/09	<0.005		mg/L	
			Dissolved Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Dissolved Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Dissolved Boron (B)	2009/12/09	<0.01		mg/L	
			Dissolved Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
			Dissolved Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Dissolved Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Dissolved Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Dissolved Copper (Cu)	2009/12/09	<0.001		mg/L	
			Dissolved Iron (Fe)	2009/12/09	<0.1		mg/L	
			Dissolved Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Dissolved Lithium (Li)	2009/12/09	<0.005		mg/L	
			Dissolved Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Dissolved Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Dissolved Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Dissolved Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Dissolved Phosphorus (P)	2009/12/09	<0.1		mg/L	
			Dissolved Potassium (K)	2009/12/09	<0.2		mg/L	
			Dissolved Selenium (Se)	2009/12/09	<0.002		mg/L	
			Dissolved Silicon (Si)	2009/12/09	<0.05		mg/L	
			Dissolved Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Dissolved Sodium (Na)	2009/12/09	<0.1		mg/L	
			Dissolved Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Dissolved Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Dissolved Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Dissolved Thorium (Th)	2009/12/09	<0.001		mg/L	
			Dissolved Tin (Sn)	2009/12/09	<0.001		mg/L	
			Dissolved Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Dissolved Tungsten (W)	2009/12/09	<0.001		mg/L	
			Dissolved Uranium (U)	2009/12/09	<0.0001		mg/L	
			Dissolved Vanadium (V)	2009/12/09	<0.001		mg/L	
			Dissolved Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Dissolved Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Dissolved Lead (Pb)	2009/12/09	NC		%	25
2032469	FD	Matrix Spike	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/12/10	4.0		%	25
			Dissolved Bromide (Br-)	2009/12/10	NC		%	25
			Dissolved Sulphate (SO4)	2009/12/10	0.7		%	25
2033115	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/10		95	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/10	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2009/12/10	0.4		%	25
2034087	ADA	Matrix Spike	Total Cobalt (Co)	2009/12/12		95	%	80 - 120
			Total Sodium (Na)	2009/12/12		NC	%	75 - 125
		Spiked Blank	Total Cobalt (Co)	2009/12/12		98	%	82 - 117
			Total Sodium (Na)	2009/12/12		106	%	75 - 125

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034087	ADA	Method Blank	Total Cobalt (Co)	2009/12/12	<0.0005		mg/L	
			Total Sodium (Na)	2009/12/12	<0.1		mg/L	
2034128	ADA	Matrix Spike						
		[EN2117-04]	Dissolved Aluminum (Al)	2009/12/12		NC	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/12		99	%	80 - 120
			Dissolved Arsenic (As)	2009/12/12		97	%	80 - 120
			Dissolved Barium (Ba)	2009/12/12		94	%	80 - 120
			Dissolved Beryllium (Be)	2009/12/12		96	%	80 - 120
			Dissolved Bismuth (Bi)	2009/12/12		91	%	80 - 120
			Dissolved Boron (B)	2009/12/12		NC	%	80 - 120
			Dissolved Cadmium (Cd)	2009/12/12		94	%	80 - 120
			Dissolved Calcium (Ca)	2009/12/12		NC	%	80 - 120
			Dissolved Chromium (Cr)	2009/12/12		96	%	80 - 120
			Dissolved Cobalt (Co)	2009/12/12		94	%	80 - 120
			Dissolved Copper (Cu)	2009/12/12		94	%	80 - 120
			Dissolved Iron (Fe)	2009/12/12		97	%	80 - 120
			Dissolved Lead (Pb)	2009/12/12		95	%	80 - 120
			Dissolved Lithium (Li)	2009/12/12		98	%	80 - 120
			Dissolved Magnesium (Mg)	2009/12/12		NC	%	80 - 120
			Dissolved Manganese (Mn)	2009/12/12		97	%	80 - 120
			Dissolved Molybdenum (Mo)	2009/12/12		102	%	80 - 120
			Dissolved Nickel (Ni)	2009/12/12		94	%	80 - 120
			Dissolved Phosphorus (P)	2009/12/12		109	%	80 - 120
			Dissolved Potassium (K)	2009/12/12		102	%	80 - 120
			Dissolved Selenium (Se)	2009/12/12		98	%	80 - 120
			Dissolved Silicon (Si)	2009/12/12		103	%	80 - 120
			Dissolved Silver (Ag)	2009/12/12		84	%	80 - 120
			Dissolved Sodium (Na)	2009/12/12		NC	%	80 - 120
			Dissolved Strontium (Sr)	2009/12/12		NC	%	80 - 120
			Dissolved Tellurium (Te)	2009/12/12		97	%	80 - 120
			Dissolved Thallium (Tl)	2009/12/12		95	%	80 - 120
			Dissolved Thorium (Th)	2009/12/12		96	%	80 - 120
			Dissolved Tin (Sn)	2009/12/12		99	%	80 - 120
			Dissolved Titanium (Ti)	2009/12/12		98	%	80 - 120
			Dissolved Tungsten (W)	2009/12/12		98	%	80 - 120
			Dissolved Uranium (U)	2009/12/12		96	%	80 - 120
			Dissolved Vanadium (V)	2009/12/12		98	%	80 - 120
			Dissolved Zinc (Zn)	2009/12/12		95	%	80 - 120
			Dissolved Zirconium (Zr)	2009/12/12		102	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2009/12/12		100	%	90 - 110
			Dissolved Antimony (Sb)	2009/12/12		98	%	90 - 110
			Dissolved Arsenic (As)	2009/12/12		98	%	90 - 110
			Dissolved Barium (Ba)	2009/12/12		96	%	90 - 110
			Dissolved Beryllium (Be)	2009/12/12		97	%	90 - 110
			Dissolved Bismuth (Bi)	2009/12/12		96	%	90 - 110
			Dissolved Boron (B)	2009/12/12		96	%	90 - 110
			Dissolved Cadmium (Cd)	2009/12/12		100	%	90 - 110
			Dissolved Calcium (Ca)	2009/12/12		104	%	90 - 110
			Dissolved Chromium (Cr)	2009/12/12		98	%	90 - 110
			Dissolved Cobalt (Co)	2009/12/12		96	%	90 - 110
			Dissolved Copper (Cu)	2009/12/12		98	%	90 - 110
			Dissolved Iron (Fe)	2009/12/12		98	%	90 - 110
			Dissolved Lead (Pb)	2009/12/12		99	%	90 - 110
			Dissolved Lithium (Li)	2009/12/12		96	%	90 - 110
			Dissolved Magnesium (Mg)	2009/12/12		104	%	90 - 110

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034128 ADA	Spiked Blank	Dissolved Manganese (Mn)	2009/12/12		98	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/12		99	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/12		97	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/12		104	%	90 - 110
		Dissolved Potassium (K)	2009/12/12		103	%	90 - 110
		Dissolved Selenium (Se)	2009/12/12		101	%	90 - 110
		Dissolved Silicon (Si)	2009/12/12		104	%	90 - 110
		Dissolved Silver (Ag)	2009/12/12		94	%	90 - 110
		Dissolved Sodium (Na)	2009/12/12		106	%	90 - 110
		Dissolved Strontium (Sr)	2009/12/12		97	%	90 - 110
		Dissolved Tellurium (Te)	2009/12/12		97	%	90 - 110
		Dissolved Thallium (Tl)	2009/12/12		99	%	90 - 110
		Dissolved Thorium (Th)	2009/12/12		99	%	90 - 110
		Dissolved Tin (Sn)	2009/12/12		99	%	90 - 110
		Dissolved Titanium (Ti)	2009/12/12		100	%	90 - 110
		Dissolved Tungsten (W)	2009/12/12		97	%	90 - 110
		Dissolved Uranium (U)	2009/12/12		99	%	90 - 110
		Dissolved Vanadium (V)	2009/12/12		99	%	90 - 110
		Dissolved Zinc (Zn)	2009/12/12		100	%	90 - 110
		Dissolved Zirconium (Zr)	2009/12/12		101	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2009/12/12	<0.005		mg/L	
		Dissolved Antimony (Sb)	2009/12/12	<0.0005		mg/L	
		Dissolved Arsenic (As)	2009/12/12	<0.001		mg/L	
		Dissolved Barium (Ba)	2009/12/12	<0.005		mg/L	
		Dissolved Beryllium (Be)	2009/12/12	<0.0005		mg/L	
		Dissolved Bismuth (Bi)	2009/12/12	<0.001		mg/L	
		Dissolved Boron (B)	2009/12/12	<0.01		mg/L	
		Dissolved Cadmium (Cd)	2009/12/12	<0.0001		mg/L	
		Dissolved Calcium (Ca)	2009/12/12	<0.2		mg/L	
		Dissolved Chromium (Cr)	2009/12/12	<0.005		mg/L	
		Dissolved Cobalt (Co)	2009/12/12	<0.0005		mg/L	
		Dissolved Copper (Cu)	2009/12/12	<0.001		mg/L	
		Dissolved Iron (Fe)	2009/12/12	<0.1		mg/L	
		Dissolved Lead (Pb)	2009/12/12	<0.0005		mg/L	
		Dissolved Lithium (Li)	2009/12/12	<0.005		mg/L	
		Dissolved Magnesium (Mg)	2009/12/12	<0.05		mg/L	
		Dissolved Manganese (Mn)	2009/12/12	<0.002		mg/L	
		Dissolved Molybdenum (Mo)	2009/12/12	<0.001		mg/L	
		Dissolved Nickel (Ni)	2009/12/12	<0.001		mg/L	
		Dissolved Phosphorus (P)	2009/12/12	<0.1		mg/L	
		Dissolved Potassium (K)	2009/12/12	<0.2		mg/L	
		Dissolved Selenium (Se)	2009/12/12	<0.002		mg/L	
		Dissolved Silicon (Si)	2009/12/12	<0.05		mg/L	
		Dissolved Silver (Ag)	2009/12/12	<0.0001		mg/L	
		Dissolved Sodium (Na)	2009/12/12	<0.1		mg/L	
		Dissolved Strontium (Sr)	2009/12/12	<0.001		mg/L	
		Dissolved Tellurium (Te)	2009/12/12	<0.001		mg/L	
		Dissolved Thallium (Tl)	2009/12/12	<0.00005		mg/L	
		Dissolved Thorium (Th)	2009/12/12	<0.001		mg/L	
		Dissolved Tin (Sn)	2009/12/12	<0.001		mg/L	
		Dissolved Titanium (Ti)	2009/12/12	<0.005		mg/L	
		Dissolved Tungsten (W)	2009/12/12	<0.001		mg/L	
		Dissolved Uranium (U)	2009/12/12	<0.0001		mg/L	
		Dissolved Vanadium (V)	2009/12/12	<0.001		mg/L	
		Dissolved Zinc (Zn)	2009/12/12	<0.005		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G2609

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034128	ADA	Method Blank	Dissolved Zirconium (Zr)	2009/12/12	<0.001		mg/L	
		RPD [EN2117-04]	Dissolved Aluminum (Al)	2009/12/12	9.9		%	25
			Dissolved Antimony (Sb)	2009/12/12	NC		%	25
			Dissolved Arsenic (As)	2009/12/12	NC		%	25
			Dissolved Barium (Ba)	2009/12/12	NC		%	25
			Dissolved Beryllium (Be)	2009/12/12	NC		%	25
			Dissolved Bismuth (Bi)	2009/12/12	NC		%	25
			Dissolved Boron (B)	2009/12/12	2.3		%	25
			Dissolved Cadmium (Cd)	2009/12/12	NC		%	25
			Dissolved Calcium (Ca)	2009/12/12	3.9		%	25
			Dissolved Chromium (Cr)	2009/12/12	NC		%	25
			Dissolved Cobalt (Co)	2009/12/12	NC		%	25
			Dissolved Copper (Cu)	2009/12/12	NC		%	25
			Dissolved Iron (Fe)	2009/12/12	5.2		%	25
			Dissolved Lead (Pb)	2009/12/12	NC		%	25
			Dissolved Lithium (Li)	2009/12/12	2.8		%	25
			Dissolved Magnesium (Mg)	2009/12/12	1.9		%	25
			Dissolved Manganese (Mn)	2009/12/12	0.9		%	25
			Dissolved Molybdenum (Mo)	2009/12/12	1.1		%	25
			Dissolved Nickel (Ni)	2009/12/12	NC		%	25
			Dissolved Phosphorus (P)	2009/12/12	NC		%	25
			Dissolved Potassium (K)	2009/12/12	1.6		%	25
			Dissolved Selenium (Se)	2009/12/12	NC		%	25
			Dissolved Silicon (Si)	2009/12/12	1.5		%	25
			Dissolved Silver (Ag)	2009/12/12	NC		%	25
			Dissolved Sodium (Na)	2009/12/12	0.1		%	25
			Dissolved Strontium (Sr)	2009/12/12	0.8		%	25
			Dissolved Tellurium (Te)	2009/12/12	NC		%	25
			Dissolved Thallium (Tl)	2009/12/12	NC		%	25
			Dissolved Thorium (Th)	2009/12/12	NC		%	25
			Dissolved Tin (Sn)	2009/12/12	NC		%	25
			Dissolved Titanium (Ti)	2009/12/12	NC		%	25
			Dissolved Tungsten (W)	2009/12/12	NC		%	25
			Dissolved Uranium (U)	2009/12/12	NC		%	25
			Dissolved Vanadium (V)	2009/12/12	NC		%	25
			Dissolved Zinc (Zn)	2009/12/12	NC		%	25
			Dissolved Zirconium (Zr)	2009/12/12	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 #: A9G2609

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

==
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. SCC and CALA have approved this reporting process and electronic report format.

Site: TANSLEY QUARRY
Your C.O.C. #: 17201803, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3398
Received: 2009/12/02, 16:58

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/07	CAM SOP-00448	SM 2320B
Alkalinity	6	N/A	2009/12/08	CAM SOP-00448	SM 2320B
Alkalinity	1	N/A	2009/12/11	CAM SOP-00448	SM 2320B
Anions	7	N/A	2009/12/09	CAM SOP-00435	SM 4110B
Anions	1	N/A	2009/12/14	CAM SOP-00435	SM 4110B
Free Cyanide	8	N/A	2009/12/07	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/07	2009/12/07	CAM SOP-00456	APHA 4500FC
Fluoride	7	2009/12/08	2009/12/08	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	8	N/A	2009/12/09	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	5	2009/12/07	2009/12/07	CAM SOP-00453	EPA 7470
Mercury in Water by CVAA	3	2009/12/07	2009/12/08	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	7	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	1	N/A	2009/12/12	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	8	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Ammonia-N	8	N/A	2009/12/09	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2009/12/08	CAM SOP-00440	SM 4500 NO3I/NO2B
Nitrate (NO3) and Nitrite (NO2) in Water (1)	5	N/A	2009/12/09	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/07	CAM SOP-00448	SM 4500H
pH	7	N/A	2009/12/08	CAM SOP-00448	SM 4500H
Phenols (4AAP)	8	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/08	CAM SOP-00461	SM 4500 P-F
Orthophosphate	7	N/A	2009/12/09	CAM SOP-00461	SM 4500 P-F
Sulphide	8	N/A	2009/12/08	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	8	2009/12/09	2009/12/09	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	8	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	8	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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. #: 17201803, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
Phone# (905) 817-5700

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN5926			EN5927		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW11-INT**	**RDL**	**QC Batch**	**MW3 DEEP**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	430	1	2026931	1800	1	2026931
Inorganics							
Total Ammonia-N	mg/L	1.3	0.05	2030591	5.7	0.1	2030591
Fluoride (F-)	mg/L	0.3	0.1	2030831	0.4	0.1	2030831
Free Cyanide	mg/L	<0.002	0.002	2027715	<0.002	0.002	2027715
Orthophosphate (P)	mg/L	<0.01	0.01	2031255	<0.01	0.01	2030021
pH	pH	8.2		2030842	7.7		2030842
Phenols-4AAP	mg/L	<0.001	0.001	2027176	<0.001	0.001	2027176
Total Phosphorus	mg/L	0.6	0.1	2031175	0.04	0.02	2031175
Total Suspended Solids	mg/L	780	10	2027122	100	10	2027122
Sulphide	mg/L	<0.02	0.02	2027941	<0.02	0.02	2027993
Turbidity	NTU	520	0.1	2029074	66	0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	431	1	2030821	88	1	2030821
Nitrite (N)	mg/L	<0.01	0.01	2030077	0.01	0.01	2030085
Dissolved Chloride (Cl)	mg/L	11	1	2031276	2440	20	2031276
Nitrate (N)	mg/L	<0.1	0.1	2030077	<0.1	0.1	2030085
Nitrate + Nitrite	mg/L	<0.1	0.1	2030077	<0.1	0.1	2030085
Dissolved Bromide (Br-)	mg/L	<1	1	2031276	31	10	2031276
Dissolved Sulphate (SO4)	mg/L	148	1	2031276	1260	10	2031276

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN5928			EN5929		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 SHALLOW**	**RDL**	**QC Batch**	**MW4 INT**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	460	1	2026931	1900	1	2026931
Inorganics							
Total Ammonia-N	mg/L	0.53	0.05	2030591	6.3	0.3	2030591
Fluoride (F-)	mg/L	0.3	0.1	2030831	0.5	0.1	2030831
Free Cyanide	mg/L	<0.002	0.002	2027715	<0.002	0.002	2027715
Orthophosphate (P)	mg/L	<0.01	0.01	2031227	<0.01	0.01	2031255
pH	pH	8.0		2030842	7.6		2030842
Phenols-4AAP	mg/L	<0.001	0.001	2027176	<0.001	0.001	2027176
Total Phosphorus	mg/L	17	1	2031175	<0.1 (1)	0.1	2031175
Total Suspended Solids	mg/L	21000	10	2027122	1100	10	2027120
Sulphide	mg/L	0.06	0.02	2027993	<0.02	0.02	2027993
Turbidity	NTU	31000	1	2029074	1100	0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	390	1	2030821	50	1	2030821
Nitrite (N)	mg/L	0.25	0.01	2030095	<0.01	0.01	2030091
Dissolved Chloride (Cl)	mg/L	4	1	2031276	1800	10	2031276
Nitrate (N)	mg/L	2.5	0.1	2030095	<0.1	0.1	2030091
Nitrate + Nitrite	mg/L	2.8	0.1	2030095	<0.1	0.1	2030091
Dissolved Bromide (Br-)	mg/L	<1	1	2031276	21	10	2031276
Dissolved Sulphate (SO4)	mg/L	116	1	2031276	1870	10	2031276

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN5930			EN5931		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 DEEP**	**RDL**	**QC Batch**	**MW2 SHALLOW**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	18000	1	2026931	2200	1	2026931
Inorganics							
Total Ammonia-N	mg/L	34	0.5	2030591	0.27	0.05	2030591
Fluoride (F-)	mg/L	0.1	0.1	2030831	0.3	0.1	2030831
Free Cyanide	mg/L	<0.002	0.002	2027715	<0.002	0.002	2027715
Orthophosphate (P)	mg/L	<0.01	0.01	2031227	<0.01	0.01	2031255
pH	pH	6.8		2030842	7.8		2030842
Phenols-4AAP	mg/L	0.003	0.001	2027176	<0.001	0.001	2027176
Total Phosphorus	mg/L	2.7	0.2	2031175	10	1	2031175
Total Suspended Solids	mg/L	3600	10	2027122	14000	10	2027122
Sulphide	mg/L	<0.02	0.02	2027993	<0.02	0.02	2027993
Turbidity	NTU	4600	0.2	2029074	31000	1	2029074
Alkalinity (Total as CaCO3)	mg/L	66	1	2034139	695	1	2030821
Nitrite (N)	mg/L	0.02	0.01	2030095	<0.01	0.01	2030085
Dissolved Chloride (Cl)	mg/L	32700	200	2032833	10	1	2031276
Nitrate (N)	mg/L	<0.1	0.1	2030095	<0.1	0.1	2030085
Nitrate + Nitrite	mg/L	<0.1	0.1	2030095	<0.1	0.1	2030085
Dissolved Bromide (Br-)	mg/L	401	20	2032833	<1	1	2031276
Dissolved Sulphate (SO4)	mg/L	1340	10	2032833	1410	5	2031276

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN5932		EN5933		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW2 INT**	**QC Batch**	**DUP 2**	**RDL**	**QC Batch**
Calculated Parameters						
Hardness (CaCO3)	mg/L	1000	2026931	2000	1	2026931
Inorganics						
Total Ammonia-N	mg/L	1.6	2030591	0.16	0.05	2030591
Fluoride (F-)	mg/L	0.2	2030831	0.3	0.1	2029660
Free Cyanide	mg/L	<0.002	2027715	<0.002	0.002	2027715
Orthophosphate (P)	mg/L	<0.01	2031227	<0.01	0.01	2031227
pH	pH	7.9	2030842	7.4		2029648
Phenols-4AAP	mg/L	<0.001	2027176	<0.001	0.001	2027176
Total Phosphorus	mg/L	5.7	2031175	4.2	0.2	2031175
Total Suspended Solids	mg/L	6500	2027122	6600	10	2027122
Sulphide	mg/L	<0.02	2027941	<0.02	0.02	2027941
Turbidity	NTU	7800	2029074	8700	0.3	2029074
Alkalinity (Total as CaCO3)	mg/L	141	2030821	692	1	2029625
Nitrite (N)	mg/L	0.03	2029440	<0.01	0.01	2030095
Dissolved Chloride (Cl)	mg/L	87	2031276	10	1	2031276
Nitrate (N)	mg/L	<0.1	2029440	<0.1	0.1	2030095
Nitrate + Nitrite	mg/L	<0.1	2029440	<0.1	0.1	2030095
Dissolved Bromide (Br-)	mg/L	1	2031276	<1	1	2031276
Dissolved Sulphate (SO4)	mg/L	1080	2031276	1470	5	2031276

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5926		EN5927		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW11-INT**	**RDL**	**MW3 DEEP**	**RDL**	**QC Batch**

Metals						
Mercury (Hg)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2028919
Dissolved Aluminum (Al)	mg/L	0.13	0.005	0.074	0.005	2031311
Total Aluminum (Al)	mg/L	5.4	0.005	0.59	0.05	2030665
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2031311
Total Antimony (Sb)	mg/L	0.0006	0.0005	<0.005	0.005	2030665
Dissolved Arsenic (As)	mg/L	0.010	0.001	<0.005 (1)	0.005	2031311
Total Arsenic (As)	mg/L	0.015	0.001	<0.01	0.01	2030665
Dissolved Barium (Ba)	mg/L	0.020	0.005	0.017	0.005	2031311
Total Barium (Ba)	mg/L	0.085	0.005	<0.05	0.05	2030665
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2031311
Total Beryllium (Be)	mg/L	<0.0005	0.0005	<0.005	0.005	2030665
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Bismuth (Bi)	mg/L	<0.001	0.001	<0.01	0.01	2030665
Dissolved Boron (B)	mg/L	1.7	0.01	4.7	0.01	2031311
Total Boron (B)	mg/L	1.6	0.01	4.8	0.1	2030665
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2031311
Total Cadmium (Cd)	mg/L	<0.0001	0.0001	<0.001	0.001	2030665
Dissolved Calcium (Ca)	mg/L	69	0.2	470	0.2	2031311
Total Calcium (Ca)	mg/L	140	0.2	510	2	2030665
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	<0.005	0.005	2031311
Total Chromium (Cr)	mg/L	0.012	0.005	<0.05	0.05	2030665
Dissolved Cobalt (Co)	mg/L	0.0013	0.0005	0.0037	0.0005	2031311
Total Cobalt (Co)	mg/L	0.0065	0.0005	<0.005	0.005	2030665
Dissolved Copper (Cu)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Copper (Cu)	mg/L	0.011	0.001	<0.01	0.01	2030665
Dissolved Iron (Fe)	mg/L	0.8	0.1	1.2	0.1	2031311
Total Iron (Fe)	mg/L	11	0.1	2	1	2030665
Dissolved Lead (Pb)	mg/L	<0.0005	0.0005	<0.0005	0.0005	2031311
Total Lead (Pb)	mg/L	0.0046	0.0005	<0.005	0.005	2030665
Dissolved Lithium (Li)	mg/L	0.11	0.005	1.2	0.05	2031311
Total Lithium (Li)	mg/L	0.12	0.005	1.3	0.05	2030665
Dissolved Magnesium (Mg)	mg/L	62	0.05	160	0.05	2031311

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		EN5926		EN5927		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW11-INT**	**RDL**	**MW3 DEEP**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	70	0.05	180	0.5	2030665
Dissolved Manganese (Mn)	mg/L	0.028	0.002	0.20	0.002	2031311
Total Manganese (Mn)	mg/L	0.64	0.002	0.26	0.02	2030665
Dissolved Molybdenum (Mo)	mg/L	0.003	0.001	0.006	0.001	2031311
Total Molybdenum (Mo)	mg/L	0.004	0.001	<0.01	0.01	2030665
Dissolved Nickel (Ni)	mg/L	<0.001	0.001	<0.005 (1)	0.005	2031311
Total Nickel (Ni)	mg/L	0.012	0.001	<0.01	0.01	2030665
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	<0.1	0.1	2031311
Dissolved Potassium (K)	mg/L	17	0.2	40	0.2	2031311
Total Potassium (K)	mg/L	18	0.2	45	2	2030665
Dissolved Selenium (Se)	mg/L	<0.002	0.002	0.01 (1)	0.01	2031311
Total Selenium (Se)	mg/L	<0.002	0.002	<0.02	0.02	2030665
Dissolved Silicon (Si)	mg/L	8.4	0.05	3.7	0.05	2031311
Total Silicon (Si)	mg/L	17	0.05	4.9	0.5	2030665
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	<0.0001	0.0001	2031311
Total Silver (Ag)	mg/L	<0.0001	0.0001	<0.001	0.001	2030665
Dissolved Sodium (Na)	mg/L	64	0.1	1300	1	2031311
Total Sodium (Na)	mg/L	64	0.1	1500	1	2030665
Dissolved Strontium (Sr)	mg/L	10	0.001	12	0.001	2031311
Total Strontium (Sr)	mg/L	11	0.001	13	0.01	2030665
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Tellurium (Te)	mg/L	<0.001	0.001	<0.01	0.01	2030665
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	<0.00005	0.00005	2031311
Total Thallium (Tl)	mg/L	0.00007	0.00005	<0.0005	0.0005	2030665
Dissolved Thorium (Th)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Thorium (Th)	mg/L	0.002	0.001	<0.01	0.01	2030665
Dissolved Tin (Sn)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Tin (Sn)	mg/L	<0.001	0.001	<0.01	0.01	2030665
Dissolved Titanium (Ti)	mg/L	<0.005	0.005	<0.005	0.005	2031311
Total Titanium (Ti)	mg/L	0.097	0.005	<0.05	0.05	2030665
Dissolved Tungsten (W)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Tungsten (W)	mg/L	<0.001	0.001	<0.01	0.01	2030665
Dissolved Uranium (U)	mg/L	0.0003	0.0001	<0.0001	0.0001	2031311

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		EN5926		EN5927		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW11-INT**	**RDL**	**MW3 DEEP**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0009	0.0001	<0.001	0.001	2030665
Dissolved Vanadium (V)	mg/L	<0.001	0.001	<0.005 (1)	0.005	2031311
Total Vanadium (V)	mg/L	0.011	0.001	<0.01	0.01	2030665
Dissolved Zinc (Zn)	mg/L	<0.005	0.005	0.034	0.005	2031311
Total Zinc (Zn)	mg/L	0.027	0.005	<0.05	0.05	2030665
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	<0.001	0.001	2031311
Total Zirconium (Zr)	mg/L	0.005	0.001	<0.01	0.01	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5928			EN5929		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 SHALLOW**	**RDL**	**QC Batch**	**MW4 INT**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	0.0001	0.0001	2029098	<0.0001	0.0001	2028919
Dissolved Aluminum (Al)	mg/L	0.32	0.005	2031311	0.14	0.005	2031311
Total Aluminum (Al)	mg/L	230	0.5	2030665	9.6	0.05	2030665
Dissolved Antimony (Sb)	mg/L	<0.0005	0.0005	2031311	<0.0005	0.0005	2031311
Total Antimony (Sb)	mg/L	<0.005	0.005	2030665	<0.005	0.005	2030665
Dissolved Arsenic (As)	mg/L	<0.001	0.001	2031311	<0.005 (1)	0.005	2031311
Total Arsenic (As)	mg/L	0.12	0.01	2030665	<0.01	0.01	2030665
Dissolved Barium (Ba)	mg/L	0.058	0.005	2031311	0.007	0.005	2031311
Total Barium (Ba)	mg/L	2.1	0.05	2030665	0.23	0.05	2030665
Dissolved Beryllium (Be)	mg/L	<0.0005	0.0005	2031311	<0.0005	0.0005	2031311
Total Beryllium (Be)	mg/L	0.016	0.005	2030665	<0.005	0.005	2030665
Dissolved Bismuth (Bi)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311
Total Bismuth (Bi)	mg/L	<0.01	0.01	2030665	<0.01	0.01	2030665
Dissolved Boron (B)	mg/L	0.11	0.01	2031311	6.5	0.01	2031311
Total Boron (B)	mg/L	0.5	0.1	2030665	6.4	0.1	2030665
Dissolved Cadmium (Cd)	mg/L	<0.0001	0.0001	2031311	<0.0001	0.0001	2031311
Total Cadmium (Cd)	mg/L	0.004	0.001	2030665	<0.001	0.001	2030665
Dissolved Calcium (Ca)	mg/L	78	0.2	2031311	510	0.2	2031311
Total Calcium (Ca)	mg/L	1600	2	2030665	630	2	2030665
Dissolved Chromium (Cr)	mg/L	<0.005	0.005	2031311	<0.005	0.005	2031311
Total Chromium (Cr)	mg/L	0.40	0.05	2030665	<0.05	0.05	2030665
Dissolved Cobalt (Co)	mg/L	0.015	0.0005	2031311	0.0086	0.0005	2031311
Total Cobalt (Co)	mg/L	0.24	0.005	2030665	0.010	0.005	2030665
Dissolved Copper (Cu)	mg/L	<0.001	0.001	2031311	<0.005 (1)	0.005	2031311
Total Copper (Cu)	mg/L	0.42	0.01	2030665	0.03	0.01	2030665
Dissolved Iron (Fe)	mg/L	0.5	0.1	2031311	0.9	0.1	2031311
Total Iron (Fe)	mg/L	470	1	2030665	20	1	2030665
Dissolved Lead (Pb)	mg/L	0.0007	0.0005	2031311	<0.0005	0.0005	2031311
Total Lead (Pb)	mg/L	0.28	0.005	2030665	0.014	0.005	2030665
Dissolved Lithium (Li)	mg/L	0.047	0.005	2031311	1.0	0.05	2031311
Total Lithium (Li)	mg/L	0.63	0.05	2030665	1.1	0.05	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5928			EN5929		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 SHALLOW**	**RDL**	**QC Batch**	**MW4 INT**	**RDL**	**QC Batch**
Dissolved Magnesium (Mg)	mg/L	65	0.05	2031311	140	0.05	2031311
Total Magnesium (Mg)	mg/L	290	0.5	2030665	170	0.5	2030665
Dissolved Manganese (Mn)	mg/L	0.31	0.002	2031311	0.22	0.002	2031311
Total Manganese (Mn)	mg/L	13	0.02	2030665	1.0	0.02	2030665
Dissolved Molybdenum (Mo)	mg/L	0.005	0.001	2031311	0.008	0.001	2031311
Total Molybdenum (Mo)	mg/L	0.02	0.01	2030665	0.01	0.01	2030665
Dissolved Nickel (Ni)	mg/L	0.004	0.001	2031311	<0.005 (1)	0.005	2031311
Total Nickel (Ni)	mg/L	0.48	0.01	2030665	0.02	0.01	2030665
Dissolved Phosphorus (P)	mg/L	<0.1	0.1	2031311	<0.1	0.1	2031311
Dissolved Potassium (K)	mg/L	5.1	0.2	2031311	43	0.2	2031311
Total Potassium (K)	mg/L	71	2	2030665	49	2	2030665
Dissolved Selenium (Se)	mg/L	<0.002	0.002	2031311	0.012	0.002	2031311
Total Selenium (Se)	mg/L	<0.02	0.02	2030665	<0.02	0.02	2030665
Dissolved Silicon (Si)	mg/L	6.7	0.05	2031311	3.4	0.05	2031311
Total Silicon (Si)	mg/L	350	0.5	2030665	19	0.5	2030665
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	2031311	<0.0001	0.0001	2031311
Total Silver (Ag)	mg/L	0.001	0.001	2030665	<0.001	0.001	2030665
Dissolved Sodium (Na)	mg/L	28	0.1	2031311	1000	1	2031311
Total Sodium (Na)	mg/L	49	1	2030665	1100	1	2030665
Dissolved Strontium (Sr)	mg/L	1.8	0.001	2031311	13	0.001	2031311
Total Strontium (Sr)	mg/L	6.0	0.01	2030665	14	0.01	2030665
Dissolved Tellurium (Te)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311
Total Tellurium (Te)	mg/L	<0.01	0.01	2030665	<0.01	0.01	2030665
Dissolved Thallium (Tl)	mg/L	<0.00005	0.00005	2031311	<0.00005	0.00005	2031311
Total Thallium (Tl)	mg/L	0.0029	0.0005	2030665	<0.0005	0.0005	2030665
Dissolved Thorium (Th)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311
Total Thorium (Th)	mg/L	0.10	0.01	2030665	0.01	0.01	2030665
Dissolved Tin (Sn)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311
Total Tin (Sn)	mg/L	<0.01	0.01	2030665	<0.01	0.01	2030665
Dissolved Titanium (Ti)	mg/L	0.008	0.005	2031311	<0.005	0.005	2031311
Total Titanium (Ti)	mg/L	5.3	0.5	2030665	0.25	0.05	2030665
Dissolved Tungsten (W)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5928			EN5929		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 SHALLOW**	**RDL**	**QC Batch**	**MW4 INT**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	0.01	0.01	2030665	<0.01	0.01	2030665
Dissolved Uranium (U)	mg/L	0.0081	0.0001	2031311	<0.0001	0.0001	2031311
Total Uranium (U)	mg/L	0.032	0.001	2030665	0.003	0.001	2030665
Dissolved Vanadium (V)	mg/L	0.001	0.001	2031311	<0.005 (1)	0.005	2031311
Total Vanadium (V)	mg/L	0.48	0.01	2030665	0.02	0.01	2030665
Dissolved Zinc (Zn)	mg/L	0.005	0.005	2031311	<0.03 (1)	0.03	2031311
Total Zinc (Zn)	mg/L	1.4	0.05	2030665	0.10	0.05	2030665
Dissolved Zirconium (Zr)	mg/L	<0.001	0.001	2031311	<0.001	0.001	2031311
Total Zirconium (Zr)	mg/L	0.11	0.01	2030665	0.01	0.01	2030665

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		EN5930			EN5931		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 DEEP**	**RDL**	**QC Batch**	**MW2 SHALLOW**	**RDL**	**QC Batch**

Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2028762	<0.0001	0.0001	2028919
Dissolved Aluminum (Al)	mg/L	0.5	0.3	2034128	0.079	0.005	2031311
Total Aluminum (Al)	mg/L	41	0.5	2030665	85	0.05	2030665
Dissolved Antimony (Sb)	mg/L	<0.03	0.03	2034128	<0.0005	0.0005	2031311
Total Antimony (Sb)	mg/L	<0.05	0.05	2030665	<0.005	0.005	2030665
Dissolved Arsenic (As)	mg/L	<0.3	0.3	2034128	0.005	0.001	2031311
Total Arsenic (As)	mg/L	<0.1	0.1	2030665	0.03	0.01	2030665
Dissolved Barium (Ba)	mg/L	<0.3	0.3	2034128	0.018	0.005	2031311
Total Barium (Ba)	mg/L	0.6	0.5	2030665	0.76	0.05	2030665
Dissolved Beryllium (Be)	mg/L	<0.03	0.03	2034128	<0.0005	0.0005	2031311
Total Beryllium (Be)	mg/L	<0.05	0.05	2030665	<0.005	0.005	2030665
Dissolved Bismuth (Bi)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311
Total Bismuth (Bi)	mg/L	<0.1	0.1	2030665	<0.01	0.01	2030665
Dissolved Boron (B)	mg/L	5.4	0.5	2034128	0.32	0.01	2031311
Total Boron (B)	mg/L	6	1	2030665	0.4	0.1	2030665
Dissolved Cadmium (Cd)	mg/L	<0.005	0.005	2034128	<0.0001	0.0001	2031311
Total Cadmium (Cd)	mg/L	<0.01	0.01	2030665	<0.001	0.001	2030665
Dissolved Calcium (Ca)	mg/L	5300	10	2034128	220	0.2	2031311
Total Calcium (Ca)	mg/L	6800	20	2030665	880	2	2030665
Dissolved Chromium (Cr)	mg/L	<0.3	0.3	2034128	<0.005	0.005	2031311
Total Chromium (Cr)	mg/L	<0.5	0.5	2030665	0.16	0.05	2030665
Dissolved Cobalt (Co)	mg/L	<0.03	0.03	2034128	0.0072	0.0005	2031311
Total Cobalt (Co)	mg/L	<0.05	0.05	2030665	0.084	0.005	2030665
Dissolved Copper (Cu)	mg/L	<0.05	0.05	2034128	<0.005 (1)	0.005	2031311
Total Copper (Cu)	mg/L	0.8	0.1	2030665	0.15	0.01	2030665
Dissolved Iron (Fe)	mg/L	24	5	2034128	1.6	0.1	2031311
Total Iron (Fe)	mg/L	110	10	2030665	180	1	2030665
Dissolved Lead (Pb)	mg/L	<0.03	0.03	2034128	<0.0005	0.0005	2031311
Total Lead (Pb)	mg/L	0.06	0.05	2030665	0.069	0.005	2030665
Dissolved Lithium (Li)	mg/L	8.5	0.3	2034128	0.25	0.005	2031311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5930			EN5931		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 DEEP**	**RDL**	**QC Batch**	**MW2 SHALLOW**	**RDL**	**QC Batch**
Total Lithium (Li)	mg/L	11	0.5	2030665	0.46	0.05	2030665
Dissolved Magnesium (Mg)	mg/L	1200	3	2034128	400	0.05	2031311
Total Magnesium (Mg)	mg/L	1600	5	2030665	440	0.5	2030665
Dissolved Manganese (Mn)	mg/L	2.8	0.1	2034128	0.26	0.002	2031311
Total Manganese (Mn)	mg/L	6.5	0.2	2030665	4.8	0.02	2030665
Dissolved Molybdenum (Mo)	mg/L	<0.05	0.05	2034128	0.003	0.001	2031311
Total Molybdenum (Mo)	mg/L	<0.1	0.1	2030665	<0.01	0.01	2030665
Dissolved Nickel (Ni)	mg/L	<0.05	0.05	2034128	0.008	0.001	2031311
Total Nickel (Ni)	mg/L	<0.1	0.1	2030665	0.18	0.01	2030665
Dissolved Phosphorus (P)	mg/L	<5	5	2034128	<0.1	0.1	2031311
Dissolved Potassium (K)	mg/L	210	10	2034128	10	0.2	2031311
Total Potassium (K)	mg/L	240	20	2030665	26	2	2030665
Dissolved Selenium (Se)	mg/L	0.2	0.1	2034128	<0.002	0.002	2031311
Total Selenium (Se)	mg/L	<0.2	0.2	2030665	<0.02	0.02	2030665
Dissolved Silicon (Si)	mg/L	4	3	2034128	11	0.05	2031311
Total Silicon (Si)	mg/L	58	5	2030665	100	0.5	2030665
Dissolved Silver (Ag)	mg/L	<0.005	0.005	2034128	<0.0001	0.0001	2031311
Total Silver (Ag)	mg/L	<0.01	0.01	2030665	<0.001	0.001	2030665
Dissolved Sodium (Na)	mg/L	12000	5	2034128	85	0.1	2031311
Total Sodium (Na)	mg/L	14000	10	2030665	72	1	2030665
Dissolved Strontium (Sr)	mg/L	110	0.05	2034128	4.1	0.001	2031311
Total Strontium (Sr)	mg/L	130	0.1	2030665	5.7	0.01	2030665
Dissolved Tellurium (Te)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311
Total Tellurium (Te)	mg/L	<0.1	0.1	2030665	<0.01	0.01	2030665
Dissolved Thallium (Tl)	mg/L	<0.003	0.003	2034128	<0.00005	0.00005	2031311
Total Thallium (Tl)	mg/L	<0.005	0.005	2030665	0.0009	0.0005	2030665
Dissolved Thorium (Th)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311
Total Thorium (Th)	mg/L	<0.1	0.1	2030665	0.04	0.01	2030665
Dissolved Tin (Sn)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311
Total Tin (Sn)	mg/L	<0.1	0.1	2030665	<0.01	0.01	2030665
Dissolved Titanium (Ti)	mg/L	<0.3	0.3	2034128	<0.005	0.005	2031311
Total Titanium (Ti)	mg/L	0.6	0.5	2030665	1.5	0.05	2030665
Dissolved Tungsten (W)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5930			EN5931		
Sampling Date		2009/12/02			2009/12/02		
COC Number		172018-0			172018-0		
	Units	**MW4 DEEP**	**RDL**	**QC Batch**	**MW2 SHALLOW**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	0.1	0.1	2030665	<0.01	0.01	2030665
Dissolved Uranium (U)	mg/L	<0.005	0.005	2034128	0.016	0.0001	2031311
Total Uranium (U)	mg/L	<0.01	0.01	2030665	0.027	0.001	2030665
Dissolved Vanadium (V)	mg/L	<0.3	0.3	2034128	0.004	0.001	2031311
Total Vanadium (V)	mg/L	<0.1	0.1	2030665	0.18	0.01	2030665
Dissolved Zinc (Zn)	mg/L	<0.3	0.3	2034128	<0.03 (1)	0.03	2031311
Total Zinc (Zn)	mg/L	0.6	0.5	2030665	0.49	0.05	2030665
Dissolved Zirconium (Zr)	mg/L	<0.05	0.05	2034128	<0.001	0.001	2031311
Total Zirconium (Zr)	mg/L	<0.1	0.1	2030665	0.04	0.01	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5932		EN5933		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW2 INT**	**QC Batch**	**DUP 2**	**RDL**	**QC Batch**
Metals						
Mercury (Hg)	mg/L	<0.0001	2029098	<0.0001	0.0001	2029098
Dissolved Aluminum (Al)	mg/L	0.27	2031311	0.059	0.005	2031311
Total Aluminum (Al)	mg/L	57	2030665	60	0.05	2030665
Dissolved Antimony (Sb)	mg/L	<0.0005	2031311	<0.0005	0.0005	2031311
Total Antimony (Sb)	mg/L	<0.005	2030665	<0.005	0.005	2030665
Dissolved Arsenic (As)	mg/L	0.003	2031311	0.004	0.001	2031311
Total Arsenic (As)	mg/L	0.03	2030665	0.02	0.01	2030665
Dissolved Barium (Ba)	mg/L	0.009	2031311	0.018	0.005	2031311
Total Barium (Ba)	mg/L	0.93	2030665	0.51	0.05	2030665
Dissolved Beryllium (Be)	mg/L	<0.0005	2031311	<0.0005	0.0005	2031311
Total Beryllium (Be)	mg/L	<0.005	2030665	<0.005	0.005	2030665
Dissolved Bismuth (Bi)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Bismuth (Bi)	mg/L	<0.01	2030665	<0.01	0.01	2030665
Dissolved Boron (B)	mg/L	1.8	2031311	0.34	0.01	2031311
Total Boron (B)	mg/L	1.7	2030665	0.4	0.1	2030665
Dissolved Cadmium (Cd)	mg/L	<0.0001	2031311	<0.0001	0.0001	2031311
Total Cadmium (Cd)	mg/L	<0.001	2030665	<0.001	0.001	2030665
Dissolved Calcium (Ca)	mg/L	200	2031311	210	0.2	2031311
Total Calcium (Ca)	mg/L	610	2030665	670	2	2030665
Dissolved Chromium (Cr)	mg/L	<0.005	2031311	<0.005	0.005	2031311
Total Chromium (Cr)	mg/L	0.11	2030665	0.11	0.05	2030665
Dissolved Cobalt (Co)	mg/L	0.010	2031311	0.0034	0.0005	2031311
Total Cobalt (Co)	mg/L	0.061	2030665	0.060	0.005	2030665
Dissolved Copper (Cu)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Copper (Cu)	mg/L	0.11	2030665	0.10	0.01	2030665
Dissolved Iron (Fe)	mg/L	1.1	2031311	1.5	0.1	2031311
Total Iron (Fe)	mg/L	120	2030665	130	1	2030665
Dissolved Lead (Pb)	mg/L	<0.0005	2031311	<0.0005	0.0005	2031311
Total Lead (Pb)	mg/L	0.050	2030665	0.049	0.005	2030665
Dissolved Lithium (Li)	mg/L	0.14	2031311	0.26	0.005	2031311
Total Lithium (Li)	mg/L	0.29	2030665	0.40	0.05	2030665
Dissolved Magnesium (Mg)	mg/L	130	2031311	360	0.05	2031311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3398
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5932		EN5933		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW2 INT**	**QC Batch**	**DUP 2**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	180	2030665	420	0.5	2030665
Dissolved Manganese (Mn)	mg/L	0.16	2031311	0.25	0.002	2031311
Total Manganese (Mn)	mg/L	4.2	2030665	3.4	0.02	2030665
Dissolved Molybdenum (Mo)	mg/L	0.009	2031311	0.003	0.001	2031311
Total Molybdenum (Mo)	mg/L	0.01	2030665	<0.01	0.01	2030665
Dissolved Nickel (Ni)	mg/L	0.004	2031311	0.007	0.001	2031311
Total Nickel (Ni)	mg/L	0.13	2030665	0.13	0.01	2030665
Dissolved Phosphorus (P)	mg/L	<0.1	2031311	<0.1	0.1	2031311
Dissolved Potassium (K)	mg/L	18	2031311	9.7	0.2	2031311
Total Potassium (K)	mg/L	28	2030665	22	2	2030665
Dissolved Selenium (Se)	mg/L	<0.002	2031311	<0.002	0.002	2031311
Total Selenium (Se)	mg/L	<0.02	2030665	<0.02	0.02	2030665
Dissolved Silicon (Si)	mg/L	6.0	2031311	10	0.05	2031311
Total Silicon (Si)	mg/L	79	2030665	85	0.5	2030665
Dissolved Silver (Ag)	mg/L	<0.0001	2031311	<0.0001	0.0001	2031311
Total Silver (Ag)	mg/L	<0.001	2030665	<0.001	0.001	2030665
Dissolved Sodium (Na)	mg/L	180	2034128	71	0.1	2031311
Total Sodium (Na)	mg/L	160	2035320	75	1	2030665
Dissolved Strontium (Sr)	mg/L	11	2031311	4.2	0.001	2031311
Total Strontium (Sr)	mg/L	12	2030665	5.4	0.01	2030665
Dissolved Tellurium (Te)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Tellurium (Te)	mg/L	<0.01	2030665	<0.01	0.01	2030665
Dissolved Thallium (Tl)	mg/L	<0.00005	2031311	<0.00005	0.00005	2031311
Total Thallium (Tl)	mg/L	0.0007	2030665	0.0005	0.0005	2030665
Dissolved Thorium (Th)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Thorium (Th)	mg/L	0.03	2030665	0.03	0.01	2030665
Dissolved Tin (Sn)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Tin (Sn)	mg/L	<0.01	2030665	<0.01	0.01	2030665
Dissolved Titanium (Ti)	mg/L	<0.005	2031311	<0.005	0.005	2031311
Total Titanium (Ti)	mg/L	0.89	2030665	1.2	0.05	2030665
Dissolved Tungsten (W)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Tungsten (W)	mg/L	<0.01	2030665	<0.01	0.01	2030665
Dissolved Uranium (U)	mg/L	0.0004	2031311	0.018	0.0001	2031311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN5932		EN5933		
Sampling Date		2009/12/02		2009/12/02		
COC Number		172018-0		172018-0		
	Units	**MW2 INT**	**QC Batch**	**DUP 2**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.007	2030665	0.024	0.001	2030665
Dissolved Vanadium (V)	mg/L	0.003	2031311	0.002	0.001	2031311
Total Vanadium (V)	mg/L	0.12	2030665	0.13	0.01	2030665
Dissolved Zinc (Zn)	mg/L	<0.005	2031311	<0.005	0.005	2031311
Total Zinc (Zn)	mg/L	0.37	2030665	0.36	0.05	2030665
Dissolved Zirconium (Zr)	mg/L	<0.001	2031311	<0.001	0.001	2031311
Total Zirconium (Zr)	mg/L	0.03	2030665	0.03	0.01	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	11.0°C
Package 2	10.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised report: Reporting units adjusted to mg/L, per request.

Sample EN5927-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5928-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5929-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5930-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5931-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5932-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN5933-01: 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: MA9G3398

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027120	HAG	QC Standard	Total Suspended Solids	2009/12/04		98	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/04	3.1		%	25
2027122	HAG	QC Standard	Total Suspended Solids	2009/12/04		100	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/04	NC		%	25
2027176	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		96	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		101	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2027715	LHA	Matrix Spike [EN5927-06]	Free Cyanide	2009/12/07		103	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/07		98	%	80 - 120
		Method Blank	Free Cyanide	2009/12/07	<0.002		mg/L	
		RPD [EN5927-06]	Free Cyanide	2009/12/07	NC		%	25
2027941	SAC	Matrix Spike	Sulphide	2009/12/08		87	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		99	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD	Sulphide	2009/12/08	NC		%	25
2027993	SAC	Matrix Spike [EN5929-07]	Sulphide	2009/12/08		99	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		106	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD [EN5929-07]	Sulphide	2009/12/08	NC		%	25
2028762	MC	Matrix Spike	Mercury (Hg)	2009/12/07		99	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/07		104	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2028919	MC	Matrix Spike	Mercury (Hg)	2009/12/07		117	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/07		106	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD [EN5926-01]	Turbidity	2009/12/07	0.8		%	25
2029098	MC	Matrix Spike	Mercury (Hg)	2009/12/08		105	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/08		102	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/08	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/08	NC		%	25
2029440	CCI	Matrix Spike	Nitrite (N)	2009/12/09		102	%	75 - 125
			Nitrate (N)	2009/12/09		101	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/09		107	%	80 - 120
			Nitrate (N)	2009/12/09		100	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/09	<0.01		mg/L	
			Nitrate (N)	2009/12/09	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/09	<0.1		mg/L	
		RPD	Nitrate (N)	2009/12/09	NC		%	25
2029625	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/07		94	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/07	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2009/12/07	1.5		%	25
2029660	YPA	Matrix Spike	Fluoride (F-)	2009/12/07		108	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/07		111	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/07	<0.1		mg/L	
		RPD	Fluoride (F-)	2009/12/07	NC		%	25
2030021	DRM	Matrix Spike	Orthophosphate (P)	2009/12/08		109	%	75 - 125

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2030021	DRM	Spiked Blank	Orthophosphate (P)	2009/12/08		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/08	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/08	NC		%	25
2030077	CCI	Matrix Spike	Nitrite (N)	2009/12/09		108	%	75 - 125
			Nitrate (N)	2009/12/09		102	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/09		107	%	80 - 120
			Nitrate (N)	2009/12/09		100	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/09	<0.01		mg/L	
			Nitrate (N)	2009/12/09	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/09	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/09	NC		%	25
			Nitrate (N)	2009/12/09	NC		%	25
			Nitrate + Nitrite	2009/12/09	NC		%	25
2030085	CCI	Matrix Spike	Nitrite (N)	2009/12/08		101	%	75 - 125
			Nitrate (N)	2009/12/08		97	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/08		103	%	80 - 120
			Nitrate (N)	2009/12/08		98	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/08	<0.01		mg/L	
			Nitrate (N)	2009/12/08	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/08	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/08	NC		%	25
			Nitrate (N)	2009/12/08	NC		%	25
			Nitrate + Nitrite	2009/12/08	NC		%	25
2030091	CCI	Matrix Spike	Nitrite (N)	2009/12/08		102	%	75 - 125
			Nitrate (N)	2009/12/08		91	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/08		104	%	80 - 120
			Nitrate (N)	2009/12/08		99	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/08	<0.01		mg/L	
			Nitrate (N)	2009/12/08	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/08	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/08	NC		%	25
			Nitrate (N)	2009/12/08	NC		%	25
			Nitrate + Nitrite	2009/12/08	NC		%	25
2030095	CCI	Matrix Spike	Nitrite (N)	2009/12/09		106	%	75 - 125
			Nitrate (N)	2009/12/09		97	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/09		106	%	80 - 120
			Nitrate (N)	2009/12/09		100	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/09	<0.01		mg/L	
			Nitrate (N)	2009/12/09	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/09	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/09	NC		%	25
			Nitrate (N)	2009/12/09	0.08		%	25
2030591	ADB	Matrix Spike	Total Ammonia-N	2009/12/09		98	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/09		97	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/09	<0.05		mg/L	
		RPD	Total Ammonia-N	2009/12/09	NC		%	25
2030665	JBW	Matrix Spike	Total Aluminum (Al)	2009/12/10		101	%	80 - 120
			Total Antimony (Sb)	2009/12/10		117	%	80 - 120
			Total Arsenic (As)	2009/12/10		109	%	80 - 120
			Total Barium (Ba)	2009/12/10		99	%	80 - 120
			Total Beryllium (Be)	2009/12/10		102	%	75 - 125
			Total Bismuth (Bi)	2009/12/10		100	%	75 - 125
			Total Boron (B)	2009/12/10		NC	%	75 - 125
			Total Cadmium (Cd)	2009/12/10		107	%	80 - 120
			Total Calcium (Ca)	2009/12/10		NC	%	75 - 125

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2030665	JBW	Matrix Spike	Total Chromium (Cr)	2009/12/10		104	%	80 - 120
			Total Cobalt (Co)	2009/12/10		103	%	80 - 120
			Total Copper (Cu)	2009/12/10		97	%	80 - 120
			Total Iron (Fe)	2009/12/10		111	%	80 - 120
			Total Lead (Pb)	2009/12/10		98	%	80 - 120
			Total Lithium (Li)	2009/12/10		NC	%	75 - 125
			Total Magnesium (Mg)	2009/12/10		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/10		106	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		109	%	80 - 120
			Total Nickel (Ni)	2009/12/10		98	%	80 - 120
			Total Potassium (K)	2009/12/10		NC	%	75 - 125
			Total Selenium (Se)	2009/12/10		105	%	75 - 125
			Total Silicon (Si)	2009/12/10		100	%	75 - 125
			Total Silver (Ag)	2009/12/10		98	%	80 - 120
			Total Sodium (Na)	2009/12/10		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/10		NC	%	80 - 120
			Total Tellurium (Te)	2009/12/10		104	%	75 - 125
			Total Thallium (Tl)	2009/12/10		97	%	80 - 120
			Total Thorium (Th)	2009/12/10		102	%	75 - 125
			Total Tin (Sn)	2009/12/10		110	%	75 - 125
			Total Titanium (Ti)	2009/12/10		111	%	75 - 125
			Total Tungsten (W)	2009/12/10		107	%	75 - 125
			Total Uranium (U)	2009/12/10		105	%	80 - 120
			Total Vanadium (V)	2009/12/10		105	%	80 - 120
			Total Zinc (Zn)	2009/12/10		101	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		109	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/10		99	%	80 - 120
			Total Antimony (Sb)	2009/12/10		113	%	82 - 120
			Total Arsenic (As)	2009/12/10		107	%	86 - 119
			Total Barium (Ba)	2009/12/10		98	%	83 - 115
			Total Beryllium (Be)	2009/12/10		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/10		101	%	78 - 120
			Total Boron (B)	2009/12/10		110	%	78 - 133
			Total Cadmium (Cd)	2009/12/10		107	%	85 - 116
			Total Calcium (Ca)	2009/12/10		107	%	75 - 125
			Total Chromium (Cr)	2009/12/10		102	%	80 - 120
			Total Cobalt (Co)	2009/12/10		102	%	82 - 117
			Total Copper (Cu)	2009/12/10		100	%	80 - 117
			Total Iron (Fe)	2009/12/10		110	%	80 - 120
			Total Lead (Pb)	2009/12/10		98	%	80 - 120
			Total Lithium (Li)	2009/12/10		101	%	86 - 131
			Total Magnesium (Mg)	2009/12/10		106	%	80 - 120
			Total Manganese (Mn)	2009/12/10		107	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		104	%	82 - 117
			Total Nickel (Ni)	2009/12/10		100	%	81 - 117
			Total Potassium (K)	2009/12/10		103	%	75 - 125
			Total Selenium (Se)	2009/12/10		105	%	82 - 118
			Total Silicon (Si)	2009/12/10		101	%	67 - 140
			Total Silver (Ag)	2009/12/10		101	%	80 - 120
			Total Sodium (Na)	2009/12/10		105	%	75 - 125
			Total Strontium (Sr)	2009/12/10		106	%	83 - 120
			Total Tellurium (Te)	2009/12/10		104	%	80 - 116
			Total Thallium (Tl)	2009/12/10		97	%	80 - 129
			Total Thorium (Th)	2009/12/10		99	%	80 - 125
			Total Tin (Sn)	2009/12/10		107	%	83 - 119

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2030665 JBW	Spiked Blank	Total Titanium (Ti)	2009/12/10		106	%	60 - 125
		Total Tungsten (W)	2009/12/10		104	%	81 - 123
		Total Uranium (U)	2009/12/10		103	%	82 - 120
		Total Vanadium (V)	2009/12/10		101	%	82 - 118
		Total Zinc (Zn)	2009/12/10		103	%	80 - 120
		Total Zirconium (Zr)	2009/12/10		106	%	84 - 118
	Method Blank	Total Aluminum (Al)	2009/12/10	<0.005		mg/L	
		Total Antimony (Sb)	2009/12/10	<0.0005		mg/L	
		Total Arsenic (As)	2009/12/10	<0.001		mg/L	
		Total Barium (Ba)	2009/12/10	<0.005		mg/L	
		Total Beryllium (Be)	2009/12/10	<0.0005		mg/L	
		Total Bismuth (Bi)	2009/12/10	<0.001		mg/L	
		Total Boron (B)	2009/12/10	0.01, RDL=0.01		mg/L	
		Total Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
		Total Calcium (Ca)	2009/12/10	<0.2		mg/L	
		Total Chromium (Cr)	2009/12/10	<0.005		mg/L	
		Total Cobalt (Co)	2009/12/10	<0.0005		mg/L	
		Total Copper (Cu)	2009/12/10	<0.001		mg/L	
		Total Iron (Fe)	2009/12/10	<0.1		mg/L	
		Total Lead (Pb)	2009/12/10	<0.0005		mg/L	
		Total Lithium (Li)	2009/12/10	<0.005		mg/L	
		Total Magnesium (Mg)	2009/12/10	<0.05		mg/L	
		Total Manganese (Mn)	2009/12/10	<0.002		mg/L	
		Total Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
		Total Nickel (Ni)	2009/12/10	<0.001		mg/L	
		Total Potassium (K)	2009/12/10	<0.2		mg/L	
		Total Selenium (Se)	2009/12/10	<0.002		mg/L	
		Total Silicon (Si)	2009/12/10	<0.05		mg/L	
		Total Silver (Ag)	2009/12/10	<0.0001		mg/L	
		Total Sodium (Na)	2009/12/10	<0.1		mg/L	
		Total Strontium (Sr)	2009/12/10	<0.001		mg/L	
		Total Tellurium (Te)	2009/12/10	<0.001		mg/L	
		Total Thallium (Tl)	2009/12/10	<0.00005		mg/L	
		Total Thorium (Th)	2009/12/10	<0.001		mg/L	
		Total Tin (Sn)	2009/12/10	<0.001		mg/L	
		Total Titanium (Ti)	2009/12/10	<0.005		mg/L	
		Total Tungsten (W)	2009/12/10	<0.001		mg/L	
		Total Uranium (U)	2009/12/10	<0.0001		mg/L	
		Total Vanadium (V)	2009/12/10	<0.001		mg/L	
		Total Zinc (Zn)	2009/12/10	<0.005		mg/L	
		Total Zirconium (Zr)	2009/12/10	<0.001		mg/L	
	RPD	Total Aluminum (Al)	2009/12/10	NC		%	25
		Total Antimony (Sb)	2009/12/10	NC		%	25
		Total Arsenic (As)	2009/12/10	NC		%	25
		Total Barium (Ba)	2009/12/10	NC		%	25
		Total Beryllium (Be)	2009/12/10	NC		%	25
		Total Bismuth (Bi)	2009/12/10	NC		%	25
		Total Boron (B)	2009/12/10	4.0		%	25
		Total Cadmium (Cd)	2009/12/10	NC		%	25
		Total Calcium (Ca)	2009/12/10	2.8		%	25
		Total Chromium (Cr)	2009/12/10	NC		%	25
		Total Cobalt (Co)	2009/12/10	NC		%	25
		Total Copper (Cu)	2009/12/10	6.8		%	25
		Total Iron (Fe)	2009/12/10	NC		%	25
		Total Lead (Pb)	2009/12/10	NC		%	25

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2030665	JBW	RPD	Total Lithium (Li)	2009/12/10	0.9		%	25
			Total Magnesium (Mg)	2009/12/10	2.0		%	25
			Total Manganese (Mn)	2009/12/10	1.7		%	25
			Total Molybdenum (Mo)	2009/12/10	3.6		%	25
			Total Nickel (Ni)	2009/12/10	NC		%	25
			Total Potassium (K)	2009/12/10	2.6		%	25
			Total Selenium (Se)	2009/12/10	NC		%	25
			Total Silicon (Si)	2009/12/10	3.9		%	25
			Total Silver (Ag)	2009/12/10	NC		%	25
			Total Sodium (Na)	2009/12/10	2.5		%	25
			Total Strontium (Sr)	2009/12/10	4.9		%	25
			Total Tellurium (Te)	2009/12/10	NC		%	25
			Total Thallium (Tl)	2009/12/10	NC		%	25
			Total Thorium (Th)	2009/12/10	NC		%	25
			Total Tin (Sn)	2009/12/10	NC		%	25
			Total Titanium (Ti)	2009/12/10	NC		%	25
			Total Tungsten (W)	2009/12/10	NC		%	25
			Total Uranium (U)	2009/12/10	NC		%	25
			Total Vanadium (V)	2009/12/10	NC		%	25
			Total Zinc (Zn)	2009/12/10	NC		%	25
			Total Zirconium (Zr)	2009/12/10	NC		%	25
2030821	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/08		92	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/08	<1		mg/L	
		RPD [EN5927-01]	Alkalinity (Total as CaCO3)	2009/12/08	0.9		%	25
2030831	YPA	Matrix Spike [EN5927-01]	Fluoride (F-)	2009/12/08		87	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/08		107	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/08	<0.1		mg/L	
		RPD [EN5927-01]	Fluoride (F-)	2009/12/08	NC		%	25
2031175	AHA	Matrix Spike	Total Phosphorus	2009/12/09		102	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/09		104	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/09		104	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/09	<0.02		mg/L	
		RPD	Total Phosphorus	2009/12/09	NC		%	25
2031227	DRM	Matrix Spike	Orthophosphate (P)	2009/12/09		96	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/09		101	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/09	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/09	NC		%	25
2031255	DRM	Matrix Spike	Orthophosphate (P)	2009/12/09		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/09		100	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/09	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/09	NC		%	25
2031276	FD	Matrix Spike	Dissolved Chloride (Cl)	2009/12/09		96	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/09		100	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/09		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/09		98	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/09		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/09	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/09	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/09	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/12/09	0.9		%	25
			Dissolved Sulphate (SO4)	2009/12/09	5.8		%	25
2031311	HRE	Matrix Spike	Dissolved Aluminum (Al)	2009/12/09		101	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/09		104	%	80 - 120
			Dissolved Arsenic (As)	2009/12/09		103	%	80 - 120

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2031311 HRE	Matrix Spike	Dissolved Barium (Ba)	2009/12/09		NC	%	80 - 120
		Dissolved Beryllium (Be)	2009/12/09		102	%	80 - 120
		Dissolved Bismuth (Bi)	2009/12/09		98	%	80 - 120
		Dissolved Boron (B)	2009/12/09		106	%	80 - 120
		Dissolved Cadmium (Cd)	2009/12/09		102	%	80 - 120
		Dissolved Calcium (Ca)	2009/12/09		NC	%	80 - 120
		Dissolved Chromium (Cr)	2009/12/09		98	%	80 - 120
		Dissolved Cobalt (Co)	2009/12/09		98	%	80 - 120
		Dissolved Copper (Cu)	2009/12/09		98	%	80 - 120
		Dissolved Iron (Fe)	2009/12/09		101	%	80 - 120
		Dissolved Lead (Pb)	2009/12/09		97	%	80 - 120
		Dissolved Lithium (Li)	2009/12/09		100	%	80 - 120
		Dissolved Magnesium (Mg)	2009/12/09		NC	%	80 - 120
		Dissolved Manganese (Mn)	2009/12/09		102	%	80 - 120
		Dissolved Molybdenum (Mo)	2009/12/09		105	%	80 - 120
		Dissolved Nickel (Ni)	2009/12/09		98	%	80 - 120
		Dissolved Phosphorus (P)	2009/12/09		99	%	80 - 120
		Dissolved Potassium (K)	2009/12/09		100	%	80 - 120
		Dissolved Selenium (Se)	2009/12/09		106	%	80 - 120
		Dissolved Silicon (Si)	2009/12/09		105	%	80 - 120
		Dissolved Silver (Ag)	2009/12/09		98	%	80 - 120
		Dissolved Sodium (Na)	2009/12/09		NC	%	80 - 120
		Dissolved Strontium (Sr)	2009/12/09		NC	%	80 - 120
		Dissolved Tellurium (Te)	2009/12/09		103	%	80 - 120
		Dissolved Thallium (Tl)	2009/12/09		96	%	80 - 120
		Dissolved Thorium (Th)	2009/12/09		101	%	80 - 120
		Dissolved Tin (Sn)	2009/12/09		102	%	80 - 120
		Dissolved Titanium (Ti)	2009/12/09		104	%	80 - 120
		Dissolved Tungsten (W)	2009/12/09		99	%	80 - 120
		Dissolved Uranium (U)	2009/12/09		102	%	80 - 120
		Dissolved Vanadium (V)	2009/12/09		100	%	80 - 120
		Dissolved Zinc (Zn)	2009/12/09		103	%	80 - 120
		Dissolved Zirconium (Zr)	2009/12/09		103	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2009/12/09		99	%	90 - 110
		Dissolved Antimony (Sb)	2009/12/09		104	%	90 - 110
		Dissolved Arsenic (As)	2009/12/09		101	%	90 - 110
		Dissolved Barium (Ba)	2009/12/09		100	%	90 - 110
		Dissolved Beryllium (Be)	2009/12/09		104	%	90 - 110
		Dissolved Bismuth (Bi)	2009/12/09		102	%	90 - 110
		Dissolved Boron (B)	2009/12/09		106	%	90 - 110
		Dissolved Cadmium (Cd)	2009/12/09		103	%	90 - 110
		Dissolved Calcium (Ca)	2009/12/09		100	%	90 - 110
		Dissolved Chromium (Cr)	2009/12/09		99	%	90 - 110
		Dissolved Cobalt (Co)	2009/12/09		98	%	90 - 110
		Dissolved Copper (Cu)	2009/12/09		100	%	90 - 110
		Dissolved Iron (Fe)	2009/12/09		101	%	90 - 110
		Dissolved Lead (Pb)	2009/12/09		101	%	90 - 110
		Dissolved Lithium (Li)	2009/12/09		102	%	90 - 110
		Dissolved Magnesium (Mg)	2009/12/09		103	%	90 - 110
		Dissolved Manganese (Mn)	2009/12/09		99	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/09		104	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/09		98	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/09		94	%	90 - 110
		Dissolved Potassium (K)	2009/12/09		100	%	90 - 110
		Dissolved Selenium (Se)	2009/12/09		103	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3398

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031311	HRE	Spiked Blank	Dissolved Silicon (Si)	2009/12/09		103	%	90 - 110
			Dissolved Silver (Ag)	2009/12/09		99	%	90 - 110
			Dissolved Sodium (Na)	2009/12/09		99	%	90 - 110
			Dissolved Strontium (Sr)	2009/12/09		100	%	90 - 110
			Dissolved Tellurium (Te)	2009/12/09		103	%	90 - 110
			Dissolved Thallium (Tl)	2009/12/09		99	%	90 - 110
			Dissolved Thorium (Th)	2009/12/09		105	%	90 - 110
			Dissolved Tin (Sn)	2009/12/09		102	%	90 - 110
			Dissolved Titanium (Ti)	2009/12/09		103	%	90 - 110
			Dissolved Tungsten (W)	2009/12/09		102	%	90 - 110
			Dissolved Uranium (U)	2009/12/09		105	%	90 - 110
			Dissolved Vanadium (V)	2009/12/09		100	%	90 - 110
			Dissolved Zinc (Zn)	2009/12/09		103	%	90 - 110
			Dissolved Zirconium (Zr)	2009/12/09		103	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2009/12/09	<0.005		mg/L	
			Dissolved Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Dissolved Arsenic (As)	2009/12/09	<0.001		mg/L	
			Dissolved Barium (Ba)	2009/12/09	<0.005		mg/L	
			Dissolved Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Dissolved Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Dissolved Boron (B)	2009/12/09	<0.01		mg/L	
			Dissolved Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
			Dissolved Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Dissolved Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Dissolved Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Dissolved Copper (Cu)	2009/12/09	<0.001		mg/L	
			Dissolved Iron (Fe)	2009/12/09	<0.1		mg/L	
			Dissolved Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Dissolved Lithium (Li)	2009/12/09	<0.005		mg/L	
			Dissolved Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Dissolved Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Dissolved Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Dissolved Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Dissolved Phosphorus (P)	2009/12/09	<0.1		mg/L	
			Dissolved Potassium (K)	2009/12/09	<0.2		mg/L	
			Dissolved Selenium (Se)	2009/12/09	<0.002		mg/L	
			Dissolved Silicon (Si)	2009/12/09	<0.05		mg/L	
			Dissolved Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Dissolved Sodium (Na)	2009/12/09	<0.1		mg/L	
			Dissolved Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Dissolved Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Dissolved Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Dissolved Thorium (Th)	2009/12/09	<0.001		mg/L	
			Dissolved Tin (Sn)	2009/12/09	<0.001		mg/L	
			Dissolved Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Dissolved Tungsten (W)	2009/12/09	<0.001		mg/L	
			Dissolved Uranium (U)	2009/12/09	<0.0001		mg/L	
			Dissolved Vanadium (V)	2009/12/09	<0.001		mg/L	
			Dissolved Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Dissolved Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Dissolved Lead (Pb)	2009/12/09	NC		%	25
2032833	SAC	Matrix Spike	Dissolved Chloride (Cl)	2009/12/10		NC	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		108	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		97	%	85 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3398

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032833	SAC	Spiked Blank	Dissolved Bromide (Br-)	2009/12/10		107	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		100	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2009/12/10	1.9		%	25
			Dissolved Bromide (Br-)	2009/12/10	NC		%	25
			Dissolved Sulphate (SO4)	2009/12/10	0.3		%	25
2034128	ADA	Matrix Spike	Dissolved Aluminum (Al)	2009/12/12		NC	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/12		99	%	80 - 120
			Dissolved Arsenic (As)	2009/12/12		97	%	80 - 120
			Dissolved Barium (Ba)	2009/12/12		94	%	80 - 120
			Dissolved Beryllium (Be)	2009/12/12		96	%	80 - 120
			Dissolved Bismuth (Bi)	2009/12/12		91	%	80 - 120
			Dissolved Boron (B)	2009/12/12		NC	%	80 - 120
			Dissolved Cadmium (Cd)	2009/12/12		94	%	80 - 120
			Dissolved Calcium (Ca)	2009/12/12		NC	%	80 - 120
			Dissolved Chromium (Cr)	2009/12/12		96	%	80 - 120
			Dissolved Cobalt (Co)	2009/12/12		94	%	80 - 120
			Dissolved Copper (Cu)	2009/12/12		94	%	80 - 120
			Dissolved Iron (Fe)	2009/12/12		97	%	80 - 120
			Dissolved Lead (Pb)	2009/12/12		95	%	80 - 120
			Dissolved Lithium (Li)	2009/12/12		98	%	80 - 120
			Dissolved Magnesium (Mg)	2009/12/12		NC	%	80 - 120
			Dissolved Manganese (Mn)	2009/12/12		97	%	80 - 120
			Dissolved Molybdenum (Mo)	2009/12/12		102	%	80 - 120
			Dissolved Nickel (Ni)	2009/12/12		94	%	80 - 120
			Dissolved Phosphorus (P)	2009/12/12		109	%	80 - 120
			Dissolved Potassium (K)	2009/12/12		102	%	80 - 120
			Dissolved Selenium (Se)	2009/12/12		98	%	80 - 120
			Dissolved Silicon (Si)	2009/12/12		103	%	80 - 120
			Dissolved Silver (Ag)	2009/12/12		84	%	80 - 120
			Dissolved Sodium (Na)	2009/12/12		NC	%	80 - 120
			Dissolved Strontium (Sr)	2009/12/12		NC	%	80 - 120
			Dissolved Tellurium (Te)	2009/12/12		97	%	80 - 120
			Dissolved Thallium (Tl)	2009/12/12		95	%	80 - 120
			Dissolved Thorium (Th)	2009/12/12		96	%	80 - 120
			Dissolved Tin (Sn)	2009/12/12		99	%	80 - 120
			Dissolved Titanium (Ti)	2009/12/12		98	%	80 - 120
			Dissolved Tungsten (W)	2009/12/12		98	%	80 - 120
			Dissolved Uranium (U)	2009/12/12		96	%	80 - 120
			Dissolved Vanadium (V)	2009/12/12		98	%	80 - 120
			Dissolved Zinc (Zn)	2009/12/12		95	%	80 - 120
			Dissolved Zirconium (Zr)	2009/12/12		102	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2009/12/12		100	%	90 - 110
			Dissolved Antimony (Sb)	2009/12/12		98	%	90 - 110
			Dissolved Arsenic (As)	2009/12/12		98	%	90 - 110
			Dissolved Barium (Ba)	2009/12/12		96	%	90 - 110
			Dissolved Beryllium (Be)	2009/12/12		97	%	90 - 110
			Dissolved Bismuth (Bi)	2009/12/12		96	%	90 - 110
			Dissolved Boron (B)	2009/12/12		96	%	90 - 110
			Dissolved Cadmium (Cd)	2009/12/12		100	%	90 - 110
			Dissolved Calcium (Ca)	2009/12/12		104	%	90 - 110
			Dissolved Chromium (Cr)	2009/12/12		98	%	90 - 110
			Dissolved Cobalt (Co)	2009/12/12		96	%	90 - 110

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3398

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034128 ADA	Spiked Blank	Dissolved Copper (Cu)	2009/12/12		98	%	90 - 110
		Dissolved Iron (Fe)	2009/12/12		98	%	90 - 110
		Dissolved Lead (Pb)	2009/12/12		99	%	90 - 110
		Dissolved Lithium (Li)	2009/12/12		96	%	90 - 110
		Dissolved Magnesium (Mg)	2009/12/12		104	%	90 - 110
		Dissolved Manganese (Mn)	2009/12/12		98	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/12		99	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/12		97	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/12		104	%	90 - 110
		Dissolved Potassium (K)	2009/12/12		103	%	90 - 110
		Dissolved Selenium (Se)	2009/12/12		101	%	90 - 110
		Dissolved Silicon (Si)	2009/12/12		104	%	90 - 110
		Dissolved Silver (Ag)	2009/12/12		94	%	90 - 110
		Dissolved Sodium (Na)	2009/12/12		106	%	90 - 110
		Dissolved Strontium (Sr)	2009/12/12		97	%	90 - 110
		Dissolved Tellurium (Te)	2009/12/12		97	%	90 - 110
		Dissolved Thallium (Tl)	2009/12/12		99	%	90 - 110
		Dissolved Thorium (Th)	2009/12/12		99	%	90 - 110
		Dissolved Tin (Sn)	2009/12/12		99	%	90 - 110
		Dissolved Titanium (Ti)	2009/12/12		100	%	90 - 110
		Dissolved Tungsten (W)	2009/12/12		97	%	90 - 110
		Dissolved Uranium (U)	2009/12/12		99	%	90 - 110
		Dissolved Vanadium (V)	2009/12/12		99	%	90 - 110
		Dissolved Zinc (Zn)	2009/12/12		100	%	90 - 110
		Dissolved Zirconium (Zr)	2009/12/12		101	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2009/12/12	<0.005		mg/L	
		Dissolved Antimony (Sb)	2009/12/12	<0.0005		mg/L	
		Dissolved Arsenic (As)	2009/12/12	<0.001		mg/L	
		Dissolved Barium (Ba)	2009/12/12	<0.005		mg/L	
		Dissolved Beryllium (Be)	2009/12/12	<0.0005		mg/L	
		Dissolved Bismuth (Bi)	2009/12/12	<0.001		mg/L	
		Dissolved Boron (B)	2009/12/12	<0.01		mg/L	
		Dissolved Cadmium (Cd)	2009/12/12	<0.0001		mg/L	
		Dissolved Calcium (Ca)	2009/12/12	<0.2		mg/L	
		Dissolved Chromium (Cr)	2009/12/12	<0.005		mg/L	
		Dissolved Cobalt (Co)	2009/12/12	<0.0005		mg/L	
		Dissolved Copper (Cu)	2009/12/12	<0.001		mg/L	
		Dissolved Iron (Fe)	2009/12/12	<0.1		mg/L	
		Dissolved Lead (Pb)	2009/12/12	<0.0005		mg/L	
		Dissolved Lithium (Li)	2009/12/12	<0.005		mg/L	
		Dissolved Magnesium (Mg)	2009/12/12	<0.05		mg/L	
		Dissolved Manganese (Mn)	2009/12/12	<0.002		mg/L	
		Dissolved Molybdenum (Mo)	2009/12/12	<0.001		mg/L	
		Dissolved Nickel (Ni)	2009/12/12	<0.001		mg/L	
		Dissolved Phosphorus (P)	2009/12/12	<0.1		mg/L	
		Dissolved Potassium (K)	2009/12/12	<0.2		mg/L	
		Dissolved Selenium (Se)	2009/12/12	<0.002		mg/L	
		Dissolved Silicon (Si)	2009/12/12	<0.05		mg/L	
		Dissolved Silver (Ag)	2009/12/12	<0.0001		mg/L	
		Dissolved Sodium (Na)	2009/12/12	<0.1		mg/L	
		Dissolved Strontium (Sr)	2009/12/12	<0.001		mg/L	
		Dissolved Tellurium (Te)	2009/12/12	<0.001		mg/L	
		Dissolved Thallium (Tl)	2009/12/12	<0.00005		mg/L	
		Dissolved Thorium (Th)	2009/12/12	<0.001		mg/L	
		Dissolved Tin (Sn)	2009/12/12	<0.001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3398

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034128 ADA	Method Blank	Dissolved Titanium (Ti)	2009/12/12	<0.005		mg/L	
		Dissolved Tungsten (W)	2009/12/12	<0.001		mg/L	
		Dissolved Uranium (U)	2009/12/12	<0.0001		mg/L	
		Dissolved Vanadium (V)	2009/12/12	<0.001		mg/L	
		Dissolved Zinc (Zn)	2009/12/12	<0.005		mg/L	
		Dissolved Zirconium (Zr)	2009/12/12	<0.001		mg/L	
	RPD	Dissolved Aluminum (Al)	2009/12/12	9.9		%	25
		Dissolved Antimony (Sb)	2009/12/12	NC		%	25
		Dissolved Arsenic (As)	2009/12/12	NC		%	25
		Dissolved Barium (Ba)	2009/12/12	NC		%	25
		Dissolved Beryllium (Be)	2009/12/12	NC		%	25
		Dissolved Bismuth (Bi)	2009/12/12	NC		%	25
		Dissolved Boron (B)	2009/12/12	2.3		%	25
		Dissolved Cadmium (Cd)	2009/12/12	NC		%	25
		Dissolved Calcium (Ca)	2009/12/12	3.9		%	25
		Dissolved Chromium (Cr)	2009/12/12	NC		%	25
		Dissolved Cobalt (Co)	2009/12/12	NC		%	25
		Dissolved Copper (Cu)	2009/12/12	NC		%	25
		Dissolved Iron (Fe)	2009/12/12	5.2		%	25
		Dissolved Lead (Pb)	2009/12/12	NC		%	25
		Dissolved Lithium (Li)	2009/12/12	2.8		%	25
		Dissolved Magnesium (Mg)	2009/12/12	1.9		%	25
		Dissolved Manganese (Mn)	2009/12/12	0.9		%	25
		Dissolved Molybdenum (Mo)	2009/12/12	1.1		%	25
		Dissolved Nickel (Ni)	2009/12/12	NC		%	25
		Dissolved Phosphorus (P)	2009/12/12	NC		%	25
		Dissolved Potassium (K)	2009/12/12	1.6		%	25
		Dissolved Selenium (Se)	2009/12/12	NC		%	25
		Dissolved Silicon (Si)	2009/12/12	1.5		%	25
		Dissolved Silver (Ag)	2009/12/12	NC		%	25
		Dissolved Sodium (Na)	2009/12/12	0.1		%	25
		Dissolved Strontium (Sr)	2009/12/12	0.8		%	25
		Dissolved Tellurium (Te)	2009/12/12	NC		%	25
		Dissolved Thallium (Tl)	2009/12/12	NC		%	25
		Dissolved Thorium (Th)	2009/12/12	NC		%	25
		Dissolved Tin (Sn)	2009/12/12	NC		%	25
		Dissolved Titanium (Ti)	2009/12/12	NC		%	25
		Dissolved Tungsten (W)	2009/12/12	NC		%	25
		Dissolved Uranium (U)	2009/12/12	NC		%	25
		Dissolved Vanadium (V)	2009/12/12	NC		%	25
		Dissolved Zinc (Zn)	2009/12/12	NC		%	25
		Dissolved Zirconium (Zr)	2009/12/12	NC		%	25
2034139 YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/11		97	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2009/12/11	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2009/12/11	0.2		%	25
2035320 JBW	Matrix Spike	Total Sodium (Na)	2009/12/14		NC	%	75 - 125
	Spiked Blank	Total Sodium (Na)	2009/12/14		96	%	75 - 125
	Method Blank	Total Sodium (Na)	2009/12/14	<0.1		mg/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.

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3398

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 #: A9G3398

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

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. SCC and CALA have approved this reporting process and electronic report format.

Site: TANSLEY QUARRY
Your C.O.C. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3994
Received: 2009/12/03, 16:48

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/09	CAM SOP-00448	SM 2320B
Alkalinity	1	N/A	2009/12/14	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Anions	1	N/A	2009/12/15	CAM SOP-00435	SM 4110B
Free Cyanide	2	N/A	2009/12/08	Ont SOP-0094	EPA 9012 Modified
Fluoride	2	2009/12/09	2009/12/09	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	2	N/A	2009/12/10	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	2	2009/12/07	2009/12/07	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	1	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Dissolved Metals by ICPMS	1	N/A	2009/12/14	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	2	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Ammonia-N	2	N/A	2009/12/10	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	2	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	2	N/A	2009/12/09	CAM SOP-00448	SM 4500H
Phenols (4AAP)	3	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	2	N/A	2009/12/10	CAM SOP-00461	SM 4500 P-F
Sulphide	2	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	2	2009/12/09	2009/12/10	CAM SOP-00407	APHA 4500 P,B,F
Total Phosphorus (Colourimetric)	2	2009/12/09	2009/12/10	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	2	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	2	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN8995	EN8996			EN8997		
Sampling Date		2009/12/03	2009/12/03			2009/12/03		
COC Number		172018-0	172018-0			172018-0		
	Units	**DUP1**	**MW2 DEEP**	**RDL**	**QC Batch**	**MW8 DEEP**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L		7100	1	2026931	1300	1	2026931
Inorganics								
Total Ammonia-N	mg/L		18	0.5	2032408	2.3	0.05	2032408
Fluoride (F-)	mg/L		0.3	0.1	2032034	0.3	0.1	2032034
Free Cyanide	mg/L		<0.002	0.002	2029599	<0.002	0.002	2029599
Orthophosphate (P)	mg/L		<0.01	0.01	2032046	<0.01	0.01	2032046
pH	pH		7.2		2032036	7.9		2032036
Phenols-4AAP	mg/L	<0.001	0.005	0.001	2027751	<0.001	0.001	2027751
Total Phosphorus	mg/L		0.82	0.01	2031510	0.04	0.02	2031505
Total Suspended Solids	mg/L		800	10	2027695	22	10	2027695
Sulphide	mg/L		0.25	0.02	2031349	<0.02	0.02	2031349
Turbidity	NTU		720	0.1	2029074	25	0.1	2029074
Alkalinity (Total as CaCO3)	mg/L		51	1	2032035	412	1	2035702
Nitrite (N)	mg/L		<0.01	0.01	2030067	0.01	0.01	2030079
Dissolved Chloride (Cl)	mg/L		12400	100	2032469	213	2	2034209
Nitrate (N)	mg/L		<0.1	0.1	2030067	<0.1	0.1	2030079
Nitrate + Nitrite	mg/L		<0.1	0.1	2030067	<0.1	0.1	2030079
Dissolved Bromide (Br-)	mg/L		148	10	2032469	3	2	2034209
Dissolved Sulphate (SO4)	mg/L		2010	10	2032469	522	2	2034209

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8996			EN8997		
Sampling Date		2009/12/03			2009/12/03		
COC Number		172018-0			172018-0		
	Units	**MW2 DEEP**	**RDL**	**QC Batch**	**MW8 DEEP**	**RDL**	**QC Batch**
Metals							
Mercury (Hg)	mg/L	<0.0001	0.0001	2028919	<0.0001	0.0001	2028919
Dissolved Aluminum (Al)	mg/L	<0.5	0.5	2032509	<0.005	0.005	2035169
Total Aluminum (Al)	mg/L	12	0.1	2031362	0.41	0.005	2031362
Dissolved Antimony (Sb)	mg/L	<0.05	0.05	2032509	<0.0005	0.0005	2035169
Total Antimony (Sb)	mg/L	<0.01	0.01	2031362	<0.0005	0.0005	2031362
Dissolved Arsenic (As)	mg/L	<0.1	0.1	2032509	<0.005 (1)	0.005	2035169
Total Arsenic (As)	mg/L	<0.02	0.02	2031362	<0.005 (1)	0.005	2031362
Dissolved Barium (Ba)	mg/L	<0.5	0.5	2032509	0.013	0.005	2035169
Total Barium (Ba)	mg/L	0.3	0.1	2031362	0.016	0.005	2031362
Dissolved Beryllium (Be)	mg/L	<0.05	0.05	2032509	<0.0005	0.0005	2035169
Total Beryllium (Be)	mg/L	<0.01	0.01	2031362	<0.0005	0.0005	2031362
Dissolved Bismuth (Bi)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Bismuth (Bi)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362
Dissolved Boron (B)	mg/L	6	1	2032509	4.5	0.01	2035169
Total Boron (B)	mg/L	6.1	0.2	2031362	4.6	0.01	2031362
Dissolved Cadmium (Cd)	mg/L	<0.01	0.01	2032509	<0.0001	0.0001	2035169
Total Cadmium (Cd)	mg/L	<0.002	0.002	2031362	0.0002	0.0001	2031362
Dissolved Calcium (Ca)	mg/L	2000	20	2032509	290	0.2	2035169
Total Calcium (Ca)	mg/L	1900	4	2031362	260	0.2	2031362
Dissolved Chromium (Cr)	mg/L	<0.5	0.5	2032509	<0.005	0.005	2035169
Total Chromium (Cr)	mg/L	<0.1	0.1	2031362	<0.005	0.005	2031362
Dissolved Cobalt (Co)	mg/L	<0.05	0.05	2032509	0.0016	0.0005	2035169
Total Cobalt (Co)	mg/L	0.01	0.01	2031362	<0.0005	0.0005	2031362
Dissolved Copper (Cu)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Copper (Cu)	mg/L	0.04	0.02	2031362	<0.001	0.001	2031362
Dissolved Iron (Fe)	mg/L	<10	10	2032509	0.7	0.1	2035169
Total Iron (Fe)	mg/L	29	2	2031362	1.3	0.1	2031362
Dissolved Lead (Pb)	mg/L	<0.05	0.05	2032509	<0.0005	0.0005	2035169
Total Lead (Pb)	mg/L	0.01	0.01	2031362	<0.0005	0.0005	2031362
Dissolved Lithium (Li)	mg/L	5.0	0.5	2032509	0.62	0.005	2035169
Total Lithium (Li)	mg/L	5.2	0.1	2031362	0.62	0.005	2031362
Dissolved Magnesium (Mg)	mg/L	520	5	2032509	130	0.05	2035169

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		EN8996			EN8997		
Sampling Date		2009/12/03			2009/12/03		
COC Number		172018-0			172018-0		
	Units	**MW2 DEEP**	**RDL**	**QC Batch**	**MW8 DEEP**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	480	1	2031362	120	0.05	2031362
Dissolved Manganese (Mn)	mg/L	1.2	0.2	2032509	0.15	0.002	2035169
Total Manganese (Mn)	mg/L	1.8	0.04	2031362	0.16	0.002	2031362
Dissolved Molybdenum (Mo)	mg/L	<0.1	0.1	2032509	0.006	0.001	2035169
Total Molybdenum (Mo)	mg/L	<0.02	0.02	2031362	0.006	0.001	2031362
Dissolved Nickel (Ni)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Nickel (Ni)	mg/L	0.05	0.02	2031362	0.003	0.001	2031362
Dissolved Phosphorus (P)	mg/L	<10	10	2032509	<0.1	0.1	2035169
Dissolved Potassium (K)	mg/L	120	20	2032509	31	0.2	2035169
Total Potassium (K)	mg/L	110	4	2031362	28	0.2	2031362
Dissolved Selenium (Se)	mg/L	<0.2	0.2	2032509	<0.01 (1)	0.01	2035169
Total Selenium (Se)	mg/L	0.06	0.04	2031362	<0.01 (1)	0.01	2031362
Dissolved Silicon (Si)	mg/L	<5	5	2032509	5.6	0.05	2035169
Total Silicon (Si)	mg/L	18	1	2031362	6.4	0.05	2031362
Dissolved Silver (Ag)	mg/L	<0.01	0.01	2032509	<0.0001	0.0001	2035169
Total Silver (Ag)	mg/L	<0.002	0.002	2031362	<0.0001	0.0001	2031362
Dissolved Sodium (Na)	mg/L	6200	10	2032509	620	1	2035169
Total Sodium (Na)	mg/L	5600	2	2031362	540	0.1	2031362
Dissolved Strontium (Sr)	mg/L	41	0.1	2032509	12	0.001	2035169
Total Strontium (Sr)	mg/L	40	0.02	2031362	13	0.001	2031362
Dissolved Tellurium (Te)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Tellurium (Te)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362
Dissolved Thallium (Tl)	mg/L	<0.005	0.005	2032509	<0.00005	0.00005	2035169
Total Thallium (Tl)	mg/L	<0.001	0.001	2031362	<0.00005	0.00005	2031362
Dissolved Thorium (Th)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Thorium (Th)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362
Dissolved Tin (Sn)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Tin (Sn)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362
Dissolved Titanium (Ti)	mg/L	0.5	0.5	2032509	<0.005	0.005	2035169
Total Titanium (Ti)	mg/L	0.2	0.1	2031362	0.034	0.005	2031362
Dissolved Tungsten (W)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Tungsten (W)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362
Dissolved Uranium (U)	mg/L	<0.01	0.01	2032509	0.0034	0.0001	2035169

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8996			EN8997		
Sampling Date		2009/12/03			2009/12/03		
COC Number		172018-0			172018-0		
	Units	**MW2 DEEP**	**RDL**	**QC Batch**	**MW8 DEEP**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	<0.002	0.002	2031362	0.0043	0.0001	2031362
Dissolved Vanadium (V)	mg/L	<0.1	0.1	2032509	<0.005 (1)	0.005	2035169
Total Vanadium (V)	mg/L	0.05	0.02	2031362	<0.005 (1)	0.005	2031362
Dissolved Zinc (Zn)	mg/L	<0.5	0.5	2032509	<0.005	0.005	2035169
Total Zinc (Zn)	mg/L	0.1	0.1	2031362	<0.005	0.005	2031362
Dissolved Zirconium (Zr)	mg/L	<0.1	0.1	2032509	<0.001	0.001	2035169
Total Zirconium (Zr)	mg/L	<0.02	0.02	2031362	<0.001	0.001	2031362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	11.3°C
Package 2	8.7°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 EN8996-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample EN8997-01: Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Elevated ion balance result was confirmed by re-analysis.

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: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027695	JDO	QC Standard	Total Suspended Solids	2009/12/04		102	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
2027751	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2028919	MC	Matrix Spike	Mercury (Hg)	2009/12/07		117	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/07		106	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD	Turbidity	2009/12/07	0.8		%	25
2029599	LHA	Matrix Spike	Free Cyanide	2009/12/08		99	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/08		96	%	80 - 120
		Method Blank	Free Cyanide	2009/12/08	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/08	NC		%	25
2030067	CCI	Matrix Spike	Nitrite (N)	2009/12/10		101	%	75 - 125
			Nitrate (N)	2009/12/10		92	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		103	%	80 - 120
			Nitrate (N)	2009/12/10		97	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/10	NC		%	25
			Nitrate (N)	2009/12/10	NC		%	25
2030079	CCI	Matrix Spike	Nitrite (N)	2009/12/10		101	%	75 - 125
			Nitrate (N)	2009/12/10		NC	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		104	%	80 - 120
			Nitrate (N)	2009/12/10		94	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/10	NC		%	25
			Nitrate (N)	2009/12/10	5.0		%	25
			Nitrate + Nitrite	2009/12/10	5.0		%	25
2031349	SAC	Matrix Spike	Sulphide	2009/12/10		83	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		99	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	NC		%	25
2031362	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/09		NC	%	80 - 120
			Total Antimony (Sb)	2009/12/09		105	%	80 - 120
			Total Arsenic (As)	2009/12/09		100	%	80 - 120
			Total Barium (Ba)	2009/12/09		96	%	80 - 120
			Total Beryllium (Be)	2009/12/09		104	%	75 - 125
			Total Bismuth (Bi)	2009/12/09		97	%	75 - 125
			Total Boron (B)	2009/12/09		110	%	75 - 125
			Total Cadmium (Cd)	2009/12/09		100	%	80 - 120
			Total Calcium (Ca)	2009/12/09		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/09		96	%	80 - 120
			Total Cobalt (Co)	2009/12/09		96	%	80 - 120
			Total Copper (Cu)	2009/12/09		96	%	80 - 120
			Total Iron (Fe)	2009/12/09		97	%	80 - 120
			Total Lead (Pb)	2009/12/09		96	%	80 - 120
			Total Lithium (Li)	2009/12/09		101	%	75 - 125

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362 HRE	Matrix Spike	Total Magnesium (Mg)	2009/12/09		NC	%	80 - 120
		Total Manganese (Mn)	2009/12/09		97	%	80 - 120
		Total Molybdenum (Mo)	2009/12/09		106	%	80 - 120
		Total Nickel (Ni)	2009/12/09		94	%	80 - 120
		Total Potassium (K)	2009/12/09		96	%	75 - 125
		Total Selenium (Se)	2009/12/09		99	%	75 - 125
		Total Silicon (Si)	2009/12/09		95	%	75 - 125
		Total Silver (Ag)	2009/12/09		93	%	80 - 120
		Total Sodium (Na)	2009/12/09		NC	%	75 - 125
		Total Strontium (Sr)	2009/12/09		NC	%	80 - 120
		Total Tellurium (Te)	2009/12/09		100	%	75 - 125
		Total Thallium (Tl)	2009/12/09		95	%	80 - 120
		Total Thorium (Th)	2009/12/09		103	%	75 - 125
		Total Tin (Sn)	2009/12/09		103	%	75 - 125
		Total Titanium (Ti)	2009/12/09		101	%	75 - 125
		Total Tungsten (W)	2009/12/09		103	%	75 - 125
		Total Uranium (U)	2009/12/09		103	%	80 - 120
		Total Vanadium (V)	2009/12/09		97	%	80 - 120
		Total Zinc (Zn)	2009/12/09		98	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		104	%	75 - 125
	Spiked Blank	Total Aluminum (Al)	2009/12/09		102	%	80 - 120
		Total Antimony (Sb)	2009/12/09		98	%	82 - 120
		Total Arsenic (As)	2009/12/09		101	%	86 - 119
		Total Barium (Ba)	2009/12/09		98	%	83 - 115
		Total Beryllium (Be)	2009/12/09		103	%	85 - 132
		Total Bismuth (Bi)	2009/12/09		99	%	78 - 120
		Total Boron (B)	2009/12/09		103	%	78 - 133
		Total Cadmium (Cd)	2009/12/09		101	%	85 - 116
		Total Calcium (Ca)	2009/12/09		100	%	75 - 125
		Total Chromium (Cr)	2009/12/09		98	%	80 - 120
		Total Cobalt (Co)	2009/12/09		98	%	82 - 117
		Total Copper (Cu)	2009/12/09		99	%	80 - 117
		Total Iron (Fe)	2009/12/09		100	%	80 - 120
		Total Lead (Pb)	2009/12/09		99	%	80 - 120
		Total Lithium (Li)	2009/12/09		100	%	86 - 131
		Total Magnesium (Mg)	2009/12/09		101	%	80 - 120
		Total Manganese (Mn)	2009/12/09		98	%	80 - 120
		Total Molybdenum (Mo)	2009/12/09		99	%	82 - 117
		Total Nickel (Ni)	2009/12/09		96	%	81 - 117
		Total Potassium (K)	2009/12/09		98	%	75 - 125
		Total Selenium (Se)	2009/12/09		102	%	82 - 118
		Total Silicon (Si)	2009/12/09		96	%	67 - 140
		Total Silver (Ag)	2009/12/09		95	%	80 - 120
		Total Sodium (Na)	2009/12/09		98	%	75 - 125
		Total Strontium (Sr)	2009/12/09		99	%	83 - 120
		Total Tellurium (Te)	2009/12/09		97	%	80 - 116
		Total Thallium (Tl)	2009/12/09		97	%	80 - 129
		Total Thorium (Th)	2009/12/09		102	%	80 - 125
		Total Tin (Sn)	2009/12/09		97	%	83 - 119
		Total Titanium (Ti)	2009/12/09		98	%	60 - 125
		Total Tungsten (W)	2009/12/09		98	%	81 - 123
		Total Uranium (U)	2009/12/09		104	%	82 - 120
		Total Vanadium (V)	2009/12/09		98	%	82 - 118
		Total Zinc (Zn)	2009/12/09		102	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		98	%	84 - 118

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362	HRE	Method Blank	Total Aluminum (Al)	2009/12/09	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/09	<0.001		mg/L	
			Total Barium (Ba)	2009/12/09	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Total Boron (B)	2009/12/09	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/09	<0.001		mg/L	
			Total Iron (Fe)	2009/12/09	<0.1		mg/L	
			Total Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/09	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Total Potassium (K)	2009/12/09	<0.2		mg/L	
			Total Selenium (Se)	2009/12/09	<0.002		mg/L	
			Total Silicon (Si)	2009/12/09	<0.05		mg/L	
			Total Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/09	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/09	<0.001		mg/L	
			Total Tin (Sn)	2009/12/09	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Total Tungsten (W)	2009/12/09	<0.001		mg/L	
			Total Uranium (U)	2009/12/09	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/09	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Total Barium (Ba)	2009/12/09	4.2		%	25
			Total Boron (B)	2009/12/09	3.7		%	25
			Total Calcium (Ca)	2009/12/09	5.2		%	25
			Total Magnesium (Mg)	2009/12/09	5.0		%	25
			Total Potassium (K)	2009/12/09	4.0		%	25
			Total Silicon (Si)	2009/12/09	5.7		%	25
			Total Sodium (Na)	2009/12/09	2.9		%	25
2031505	AHA	Matrix Spike	Total Phosphorus	2009/12/10		102	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		105	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		100	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	0.02, RDL=0.02		mg/L	
		RPD	Total Phosphorus	2009/12/10	8.9		%	25
2031510	AHA	Matrix Spike	Total Phosphorus	2009/12/10		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		100	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		98	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/10	2.1		%	25
2032034	YPA	Matrix Spike [EN9003-01]	Fluoride (F-)	2009/12/09		106	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/09		108	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032034 YPA	Method Blank	Fluoride (F-)	2009/12/09	<0.1		mg/L	
2032035 YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/09		96	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2009/12/09	<1		mg/L	
2032046 DRM	Matrix Spike	Orthophosphate (P)	2009/12/10		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2009/12/10		101	%	80 - 120
	Method Blank	Orthophosphate (P)	2009/12/10	<0.01		mg/L	
	RPD	Orthophosphate (P)	2009/12/10	NC		%	25
2032408 ADB	Matrix Spike [EN8999-04]	Total Ammonia-N	2009/12/10		93	%	80 - 120
	Spiked Blank	Total Ammonia-N	2009/12/10		100	%	80 - 120
	Method Blank	Total Ammonia-N	2009/12/10	<0.05		mg/L	
2032469 FD	Matrix Spike [EN8999-01]	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120
		Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
		Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
		Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115
		Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
	Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
		Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
		Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
2032509 JBW	Matrix Spike	Dissolved Aluminum (Al)	2009/12/10		97	%	80 - 120
		Dissolved Antimony (Sb)	2009/12/10		107	%	80 - 120
		Dissolved Arsenic (As)	2009/12/10		105	%	80 - 120
		Dissolved Barium (Ba)	2009/12/10		97	%	80 - 120
		Dissolved Beryllium (Be)	2009/12/10		100	%	80 - 120
		Dissolved Bismuth (Bi)	2009/12/10		100	%	80 - 120
		Dissolved Boron (B)	2009/12/10		104	%	80 - 120
		Dissolved Cadmium (Cd)	2009/12/10		104	%	80 - 120
		Dissolved Calcium (Ca)	2009/12/10		NC	%	80 - 120
		Dissolved Chromium (Cr)	2009/12/10		101	%	80 - 120
		Dissolved Cobalt (Co)	2009/12/10		98	%	80 - 120
		Dissolved Copper (Cu)	2009/12/10		96	%	80 - 120
		Dissolved Iron (Fe)	2009/12/10		107	%	80 - 120
		Dissolved Lead (Pb)	2009/12/10		97	%	80 - 120
		Dissolved Lithium (Li)	2009/12/10		100	%	80 - 120
		Dissolved Magnesium (Mg)	2009/12/10		NC	%	80 - 120
		Dissolved Manganese (Mn)	2009/12/10		102	%	80 - 120
		Dissolved Molybdenum (Mo)	2009/12/10		105	%	80 - 120
		Dissolved Nickel (Ni)	2009/12/10		97	%	80 - 120
		Dissolved Phosphorus (P)	2009/12/10		102	%	80 - 120
		Dissolved Potassium (K)	2009/12/10		102	%	80 - 120
		Dissolved Selenium (Se)	2009/12/10		102	%	80 - 120
		Dissolved Silicon (Si)	2009/12/10		106	%	80 - 120
		Dissolved Silver (Ag)	2009/12/10		101	%	80 - 120
		Dissolved Sodium (Na)	2009/12/10		104	%	80 - 120
		Dissolved Strontium (Sr)	2009/12/10		NC	%	80 - 120
		Dissolved Tellurium (Te)	2009/12/10		104	%	80 - 120
		Dissolved Thallium (Tl)	2009/12/10		96	%	80 - 120
		Dissolved Thorium (Th)	2009/12/10		99	%	80 - 120
		Dissolved Tin (Sn)	2009/12/10		106	%	80 - 120
		Dissolved Titanium (Ti)	2009/12/10		107	%	80 - 120
		Dissolved Tungsten (W)	2009/12/10		105	%	80 - 120
		Dissolved Uranium (U)	2009/12/10		103	%	80 - 120
		Dissolved Vanadium (V)	2009/12/10		102	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032509 JBW	Matrix Spike	Dissolved Zinc (Zn)	2009/12/10		100	%	80 - 120
		Dissolved Zirconium (Zr)	2009/12/10		105	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2009/12/10		100	%	90 - 110
		Dissolved Antimony (Sb)	2009/12/10		102	%	90 - 110
		Dissolved Arsenic (As)	2009/12/10		102	%	90 - 110
		Dissolved Barium (Ba)	2009/12/10		97	%	90 - 110
		Dissolved Beryllium (Be)	2009/12/10		102	%	90 - 110
		Dissolved Bismuth (Bi)	2009/12/10		98	%	90 - 110
		Dissolved Boron (B)	2009/12/10		105	%	90 - 110
		Dissolved Cadmium (Cd)	2009/12/10		103	%	90 - 110
		Dissolved Calcium (Ca)	2009/12/10		105	%	90 - 110
		Dissolved Chromium (Cr)	2009/12/10		99	%	90 - 110
		Dissolved Cobalt (Co)	2009/12/10		99	%	90 - 110
		Dissolved Copper (Cu)	2009/12/10		96	%	90 - 110
		Dissolved Iron (Fe)	2009/12/10		107	%	90 - 110
		Dissolved Lead (Pb)	2009/12/10		96	%	90 - 110
		Dissolved Lithium (Li)	2009/12/10		101	%	90 - 110
		Dissolved Magnesium (Mg)	2009/12/10		106	%	90 - 110
		Dissolved Manganese (Mn)	2009/12/10		105	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/10		100	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/10		97	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/10		98	%	90 - 110
		Dissolved Potassium (K)	2009/12/10		100	%	90 - 110
		Dissolved Selenium (Se)	2009/12/10		103	%	90 - 110
		Dissolved Silicon (Si)	2009/12/10		106	%	90 - 110
		Dissolved Silver (Ag)	2009/12/10		99	%	90 - 110
		Dissolved Sodium (Na)	2009/12/10		103	%	90 - 110
		Dissolved Strontium (Sr)	2009/12/10		103	%	90 - 110
		Dissolved Tellurium (Te)	2009/12/10		98	%	90 - 110
		Dissolved Thallium (Tl)	2009/12/10		96	%	90 - 110
		Dissolved Thorium (Th)	2009/12/10		97	%	90 - 110
		Dissolved Tin (Sn)	2009/12/10		101	%	90 - 110
		Dissolved Titanium (Ti)	2009/12/10		103	%	90 - 110
		Dissolved Tungsten (W)	2009/12/10		100	%	90 - 110
		Dissolved Uranium (U)	2009/12/10		101	%	90 - 110
		Dissolved Vanadium (V)	2009/12/10		100	%	90 - 110
		Dissolved Zinc (Zn)	2009/12/10		103	%	90 - 110
		Dissolved Zirconium (Zr)	2009/12/10		100	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2009/12/10	<0.005		mg/L	
		Dissolved Antimony (Sb)	2009/12/10	<0.0005		mg/L	
		Dissolved Arsenic (As)	2009/12/10	<0.001		mg/L	
		Dissolved Barium (Ba)	2009/12/10	<0.005		mg/L	
		Dissolved Beryllium (Be)	2009/12/10	<0.0005		mg/L	
		Dissolved Bismuth (Bi)	2009/12/10	<0.001		mg/L	
		Dissolved Boron (B)	2009/12/10	<0.01		mg/L	
		Dissolved Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
		Dissolved Calcium (Ca)	2009/12/10	<0.2		mg/L	
		Dissolved Chromium (Cr)	2009/12/10	<0.005		mg/L	
		Dissolved Cobalt (Co)	2009/12/10	<0.0005		mg/L	
		Dissolved Copper (Cu)	2009/12/10	<0.001		mg/L	
		Dissolved Iron (Fe)	2009/12/10	<0.1		mg/L	
		Dissolved Lead (Pb)	2009/12/10	<0.0005		mg/L	
		Dissolved Lithium (Li)	2009/12/10	<0.005		mg/L	
		Dissolved Magnesium (Mg)	2009/12/10	<0.05		mg/L	
		Dissolved Manganese (Mn)	2009/12/10	<0.002		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032509	JBW	Method Blank	Dissolved Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
			Dissolved Nickel (Ni)	2009/12/10	<0.001		mg/L	
			Dissolved Phosphorus (P)	2009/12/10	<0.1		mg/L	
			Dissolved Potassium (K)	2009/12/10	<0.2		mg/L	
			Dissolved Selenium (Se)	2009/12/10	<0.002		mg/L	
			Dissolved Silicon (Si)	2009/12/10	<0.05		mg/L	
			Dissolved Silver (Ag)	2009/12/10	<0.0001		mg/L	
			Dissolved Sodium (Na)	2009/12/10	<0.1		mg/L	
			Dissolved Strontium (Sr)	2009/12/10	<0.001		mg/L	
			Dissolved Tellurium (Te)	2009/12/10	<0.001		mg/L	
			Dissolved Thallium (Tl)	2009/12/10	<0.00005		mg/L	
			Dissolved Thorium (Th)	2009/12/10	<0.001		mg/L	
			Dissolved Tin (Sn)	2009/12/10	<0.001		mg/L	
			Dissolved Titanium (Ti)	2009/12/10	<0.005		mg/L	
			Dissolved Tungsten (W)	2009/12/10	<0.001		mg/L	
			Dissolved Uranium (U)	2009/12/10	<0.0001		mg/L	
			Dissolved Vanadium (V)	2009/12/10	<0.001		mg/L	
			Dissolved Zinc (Zn)	2009/12/10	<0.005		mg/L	
			Dissolved Zirconium (Zr)	2009/12/10	<0.001		mg/L	
		RPD	Dissolved Aluminum (Al)	2009/12/10	NC		%	25
			Dissolved Antimony (Sb)	2009/12/10	NC		%	25
			Dissolved Arsenic (As)	2009/12/10	NC		%	25
			Dissolved Barium (Ba)	2009/12/10	1.7		%	25
			Dissolved Beryllium (Be)	2009/12/10	NC		%	25
			Dissolved Boron (B)	2009/12/10	NC		%	25
			Dissolved Cadmium (Cd)	2009/12/10	NC		%	25
			Dissolved Calcium (Ca)	2009/12/10	0.2		%	25
			Dissolved Chromium (Cr)	2009/12/10	NC		%	25
			Dissolved Cobalt (Co)	2009/12/10	NC		%	25
			Dissolved Copper (Cu)	2009/12/10	NC		%	25
			Dissolved Iron (Fe)	2009/12/10	NC		%	25
			Dissolved Lead (Pb)	2009/12/10	NC		%	25
			Dissolved Magnesium (Mg)	2009/12/10	0.04		%	25
			Dissolved Manganese (Mn)	2009/12/10	2.0		%	25
			Dissolved Molybdenum (Mo)	2009/12/10	NC		%	25
			Dissolved Nickel (Ni)	2009/12/10	NC		%	25
			Dissolved Phosphorus (P)	2009/12/10	NC		%	25
			Dissolved Potassium (K)	2009/12/10	NC		%	25
			Dissolved Selenium (Se)	2009/12/10	NC		%	25
			Dissolved Silicon (Si)	2009/12/10	0.008		%	25
			Dissolved Silver (Ag)	2009/12/10	NC		%	25
			Dissolved Sodium (Na)	2009/12/10	0.3		%	25
			Dissolved Strontium (Sr)	2009/12/10	0.2		%	25
			Dissolved Thallium (Tl)	2009/12/10	NC		%	25
			Dissolved Titanium (Ti)	2009/12/10	NC		%	25
			Dissolved Uranium (U)	2009/12/10	NC		%	25
			Dissolved Vanadium (V)	2009/12/10	NC		%	25
			Dissolved Zinc (Zn)	2009/12/10	NC		%	25
2034209	FD	Matrix Spike	Dissolved Sulphate (SO4)	2009/12/15		91	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/15		99	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/15		91	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/15		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/15	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/15	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/15	<1		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2034209 FD	RPD	Dissolved Sulphate (SO4)	2009/12/15	1.6		%	25
2035169 HRE	Matrix Spike	Dissolved Aluminum (Al)	2009/12/14		100	%	80 - 120
		Dissolved Antimony (Sb)	2009/12/14		109	%	80 - 120
		Dissolved Arsenic (As)	2009/12/14		104	%	80 - 120
		Dissolved Barium (Ba)	2009/12/14		102	%	80 - 120
		Dissolved Beryllium (Be)	2009/12/14		104	%	80 - 120
		Dissolved Bismuth (Bi)	2009/12/14		93	%	80 - 120
		Dissolved Boron (B)	2009/12/14		NC	%	80 - 120
		Dissolved Cadmium (Cd)	2009/12/14		104	%	80 - 120
		Dissolved Calcium (Ca)	2009/12/14		NC	%	80 - 120
		Dissolved Chromium (Cr)	2009/12/14		99	%	80 - 120
		Dissolved Cobalt (Co)	2009/12/14		98	%	80 - 120
		Dissolved Copper (Cu)	2009/12/14		92	%	80 - 120
		Dissolved Iron (Fe)	2009/12/14		105	%	80 - 120
		Dissolved Lead (Pb)	2009/12/14		94	%	80 - 120
		Dissolved Lithium (Li)	2009/12/14		NC	%	80 - 120
		Dissolved Magnesium (Mg)	2009/12/14		NC	%	80 - 120
		Dissolved Manganese (Mn)	2009/12/14		NC	%	80 - 120
		Dissolved Molybdenum (Mo)	2009/12/14		112	%	80 - 120
		Dissolved Nickel (Ni)	2009/12/14		96	%	80 - 120
		Dissolved Phosphorus (P)	2009/12/14		111	%	80 - 120
		Dissolved Potassium (K)	2009/12/14		103	%	80 - 120
		Dissolved Selenium (Se)	2009/12/14		107	%	80 - 120
		Dissolved Silicon (Si)	2009/12/14		105	%	80 - 120
		Dissolved Silver (Ag)	2009/12/14		64 (1)	%	80 - 120
		Dissolved Sodium (Na)	2009/12/14		NC	%	80 - 120
		Dissolved Strontium (Sr)	2009/12/14		NC	%	80 - 120
		Dissolved Tellurium (Te)	2009/12/14		101	%	80 - 120
		Dissolved Thallium (Tl)	2009/12/14		95	%	80 - 120
		Dissolved Thorium (Th)	2009/12/14		97	%	80 - 120
		Dissolved Tin (Sn)	2009/12/14		107	%	80 - 120
		Dissolved Titanium (Ti)	2009/12/14		108	%	80 - 120
		Dissolved Tungsten (W)	2009/12/14		100	%	80 - 120
		Dissolved Uranium (U)	2009/12/14		99	%	80 - 120
		Dissolved Vanadium (V)	2009/12/14		104	%	80 - 120
		Dissolved Zinc (Zn)	2009/12/14		95	%	80 - 120
		Dissolved Zirconium (Zr)	2009/12/14		107	%	80 - 120
	Spiked Blank	Dissolved Aluminum (Al)	2009/12/14		99	%	90 - 110
		Dissolved Antimony (Sb)	2009/12/14		100	%	90 - 110
		Dissolved Arsenic (As)	2009/12/14		99	%	90 - 110
		Dissolved Barium (Ba)	2009/12/14		101	%	90 - 110
		Dissolved Beryllium (Be)	2009/12/14		102	%	90 - 110
		Dissolved Bismuth (Bi)	2009/12/14		97	%	90 - 110
		Dissolved Boron (B)	2009/12/14		97	%	90 - 110
		Dissolved Cadmium (Cd)	2009/12/14		101	%	90 - 110
		Dissolved Calcium (Ca)	2009/12/14		104	%	90 - 110
		Dissolved Chromium (Cr)	2009/12/14		98	%	90 - 110
		Dissolved Cobalt (Co)	2009/12/14		98	%	90 - 110
		Dissolved Copper (Cu)	2009/12/14		97	%	90 - 110
		Dissolved Iron (Fe)	2009/12/14		102	%	90 - 110
		Dissolved Lead (Pb)	2009/12/14		97	%	90 - 110
		Dissolved Lithium (Li)	2009/12/14		100	%	90 - 110
		Dissolved Magnesium (Mg)	2009/12/14		107	%	90 - 110
		Dissolved Manganese (Mn)	2009/12/14		101	%	90 - 110
		Dissolved Molybdenum (Mo)	2009/12/14		101	%	90 - 110

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2035169	HRE	Spiked Blank	Dissolved Nickel (Ni)	2009/12/14		98	%	90 - 110
			Dissolved Phosphorus (P)	2009/12/14		98	%	90 - 110
			Dissolved Potassium (K)	2009/12/14		105	%	90 - 110
			Dissolved Selenium (Se)	2009/12/14		101	%	90 - 110
			Dissolved Silicon (Si)	2009/12/14		104	%	90 - 110
			Dissolved Silver (Ag)	2009/12/14		99	%	90 - 110
			Dissolved Sodium (Na)	2009/12/14		103	%	90 - 110
			Dissolved Strontium (Sr)	2009/12/14		98	%	90 - 110
			Dissolved Tellurium (Te)	2009/12/14		97	%	90 - 110
			Dissolved Thallium (Tl)	2009/12/14		96	%	90 - 110
			Dissolved Thorium (Th)	2009/12/14		97	%	90 - 110
			Dissolved Tin (Sn)	2009/12/14		100	%	90 - 110
			Dissolved Titanium (Ti)	2009/12/14		104	%	90 - 110
			Dissolved Tungsten (W)	2009/12/14		99	%	90 - 110
			Dissolved Uranium (U)	2009/12/14		100	%	90 - 110
			Dissolved Vanadium (V)	2009/12/14		99	%	90 - 110
			Dissolved Zinc (Zn)	2009/12/14		101	%	90 - 110
			Dissolved Zirconium (Zr)	2009/12/14		101	%	90 - 110
		Method Blank	Dissolved Aluminum (Al)	2009/12/14	<0.005		mg/L	
			Dissolved Antimony (Sb)	2009/12/14	<0.0005		mg/L	
			Dissolved Arsenic (As)	2009/12/14	<0.001		mg/L	
			Dissolved Barium (Ba)	2009/12/14	<0.005		mg/L	
			Dissolved Beryllium (Be)	2009/12/14	<0.0005		mg/L	
			Dissolved Bismuth (Bi)	2009/12/14	<0.001		mg/L	
			Dissolved Boron (B)	2009/12/14	<0.01		mg/L	
			Dissolved Cadmium (Cd)	2009/12/14	<0.0001		mg/L	
			Dissolved Calcium (Ca)	2009/12/14	<0.2		mg/L	
			Dissolved Chromium (Cr)	2009/12/14	<0.005		mg/L	
			Dissolved Cobalt (Co)	2009/12/14	<0.0005		mg/L	
			Dissolved Copper (Cu)	2009/12/14	<0.001		mg/L	
			Dissolved Iron (Fe)	2009/12/14	<0.1		mg/L	
			Dissolved Lead (Pb)	2009/12/14	<0.0005		mg/L	
			Dissolved Lithium (Li)	2009/12/14	<0.005		mg/L	
			Dissolved Magnesium (Mg)	2009/12/14	<0.05		mg/L	
			Dissolved Manganese (Mn)	2009/12/14	<0.002		mg/L	
			Dissolved Molybdenum (Mo)	2009/12/14	<0.001		mg/L	
			Dissolved Nickel (Ni)	2009/12/14	<0.001		mg/L	
			Dissolved Phosphorus (P)	2009/12/14	<0.1		mg/L	
			Dissolved Potassium (K)	2009/12/14	<0.2		mg/L	
			Dissolved Selenium (Se)	2009/12/14	<0.002		mg/L	
			Dissolved Silicon (Si)	2009/12/14	<0.05		mg/L	
			Dissolved Silver (Ag)	2009/12/14	<0.0001		mg/L	
			Dissolved Sodium (Na)	2009/12/14	<0.1		mg/L	
			Dissolved Strontium (Sr)	2009/12/14	<0.001		mg/L	
			Dissolved Tellurium (Te)	2009/12/14	<0.001		mg/L	
			Dissolved Thallium (Tl)	2009/12/14	<0.00005		mg/L	
			Dissolved Thorium (Th)	2009/12/14	<0.001		mg/L	
			Dissolved Tin (Sn)	2009/12/14	<0.001		mg/L	
			Dissolved Titanium (Ti)	2009/12/14	<0.005		mg/L	
			Dissolved Tungsten (W)	2009/12/14	<0.001		mg/L	
			Dissolved Uranium (U)	2009/12/14	<0.0001		mg/L	
			Dissolved Vanadium (V)	2009/12/14	<0.001		mg/L	
			Dissolved Zinc (Zn)	2009/12/14	<0.005		mg/L	
			Dissolved Zirconium (Zr)	2009/12/14	<0.001		mg/L	
		RPD	Dissolved Antimony (Sb)	2009/12/14	NC		%	25

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2035169 HRE	RPD	Dissolved Arsenic (As)	2009/12/14	2.4		%	25
		Dissolved Barium (Ba)	2009/12/14	2.1		%	25
		Dissolved Beryllium (Be)	2009/12/14	NC		%	25
		Dissolved Boron (B)	2009/12/14	0.4		%	25
		Dissolved Cadmium (Cd)	2009/12/14	NC		%	25
		Dissolved Chromium (Cr)	2009/12/14	NC		%	25
		Dissolved Cobalt (Co)	2009/12/14	4.7		%	25
		Dissolved Copper (Cu)	2009/12/14	NC		%	25
		Dissolved Lead (Pb)	2009/12/14	NC		%	25
		Dissolved Molybdenum (Mo)	2009/12/14	NC		%	25
		Dissolved Nickel (Ni)	2009/12/14	NC		%	25
		Dissolved Selenium (Se)	2009/12/14	NC		%	25
		Dissolved Silver (Ag)	2009/12/14	NC		%	25
		Dissolved Sodium (Na)	2009/12/14	1.6		%	25
		Dissolved Thallium (Tl)	2009/12/14	NC		%	25
		Dissolved Vanadium (V)	2009/12/14	NC		%	25
		Dissolved Zinc (Zn)	2009/12/14	NC		%	25
2035702 YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/14		100	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2009/12/14	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2009/12/14	1.5		%	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 #: A9G3994

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, 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. SCC and CALA have approved this reporting process and electronic report format.

Site: TANSLEY QUARRY
Your C.O.C. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G4697
Received: 2009/12/04, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/10	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/09	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/10	2009/12/10	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/11	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/10	2009/12/10	CAM SOP-00453	EPA 7470
Dissolved Metals by ICPMS	1	N/A	2009/12/11	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	1	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/11	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/10	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/10	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/11	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/11	2009/12/11	CAM SOP-00407	SM 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/07	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/08	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
Phone# (905) 817-5700

==

Site: TANSLEY QUARRY
Your C.O.C. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EO2328		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**MW5 DEEP**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	31000	1	2027949
Inorganics				
Total Ammonia-N	mg/L	43	0.5	2033031
Fluoride (F-)	mg/L	<0.1	0.1	2033127
Free Cyanide	mg/L	<0.002	0.002	2031484
Orthophosphate (P)	mg/L	<0.01	0.01	2033114
pH	pH	6.5		2033121
Phenols-4AAP	mg/L	0.006	0.001	2031417
Total Phosphorus	mg/L	1.1	0.2	2033550
Total Suspended Solids	mg/L	1500	10	2029724
Sulphide	mg/L	0.06	0.02	2032416
Turbidity	NTU	530	0.1	2029772
Alkalinity (Total as CaCO3)	mg/L	32	1	2033115
Nitrite (N)	mg/L	<0.01	0.01	2031274
Dissolved Chloride (Cl)	mg/L	50200	500	2032833
Nitrate (N)	mg/L	<0.1	0.1	2031274
Nitrate + Nitrite	mg/L	<0.1	0.1	2031274
Dissolved Bromide (Br-)	mg/L	587	50	2032833
Dissolved Sulphate (SO4)	mg/L	1260	10	2032833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2328		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**MW5 DEEP**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2032612
Dissolved Aluminum (Al)	mg/L	<0.5	0.5	2033737
Total Aluminum (Al)	mg/L	14	0.5	2030665
Dissolved Antimony (Sb)	mg/L	0.07	0.05	2033737
Total Antimony (Sb)	mg/L	0.05	0.05	2030665
Dissolved Arsenic (As)	mg/L	<0.1	0.1	2033737
Total Arsenic (As)	mg/L	<0.1	0.1	2030665
Dissolved Barium (Ba)	mg/L	<0.5	0.5	2033737
Total Barium (Ba)	mg/L	<0.5	0.5	2030665
Dissolved Beryllium (Be)	mg/L	<0.05	0.05	2033737
Total Beryllium (Be)	mg/L	<0.05	0.05	2030665
Dissolved Bismuth (Bi)	mg/L	<0.1	0.1	2033737
Total Bismuth (Bi)	mg/L	<0.1	0.1	2030665
Dissolved Boron (B)	mg/L	5	1	2033737
Total Boron (B)	mg/L	5	1	2030665
Dissolved Cadmium (Cd)	mg/L	0.01	0.01	2033737
Total Cadmium (Cd)	mg/L	0.01	0.01	2030665
Dissolved Calcium (Ca)	mg/L	8800	20	2033737
Total Calcium (Ca)	mg/L	8600	20	2030665
Dissolved Chromium (Cr)	mg/L	<0.5	0.5	2033737
Total Chromium (Cr)	mg/L	<0.5	0.5	2030665
Dissolved Cobalt (Co)	mg/L	<0.05	0.05	2033737
Total Cobalt (Co)	mg/L	<0.05	0.05	2030665
Dissolved Copper (Cu)	mg/L	<0.1	0.1	2033737
Total Copper (Cu)	mg/L	0.1	0.1	2030665
Dissolved Iron (Fe)	mg/L	29	10	2033737
Total Iron (Fe)	mg/L	49	10	2030665
Dissolved Lead (Pb)	mg/L	<0.05	0.05	2033737
Total Lead (Pb)	mg/L	<0.05	0.05	2030665
Dissolved Lithium (Li)	mg/L	13	0.5	2033737
Total Lithium (Li)	mg/L	14	0.5	2030665
Dissolved Magnesium (Mg)	mg/L	2100	5	2033737

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2328		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**MW5 DEEP**	**RDL**	**QC Batch**
Total Magnesium (Mg)	mg/L	2000	5	2030665
Dissolved Manganese (Mn)	mg/L	4.7	0.2	2033737
Total Manganese (Mn)	mg/L	5.0	0.2	2030665
Dissolved Molybdenum (Mo)	mg/L	<0.1	0.1	2033737
Total Molybdenum (Mo)	mg/L	<0.1	0.1	2030665
Dissolved Nickel (Ni)	mg/L	<0.1	0.1	2033737
Total Nickel (Ni)	mg/L	<0.1	0.1	2030665
Dissolved Phosphorus (P)	mg/L	<10	10	2033737
Dissolved Potassium (K)	mg/L	290	20	2033737
Total Potassium (K)	mg/L	280	20	2030665
Dissolved Selenium (Se)	mg/L	<0.2	0.2	2033737
Total Selenium (Se)	mg/L	<0.2	0.2	2030665
Dissolved Silicon (Si)	mg/L	<5	5	2033737
Total Silicon (Si)	mg/L	18	5	2030665
Dissolved Silver (Ag)	mg/L	<0.01	0.01	2033737
Total Silver (Ag)	mg/L	<0.01	0.01	2030665
Dissolved Sodium (Na)	mg/L	18000	10	2033737
Total Sodium (Na)	mg/L	17000	10	2030665
Dissolved Strontium (Sr)	mg/L	180	0.1	2033737
Total Strontium (Sr)	mg/L	180	0.1	2030665
Dissolved Tellurium (Te)	mg/L	<0.1	0.1	2033737
Total Tellurium (Te)	mg/L	<0.1	0.1	2030665
Dissolved Thallium (Tl)	mg/L	<0.005	0.005	2033737
Total Thallium (Tl)	mg/L	<0.005	0.005	2030665
Dissolved Thorium (Th)	mg/L	<0.1	0.1	2033737
Total Thorium (Th)	mg/L	<0.1	0.1	2030665
Dissolved Tin (Sn)	mg/L	<0.1	0.1	2033737
Total Tin (Sn)	mg/L	<0.1	0.1	2030665
Dissolved Titanium (Ti)	mg/L	<0.5	0.5	2033737
Total Titanium (Ti)	mg/L	<0.5	0.5	2030665
Dissolved Tungsten (W)	mg/L	<0.1	0.1	2033737
Total Tungsten (W)	mg/L	<0.1	0.1	2030665
Dissolved Uranium (U)	mg/L	<0.01	0.01	2033737

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2328		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**MW5 DEEP**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	<0.01	0.01	2030665
Dissolved Vanadium (V)	mg/L	<0.1	0.1	2033737
Total Vanadium (V)	mg/L	<0.1	0.1	2030665
Dissolved Zinc (Zn)	mg/L	<0.5	0.5	2033737
Total Zinc (Zn)	mg/L	<0.5	0.5	2030665
Dissolved Zirconium (Zr)	mg/L	<0.1	0.1	2033737
Total Zirconium (Zr)	mg/L	<0.1	0.1	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	10.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample EO2328-01: 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: MA9G4697

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2029724 JDO	QC Standard	Total Suspended Solids	2009/12/07		99	%	85 - 115
	Method Blank	Total Suspended Solids	2009/12/07	<10		mg/L	
	RPD	Total Suspended Solids	2009/12/07	NC		%	25
2029772 KTH	QC Standard	Turbidity	2009/12/08		101	%	85 - 115
	Method Blank	Turbidity	2009/12/08	<0.1		NTU	
	RPD	Turbidity	2009/12/08	NC		%	25
2030665 JBW	Matrix Spike						
	[EO2327-04]	Total Aluminum (Al)	2009/12/10		101	%	80 - 120
		Total Antimony (Sb)	2009/12/10		117	%	80 - 120
		Total Arsenic (As)	2009/12/10		109	%	80 - 120
		Total Barium (Ba)	2009/12/10		99	%	80 - 120
		Total Beryllium (Be)	2009/12/10		102	%	75 - 125
		Total Bismuth (Bi)	2009/12/10		100	%	75 - 125
		Total Boron (B)	2009/12/10		NC	%	75 - 125
		Total Cadmium (Cd)	2009/12/10		107	%	80 - 120
		Total Calcium (Ca)	2009/12/10		NC	%	75 - 125
		Total Chromium (Cr)	2009/12/10		104	%	80 - 120
		Total Cobalt (Co)	2009/12/10		103	%	80 - 120
		Total Copper (Cu)	2009/12/10		97	%	80 - 120
		Total Iron (Fe)	2009/12/10		111	%	80 - 120
		Total Lead (Pb)	2009/12/10		98	%	80 - 120
		Total Lithium (Li)	2009/12/10		NC	%	75 - 125
		Total Magnesium (Mg)	2009/12/10		NC	%	80 - 120
		Total Manganese (Mn)	2009/12/10		106	%	80 - 120
		Total Molybdenum (Mo)	2009/12/10		109	%	80 - 120
		Total Nickel (Ni)	2009/12/10		98	%	80 - 120
		Total Potassium (K)	2009/12/10		NC	%	75 - 125
		Total Selenium (Se)	2009/12/10		105	%	75 - 125
		Total Silicon (Si)	2009/12/10		100	%	75 - 125
		Total Silver (Ag)	2009/12/10		98	%	80 - 120
		Total Sodium (Na)	2009/12/10		NC	%	75 - 125
		Total Strontium (Sr)	2009/12/10		NC	%	80 - 120
		Total Tellurium (Te)	2009/12/10		104	%	75 - 125
		Total Thallium (Tl)	2009/12/10		97	%	80 - 120
		Total Thorium (Th)	2009/12/10		102	%	75 - 125
		Total Tin (Sn)	2009/12/10		110	%	75 - 125
		Total Titanium (Ti)	2009/12/10		111	%	75 - 125
		Total Tungsten (W)	2009/12/10		107	%	75 - 125
		Total Uranium (U)	2009/12/10		105	%	80 - 120
		Total Vanadium (V)	2009/12/10		105	%	80 - 120
		Total Zinc (Zn)	2009/12/10		101	%	80 - 120
		Total Zirconium (Zr)	2009/12/10		109	%	75 - 125
	Spiked Blank	Total Aluminum (Al)	2009/12/10		99	%	80 - 120
		Total Antimony (Sb)	2009/12/10		113	%	82 - 120
		Total Arsenic (As)	2009/12/10		107	%	86 - 119
		Total Barium (Ba)	2009/12/10		98	%	83 - 115
		Total Beryllium (Be)	2009/12/10		103	%	85 - 132
		Total Bismuth (Bi)	2009/12/10		101	%	78 - 120
		Total Boron (B)	2009/12/10		110	%	78 - 133
		Total Cadmium (Cd)	2009/12/10		107	%	85 - 116
		Total Calcium (Ca)	2009/12/10		107	%	75 - 125
		Total Chromium (Cr)	2009/12/10		102	%	80 - 120
		Total Cobalt (Co)	2009/12/10		102	%	82 - 117
		Total Copper (Cu)	2009/12/10		100	%	80 - 117
		Total Iron (Fe)	2009/12/10		110	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030665 JBW	Spiked Blank	Total Lead (Pb)	2009/12/10		98	%	80 - 120
		Total Lithium (Li)	2009/12/10		101	%	86 - 131
		Total Magnesium (Mg)	2009/12/10		106	%	80 - 120
		Total Manganese (Mn)	2009/12/10		107	%	80 - 120
		Total Molybdenum (Mo)	2009/12/10		104	%	82 - 117
		Total Nickel (Ni)	2009/12/10		100	%	81 - 117
		Total Potassium (K)	2009/12/10		103	%	75 - 125
		Total Selenium (Se)	2009/12/10		105	%	82 - 118
		Total Silicon (Si)	2009/12/10		101	%	67 - 140
		Total Silver (Ag)	2009/12/10		101	%	80 - 120
		Total Sodium (Na)	2009/12/10		105	%	75 - 125
		Total Strontium (Sr)	2009/12/10		106	%	83 - 120
		Total Tellurium (Te)	2009/12/10		104	%	80 - 116
		Total Thallium (Tl)	2009/12/10		97	%	80 - 129
		Total Thorium (Th)	2009/12/10		99	%	80 - 125
		Total Tin (Sn)	2009/12/10		107	%	83 - 119
		Total Titanium (Ti)	2009/12/10		106	%	60 - 125
		Total Tungsten (W)	2009/12/10		104	%	81 - 123
		Total Uranium (U)	2009/12/10		103	%	82 - 120
		Total Vanadium (V)	2009/12/10		101	%	82 - 118
		Total Zinc (Zn)	2009/12/10		103	%	80 - 120
		Total Zirconium (Zr)	2009/12/10		106	%	84 - 118
	Method Blank	Total Aluminum (Al)	2009/12/10	<0.005		mg/L	
		Total Antimony (Sb)	2009/12/10	<0.0005		mg/L	
		Total Arsenic (As)	2009/12/10	<0.001		mg/L	
		Total Barium (Ba)	2009/12/10	<0.005		mg/L	
		Total Beryllium (Be)	2009/12/10	<0.0005		mg/L	
		Total Bismuth (Bi)	2009/12/10	<0.001		mg/L	
		Total Boron (B)	2009/12/10	0.01, RDL=0.01		mg/L	
		Total Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
		Total Calcium (Ca)	2009/12/10	<0.2		mg/L	
		Total Chromium (Cr)	2009/12/10	<0.005		mg/L	
		Total Cobalt (Co)	2009/12/10	<0.0005		mg/L	
		Total Copper (Cu)	2009/12/10	<0.001		mg/L	
		Total Iron (Fe)	2009/12/10	<0.1		mg/L	
		Total Lead (Pb)	2009/12/10	<0.0005		mg/L	
		Total Lithium (Li)	2009/12/10	<0.005		mg/L	
		Total Magnesium (Mg)	2009/12/10	<0.05		mg/L	
		Total Manganese (Mn)	2009/12/10	<0.002		mg/L	
		Total Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
		Total Nickel (Ni)	2009/12/10	<0.001		mg/L	
		Total Potassium (K)	2009/12/10	<0.2		mg/L	
		Total Selenium (Se)	2009/12/10	<0.002		mg/L	
		Total Silicon (Si)	2009/12/10	<0.05		mg/L	
		Total Silver (Ag)	2009/12/10	<0.0001		mg/L	
		Total Sodium (Na)	2009/12/10	<0.1		mg/L	
		Total Strontium (Sr)	2009/12/10	<0.001		mg/L	
		Total Tellurium (Te)	2009/12/10	<0.001		mg/L	
		Total Thallium (Tl)	2009/12/10	<0.00005		mg/L	
		Total Thorium (Th)	2009/12/10	<0.001		mg/L	
		Total Tin (Sn)	2009/12/10	<0.001		mg/L	
		Total Titanium (Ti)	2009/12/10	<0.005		mg/L	
		Total Tungsten (W)	2009/12/10	<0.001		mg/L	
		Total Uranium (U)	2009/12/10	<0.0001		mg/L	
		Total Vanadium (V)	2009/12/10	<0.001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030665 JBW	Method Blank	Total Zinc (Zn)	2009/12/10	<0.005		mg/L	
		Total Zirconium (Zr)	2009/12/10	<0.001		mg/L	
2031274 CCI	Matrix Spike	Nitrite (N)	2009/12/10		100	%	75 - 125
		Nitrate (N)	2009/12/10		93	%	75 - 125
	Spiked Blank	Nitrite (N)	2009/12/10		104	%	80 - 120
		Nitrate (N)	2009/12/10		96	%	80 - 120
	Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
		Nitrate (N)	2009/12/10	<0.1		mg/L	
		Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
	RPD	Nitrite (N)	2009/12/10	NC		%	25
		Nitrate (N)	2009/12/10	NC		%	25
2031417 BMO	Matrix Spike [EO2326-08]	Phenols-4AAP	2009/12/10		97	%	75 - 125
	Spiked Blank	Phenols-4AAP	2009/12/10		101	%	75 - 125
	Method Blank	Phenols-4AAP	2009/12/10	<0.001		mg/L	
2031484 CP	Matrix Spike	Free Cyanide	2009/12/09		83	%	80 - 120
	Spiked Blank	Free Cyanide	2009/12/09		103	%	80 - 120
	Method Blank	Free Cyanide	2009/12/09	<0.002		mg/L	
	RPD	Free Cyanide	2009/12/09	NC		%	25
2032416 SAC	Matrix Spike	Sulphide	2009/12/10		NC (1)	%	75 - 125
	Spiked Blank	Sulphide	2009/12/10		102	%	85 - 115
	Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
	RPD	Sulphide	2009/12/10	10.3		%	25
2032612 MC	Matrix Spike	Mercury (Hg)	2009/12/10		100	%	80 - 120
	Spiked Blank	Mercury (Hg)	2009/12/10		98	%	80 - 120
	Method Blank	Mercury (Hg)	2009/12/10	<0.0001		mg/L	
	RPD	Mercury (Hg)	2009/12/10	NC		%	25
2032833 SAC	Matrix Spike [EO2327-01]	Dissolved Chloride (Cl)	2009/12/10		NC	%	80 - 120
		Dissolved Bromide (Br-)	2009/12/10		108	%	80 - 120
		Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		97	%	85 - 115
		Dissolved Bromide (Br-)	2009/12/10		107	%	85 - 115
		Dissolved Sulphate (SO4)	2009/12/10		100	%	85 - 115
	Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
		Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
		Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
2033031 ADB	Matrix Spike	Total Ammonia-N	2009/12/11		100	%	80 - 120
	Spiked Blank	Total Ammonia-N	2009/12/11		101	%	80 - 120
	Method Blank	Total Ammonia-N	2009/12/11	<0.05		mg/L	
	RPD	Total Ammonia-N	2009/12/11	NC		%	25
2033114 DRM	Matrix Spike	Orthophosphate (P)	2009/12/11		101	%	75 - 125
	Spiked Blank	Orthophosphate (P)	2009/12/11		98	%	80 - 120
	Method Blank	Orthophosphate (P)	2009/12/11	<0.01		mg/L	
	RPD	Orthophosphate (P)	2009/12/11	NC		%	25
2033115 YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/10		95	%	85 - 115
	Method Blank	Alkalinity (Total as CaCO3)	2009/12/10	<1		mg/L	
	RPD	Alkalinity (Total as CaCO3)	2009/12/10	0.4		%	25
2033127 YPA	Matrix Spike	Fluoride (F-)	2009/12/10		100	%	80 - 120
	Spiked Blank	Fluoride (F-)	2009/12/10		110	%	80 - 120
	Method Blank	Fluoride (F-)	2009/12/10	<0.1		mg/L	
	RPD	Fluoride (F-)	2009/12/10	1.5		%	25
2033550 AHA	Matrix Spike	Total Phosphorus	2009/12/11		103	%	75 - 125
	QC Standard	Total Phosphorus	2009/12/11		104	%	85 - 115
	Spiked Blank	Total Phosphorus	2009/12/11		102	%	75 - 125

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2033550	AHA	Method Blank	Total Phosphorus	2009/12/11	<0.02		mg/L	
		RPD	Total Phosphorus	2009/12/11	2.7		%	25
2033737	JBW	Matrix Spike	Dissolved Aluminum (Al)	2009/12/11		98	%	80 - 120
			Dissolved Antimony (Sb)	2009/12/11		108	%	80 - 120
			Dissolved Arsenic (As)	2009/12/11		96	%	80 - 120
			Dissolved Barium (Ba)	2009/12/11		101	%	80 - 120
			Dissolved Beryllium (Be)	2009/12/11		101	%	80 - 120
			Dissolved Bismuth (Bi)	2009/12/11		99	%	80 - 120
			Dissolved Boron (B)	2009/12/11		107	%	80 - 120
			Dissolved Cadmium (Cd)	2009/12/11		105	%	80 - 120
			Dissolved Calcium (Ca)	2009/12/11		NC (1)	%	80 - 120
			Dissolved Chromium (Cr)	2009/12/11		98	%	80 - 120
			Dissolved Cobalt (Co)	2009/12/11		99	%	80 - 120
			Dissolved Copper (Cu)	2009/12/11		95	%	80 - 120
			Dissolved Iron (Fe)	2009/12/11		100	%	80 - 120
			Dissolved Lead (Pb)	2009/12/11		99	%	80 - 120
			Dissolved Lithium (Li)	2009/12/11		97	%	80 - 120
			Dissolved Magnesium (Mg)	2009/12/11		98	%	80 - 120
			Dissolved Manganese (Mn)	2009/12/11		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2009/12/11		108	%	80 - 120
			Dissolved Nickel (Ni)	2009/12/11		97	%	80 - 120
			Dissolved Phosphorus (P)	2009/12/11		107	%	80 - 120
			Dissolved Potassium (K)	2009/12/11		103	%	80 - 120
			Dissolved Selenium (Se)	2009/12/11		102	%	80 - 120
			Dissolved Silicon (Si)	2009/12/11		102	%	80 - 120
			Dissolved Silver (Ag)	2009/12/11		102	%	80 - 120
			Dissolved Sodium (Na)	2009/12/11		NC (1)	%	80 - 120
			Dissolved Strontium (Sr)	2009/12/11		96	%	80 - 120
			Dissolved Tellurium (Te)	2009/12/11		104	%	80 - 120
			Dissolved Thallium (Tl)	2009/12/11		100	%	80 - 120
			Dissolved Thorium (Th)	2009/12/11		96	%	80 - 120
			Dissolved Tin (Sn)	2009/12/11		107	%	80 - 120
			Dissolved Titanium (Ti)	2009/12/11		100	%	80 - 120
			Dissolved Tungsten (W)	2009/12/11		107	%	80 - 120
			Dissolved Uranium (U)	2009/12/11		103	%	80 - 120
			Dissolved Vanadium (V)	2009/12/11		99	%	80 - 120
			Dissolved Zinc (Zn)	2009/12/11		98	%	80 - 120
			Dissolved Zirconium (Zr)	2009/12/11		108	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2009/12/11		103	%	90 - 110
			Dissolved Antimony (Sb)	2009/12/11		103	%	90 - 110
			Dissolved Arsenic (As)	2009/12/11		97	%	90 - 110
			Dissolved Barium (Ba)	2009/12/11		99	%	90 - 110
			Dissolved Beryllium (Be)	2009/12/11		100	%	90 - 110
			Dissolved Bismuth (Bi)	2009/12/11		99	%	90 - 110
			Dissolved Boron (B)	2009/12/11		103	%	90 - 110
			Dissolved Cadmium (Cd)	2009/12/11		104	%	90 - 110
			Dissolved Calcium (Ca)	2009/12/11		100	%	90 - 110
			Dissolved Chromium (Cr)	2009/12/11		101	%	90 - 110
			Dissolved Cobalt (Co)	2009/12/11		102	%	90 - 110
			Dissolved Copper (Cu)	2009/12/11		99	%	90 - 110
			Dissolved Iron (Fe)	2009/12/11		102	%	90 - 110
			Dissolved Lead (Pb)	2009/12/11		99	%	90 - 110
			Dissolved Lithium (Li)	2009/12/11		97	%	90 - 110
			Dissolved Magnesium (Mg)	2009/12/11		102	%	90 - 110
			Dissolved Manganese (Mn)	2009/12/11		102	%	90 - 110

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2033737 JBW	Spiked Blank	Dissolved Molybdenum (Mo)	2009/12/11		103	%	90 - 110
		Dissolved Nickel (Ni)	2009/12/11		100	%	90 - 110
		Dissolved Phosphorus (P)	2009/12/11		107	%	90 - 110
		Dissolved Potassium (K)	2009/12/11		100	%	90 - 110
		Dissolved Selenium (Se)	2009/12/11		103	%	90 - 110
		Dissolved Silicon (Si)	2009/12/11		101	%	90 - 110
		Dissolved Silver (Ag)	2009/12/11		102	%	90 - 110
		Dissolved Sodium (Na)	2009/12/11		103	%	90 - 110
		Dissolved Strontium (Sr)	2009/12/11		99	%	90 - 110
		Dissolved Tellurium (Te)	2009/12/11		101	%	90 - 110
		Dissolved Thallium (Tl)	2009/12/11		100	%	90 - 110
		Dissolved Thorium (Th)	2009/12/11		97	%	90 - 110
		Dissolved Tin (Sn)	2009/12/11		102	%	90 - 110
		Dissolved Titanium (Ti)	2009/12/11		99	%	90 - 110
		Dissolved Tungsten (W)	2009/12/11		102	%	90 - 110
		Dissolved Uranium (U)	2009/12/11		102	%	90 - 110
		Dissolved Vanadium (V)	2009/12/11		101	%	90 - 110
		Dissolved Zinc (Zn)	2009/12/11		102	%	90 - 110
		Dissolved Zirconium (Zr)	2009/12/11		102	%	90 - 110
	Method Blank	Dissolved Aluminum (Al)	2009/12/11	<0.005		mg/L	
		Dissolved Antimony (Sb)	2009/12/11	<0.0005		mg/L	
		Dissolved Arsenic (As)	2009/12/11	<0.001		mg/L	
		Dissolved Barium (Ba)	2009/12/11	<0.005		mg/L	
		Dissolved Beryllium (Be)	2009/12/11	<0.0005		mg/L	
		Dissolved Bismuth (Bi)	2009/12/11	<0.001		mg/L	
		Dissolved Boron (B)	2009/12/11	<0.01		mg/L	
		Dissolved Cadmium (Cd)	2009/12/11	<0.0001		mg/L	
		Dissolved Calcium (Ca)	2009/12/11	<0.2		mg/L	
		Dissolved Chromium (Cr)	2009/12/11	<0.005		mg/L	
		Dissolved Cobalt (Co)	2009/12/11	<0.0005		mg/L	
		Dissolved Copper (Cu)	2009/12/11	<0.001		mg/L	
		Dissolved Iron (Fe)	2009/12/11	<0.1		mg/L	
		Dissolved Lead (Pb)	2009/12/11	<0.0005		mg/L	
		Dissolved Lithium (Li)	2009/12/11	<0.005		mg/L	
		Dissolved Magnesium (Mg)	2009/12/11	<0.05		mg/L	
		Dissolved Manganese (Mn)	2009/12/11	<0.002		mg/L	
		Dissolved Molybdenum (Mo)	2009/12/11	<0.001		mg/L	
		Dissolved Nickel (Ni)	2009/12/11	<0.001		mg/L	
		Dissolved Phosphorus (P)	2009/12/11	<0.1		mg/L	
		Dissolved Potassium (K)	2009/12/11	<0.2		mg/L	
		Dissolved Selenium (Se)	2009/12/11	<0.002		mg/L	
		Dissolved Silicon (Si)	2009/12/11	<0.05		mg/L	
		Dissolved Silver (Ag)	2009/12/11	<0.0001		mg/L	
		Dissolved Sodium (Na)	2009/12/11	<0.1		mg/L	
		Dissolved Strontium (Sr)	2009/12/11	<0.001		mg/L	
		Dissolved Tellurium (Te)	2009/12/11	<0.001		mg/L	
		Dissolved Thallium (Tl)	2009/12/11	<0.00005		mg/L	
		Dissolved Thorium (Th)	2009/12/11	<0.001		mg/L	
		Dissolved Tin (Sn)	2009/12/11	<0.001		mg/L	
		Dissolved Titanium (Ti)	2009/12/11	<0.005		mg/L	
		Dissolved Tungsten (W)	2009/12/11	<0.001		mg/L	
		Dissolved Uranium (U)	2009/12/11	<0.0001		mg/L	
		Dissolved Vanadium (V)	2009/12/11	<0.001		mg/L	
		Dissolved Zinc (Zn)	2009/12/11	<0.005		mg/L	
		Dissolved Zirconium (Zr)	2009/12/11	<0.001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2033737	JBW	RPD	Dissolved Lead (Pb)	2009/12/11	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.

Validation Signature Page

Maxxam Job #: A9G4697

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

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. SCC and CALA have approved this reporting process and electronic report format.

BEKKERS

Site: TANSLEY QUARRY
Your C.O.C. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G4697
Received: 2009/12/04, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/10	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/09	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/10	2009/12/10	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/14	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/07	2009/12/08	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/11	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/10	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/10	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/11	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/10	2009/12/11	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/07	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/08	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EO2327	EO2327		
Sampling Date		2009/12/04	2009/12/04		
COC Number		172018-0	172018-0		
	Units	**3466 BURNHAMTHORPE ROAD**	**3466 BURNHAMTHORPE ROAD Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	740		1	2027949
Inorganics					
Total Ammonia-N	mg/L	1.0		0.05	2033031
Fluoride (F-)	mg/L	0.2		0.1	2033127
Free Cyanide	mg/L	<0.002		0.002	2031484
Orthophosphate (P)	mg/L	<0.01		0.01	2033114
pH	pH	7.8			2033121
Phenols-4AAP	mg/L	0.001		0.001	2031417
Total Phosphorus	mg/L	<0.002		0.002	2032834
Total Suspended Solids	mg/L	<10		10	2029724
Sulphide	mg/L	<0.02		0.02	2032416
Turbidity	NTU	0.6		0.1	2029772
Alkalinity (Total as CaCO3)	mg/L	77		1	2033115
Nitrite (N)	mg/L	<0.01		0.01	2031266
Dissolved Chloride (Cl)	mg/L	264	269	10	2032833
Nitrate (N)	mg/L	<0.1		0.1	2031266
Nitrate + Nitrite	mg/L	<0.1		0.1	2031266
Dissolved Bromide (Br-)	mg/L	3	3	1	2032833
Dissolved Sulphate (SO4)	mg/L	838	841	10	2032833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2327	EO2327		
Sampling Date		2009/12/04	2009/12/04		
COC Number		172018-0	172018-0		
	Units	**3466 BURNHAMTHORPE ROAD**	**3466 BURNHAMTHORPE ROAD Lab-Dup**	**RDL**	**QC Batch**
Metals					
Mercury (Hg)	mg/L	<0.0001		0.0001	2029590
Total Aluminum (Al)	mg/L	0.012	0.009	0.005	2030665
Total Antimony (Sb)	mg/L	<0.0005	<0.0005	0.0005	2030665
Total Arsenic (As)	mg/L	<0.001	<0.001	0.001	2030665
Total Barium (Ba)	mg/L	0.010	0.009	0.005	2030665
Total Beryllium (Be)	mg/L	<0.0005	<0.0005	0.0005	2030665
Total Bismuth (Bi)	mg/L	<0.001	<0.001	0.001	2030665
Total Boron (B)	mg/L	1.8	1.8	0.01	2030665
Total Cadmium (Cd)	mg/L	<0.0001	<0.0001	0.0001	2030665
Total Calcium (Ca)	mg/L	190	190	0.2	2030665
Total Chromium (Cr)	mg/L	<0.005	<0.005	0.005	2030665
Total Cobalt (Co)	mg/L	<0.0005	<0.0005	0.0005	2030665
Total Copper (Cu)	mg/L	0.006	0.005	0.001	2030665
Total Iron (Fe)	mg/L	<0.1	<0.1	0.1	2030665
Total Lead (Pb)	mg/L	0.0010	0.0009	0.0005	2030665
Total Lithium (Li)	mg/L	0.14	0.14	0.005	2030665
Total Magnesium (Mg)	mg/L	79	78	0.05	2030665
Total Manganese (Mn)	mg/L	0.15	0.15	0.002	2030665
Total Molybdenum (Mo)	mg/L	0.018	0.017	0.001	2030665
Total Nickel (Ni)	mg/L	<0.001	<0.001	0.001	2030665
Total Potassium (K)	mg/L	17	17	0.2	2030665
Total Selenium (Se)	mg/L	<0.002	<0.002	0.002	2030665
Total Silicon (Si)	mg/L	4.3	4.2	0.05	2030665
Total Silver (Ag)	mg/L	<0.0001	<0.0001	0.0001	2030665
Total Sodium (Na)	mg/L	260	250	0.1	2030665
Total Strontium (Sr)	mg/L	12	12	0.001	2030665
Total Tellurium (Te)	mg/L	<0.001	<0.001	0.001	2030665
Total Thallium (Tl)	mg/L	<0.00005	<0.00005	0.00005	2030665
Total Thorium (Th)	mg/L	<0.001	<0.001	0.001	2030665
Total Tin (Sn)	mg/L	<0.001	<0.001	0.001	2030665
Total Titanium (Ti)	mg/L	<0.005	<0.005	0.005	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2327	EO2327		
Sampling Date		2009/12/04	2009/12/04		
COC Number		172018-0	172018-0		
	Units	**3466 BURNHAMTHORPE ROAD**	**3466 BURNHAMTHORPE ROAD Lab-Dup**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	<0.001	<0.001	0.001	2030665
Total Uranium (U)	mg/L	0.0004	0.0004	0.0001	2030665
Total Vanadium (V)	mg/L	<0.001	<0.001	0.001	2030665
Total Zinc (Zn)	mg/L	<0.03 (1)	<0.03	0.03	2030665
Total Zirconium (Zr)	mg/L	<0.001	<0.001	0.001	2030665

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Golder Associates Ltd

Project name: TANSLEY QUARRY
Sampler Initials: AF

Package 1	10.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

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: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2029590	MC	Matrix Spike	Mercury (Hg)	2009/12/08		99	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/08		97	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/08	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/08	NC		%	25
2029724	JDO	QC Standard	Total Suspended Solids	2009/12/07		99	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/07	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/07	NC		%	25
2029772	KTH	QC Standard	Turbidity	2009/12/08		101	%	85 - 115
		Method Blank	Turbidity	2009/12/08	<0.1		NTU	
		RPD	Turbidity	2009/12/08	NC		%	25
2030665	JBW	Matrix Spike						
		[EO2327-04]	Total Aluminum (Al)	2009/12/10		101	%	80 - 120
			Total Antimony (Sb)	2009/12/10		117	%	80 - 120
			Total Arsenic (As)	2009/12/10		109	%	80 - 120
			Total Barium (Ba)	2009/12/10		99	%	80 - 120
			Total Beryllium (Be)	2009/12/10		102	%	75 - 125
			Total Bismuth (Bi)	2009/12/10		100	%	75 - 125
			Total Boron (B)	2009/12/10		NC	%	75 - 125
			Total Cadmium (Cd)	2009/12/10		107	%	80 - 120
			Total Calcium (Ca)	2009/12/10		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/10		104	%	80 - 120
			Total Cobalt (Co)	2009/12/10		103	%	80 - 120
			Total Copper (Cu)	2009/12/10		97	%	80 - 120
			Total Iron (Fe)	2009/12/10		111	%	80 - 120
			Total Lead (Pb)	2009/12/10		98	%	80 - 120
			Total Lithium (Li)	2009/12/10		NC	%	75 - 125
			Total Magnesium (Mg)	2009/12/10		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/10		106	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		109	%	80 - 120
			Total Nickel (Ni)	2009/12/10		98	%	80 - 120
			Total Potassium (K)	2009/12/10		NC	%	75 - 125
			Total Selenium (Se)	2009/12/10		105	%	75 - 125
			Total Silicon (Si)	2009/12/10		100	%	75 - 125
			Total Silver (Ag)	2009/12/10		98	%	80 - 120
			Total Sodium (Na)	2009/12/10		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/10		NC	%	80 - 120
			Total Tellurium (Te)	2009/12/10		104	%	75 - 125
			Total Thallium (Tl)	2009/12/10		97	%	80 - 120
			Total Thorium (Th)	2009/12/10		102	%	75 - 125
			Total Tin (Sn)	2009/12/10		110	%	75 - 125
			Total Titanium (Ti)	2009/12/10		111	%	75 - 125
			Total Tungsten (W)	2009/12/10		107	%	75 - 125
			Total Uranium (U)	2009/12/10		105	%	80 - 120
			Total Vanadium (V)	2009/12/10		105	%	80 - 120
			Total Zinc (Zn)	2009/12/10		101	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		109	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/10		99	%	80 - 120
			Total Antimony (Sb)	2009/12/10		113	%	82 - 120
			Total Arsenic (As)	2009/12/10		107	%	86 - 119
			Total Barium (Ba)	2009/12/10		98	%	83 - 115
			Total Beryllium (Be)	2009/12/10		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/10		101	%	78 - 120
			Total Boron (B)	2009/12/10		110	%	78 - 133
			Total Cadmium (Cd)	2009/12/10		107	%	85 - 116
			Total Calcium (Ca)	2009/12/10		107	%	75 - 125

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030665	JBW	Spiked Blank	Total Chromium (Cr)	2009/12/10		102	%	80 - 120
			Total Cobalt (Co)	2009/12/10		102	%	82 - 117
			Total Copper (Cu)	2009/12/10		100	%	80 - 117
			Total Iron (Fe)	2009/12/10		110	%	80 - 120
			Total Lead (Pb)	2009/12/10		98	%	80 - 120
			Total Lithium (Li)	2009/12/10		101	%	86 - 131
			Total Magnesium (Mg)	2009/12/10		106	%	80 - 120
			Total Manganese (Mn)	2009/12/10		107	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		104	%	82 - 117
			Total Nickel (Ni)	2009/12/10		100	%	81 - 117
			Total Potassium (K)	2009/12/10		103	%	75 - 125
			Total Selenium (Se)	2009/12/10		105	%	82 - 118
			Total Silicon (Si)	2009/12/10		101	%	67 - 140
			Total Silver (Ag)	2009/12/10		101	%	80 - 120
			Total Sodium (Na)	2009/12/10		105	%	75 - 125
			Total Strontium (Sr)	2009/12/10		106	%	83 - 120
			Total Tellurium (Te)	2009/12/10		104	%	80 - 116
			Total Thallium (Tl)	2009/12/10		97	%	80 - 129
			Total Thorium (Th)	2009/12/10		99	%	80 - 125
			Total Tin (Sn)	2009/12/10		107	%	83 - 119
			Total Titanium (Ti)	2009/12/10		106	%	60 - 125
			Total Tungsten (W)	2009/12/10		104	%	81 - 123
			Total Uranium (U)	2009/12/10		103	%	82 - 120
			Total Vanadium (V)	2009/12/10		101	%	82 - 118
			Total Zinc (Zn)	2009/12/10		103	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		106	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/10	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/10	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/10	<0.001		mg/L	
			Total Barium (Ba)	2009/12/10	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/10	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/10	<0.001		mg/L	
			Total Boron (B)	2009/12/10	0.01, RDL=0.01		mg/L	
			Total Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/10	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/10	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/10	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/10	<0.001		mg/L	
			Total Iron (Fe)	2009/12/10	<0.1		mg/L	
			Total Lead (Pb)	2009/12/10	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/10	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/10	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/10	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/10	<0.001		mg/L	
			Total Potassium (K)	2009/12/10	<0.2		mg/L	
			Total Selenium (Se)	2009/12/10	<0.002		mg/L	
			Total Silicon (Si)	2009/12/10	<0.05		mg/L	
			Total Silver (Ag)	2009/12/10	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/10	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/10	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/10	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/10	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/10	<0.001		mg/L	
			Total Tin (Sn)	2009/12/10	<0.001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030665	JBW	Method Blank	Total Titanium (Ti)	2009/12/10	<0.005		mg/L	
			Total Tungsten (W)	2009/12/10	<0.001		mg/L	
			Total Uranium (U)	2009/12/10	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/10	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/10	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/10	<0.001		mg/L	
		RPD [EO2327-04]	Total Aluminum (Al)	2009/12/10	NC		%	25
			Total Antimony (Sb)	2009/12/10	NC		%	25
			Total Arsenic (As)	2009/12/10	NC		%	25
			Total Barium (Ba)	2009/12/10	NC		%	25
			Total Beryllium (Be)	2009/12/10	NC		%	25
			Total Bismuth (Bi)	2009/12/10	NC		%	25
			Total Boron (B)	2009/12/10	4.0		%	25
			Total Cadmium (Cd)	2009/12/10	NC		%	25
			Total Calcium (Ca)	2009/12/10	2.8		%	25
			Total Chromium (Cr)	2009/12/10	NC		%	25
			Total Cobalt (Co)	2009/12/10	NC		%	25
			Total Copper (Cu)	2009/12/10	6.8		%	25
			Total Iron (Fe)	2009/12/10	NC		%	25
			Total Lead (Pb)	2009/12/10	NC		%	25
			Total Lithium (Li)	2009/12/10	0.9		%	25
			Total Magnesium (Mg)	2009/12/10	2.0		%	25
			Total Manganese (Mn)	2009/12/10	1.7		%	25
			Total Molybdenum (Mo)	2009/12/10	3.6		%	25
			Total Nickel (Ni)	2009/12/10	NC		%	25
			Total Potassium (K)	2009/12/10	2.6		%	25
			Total Selenium (Se)	2009/12/10	NC		%	25
			Total Silicon (Si)	2009/12/10	3.9		%	25
			Total Silver (Ag)	2009/12/10	NC		%	25
			Total Sodium (Na)	2009/12/10	2.5		%	25
			Total Strontium (Sr)	2009/12/10	4.9		%	25
			Total Tellurium (Te)	2009/12/10	NC		%	25
			Total Thallium (Tl)	2009/12/10	NC		%	25
			Total Thorium (Th)	2009/12/10	NC		%	25
			Total Tin (Sn)	2009/12/10	NC		%	25
			Total Titanium (Ti)	2009/12/10	NC		%	25
			Total Tungsten (W)	2009/12/10	NC		%	25
			Total Uranium (U)	2009/12/10	NC		%	25
			Total Vanadium (V)	2009/12/10	NC		%	25
			Total Zinc (Zn)	2009/12/10	NC		%	25
			Total Zirconium (Zr)	2009/12/10	NC		%	25
2031266	CCI	Matrix Spike	Nitrite (N)	2009/12/10		101	%	75 - 125
			Nitrate (N)	2009/12/10		NC	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		103	%	80 - 120
			Nitrate (N)	2009/12/10		98	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrate (N)	2009/12/10	6.9		%	25
2031417	BMO	Matrix Spike [EO2326-08]	Phenols-4AAP	2009/12/10		97	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/10		101	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/10	<0.001		mg/L	
2031484	CP	Matrix Spike	Free Cyanide	2009/12/09		83	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/09		103	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031484	CP	Method Blank	Free Cyanide	2009/12/09	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/09	NC		%	25
2032416	SAC	Matrix Spike	Sulphide	2009/12/10		NC (1)	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		102	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	10.3		%	25
2032833	SAC	Matrix Spike						
		[EO2327-01]	Dissolved Chloride (Cl)	2009/12/10		NC	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		108	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		97	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		107	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		100	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
		RPD [EO2327-01]	Dissolved Chloride (Cl)	2009/12/10	1.9		%	25
			Dissolved Bromide (Br-)	2009/12/10	NC		%	25
			Dissolved Sulphate (SO4)	2009/12/10	0.3		%	25
2032834	AHA	Matrix Spike	Total Phosphorus	2009/12/11		106	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/11		104	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/11		105	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/11	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/11	NC		%	25
2033031	ADB	Matrix Spike	Total Ammonia-N	2009/12/11		100	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/11		101	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/11	<0.05		mg/L	
		RPD	Total Ammonia-N	2009/12/11	NC		%	25
2033114	DRM	Matrix Spike	Orthophosphate (P)	2009/12/11		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/11		98	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/11	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/11	NC		%	25
2033115	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/10		95	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/10	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2009/12/10	0.4		%	25
2033127	YPA	Matrix Spike	Fluoride (F-)	2009/12/10		100	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/10		110	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/10	<0.1		mg/L	
		RPD	Fluoride (F-)	2009/12/10	1.5		%	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.

Validation Signature Page

Maxxam Job #: A9G4697

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

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. SCC and CALA have approved this reporting process and electronic report format.

FINUCCI

Site: TANSLEY QUARRY
Your C.O.C. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3994
Received: 2009/12/03, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/09	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/07	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/09	2009/12/09	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/11	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/07	2009/12/08	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/10	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/08	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/09	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/10	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/09	2009/12/10	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN9003	EN9003		
Sampling Date		2009/12/03	2009/12/03		
COC Number		172018-0	172018-0		
	Units	**5300 NO1 SDRD FINUCCI**	**5300 NO1 SDRD FINUCCI Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	520		1	2026931
Inorganics					
Total Ammonia-N	mg/L	1.3		0.05	2032408
Fluoride (F-)	mg/L	0.3	0.3	0.1	2032034
Free Cyanide	mg/L	<0.002		0.002	2027715
Orthophosphate (P)	mg/L	<0.01		0.01	2032046
pH	pH	8.0	8.0		2032036
Phenols-4AAP	mg/L	<0.001		0.001	2027751
Total Phosphorus	mg/L	<0.002		0.002	2031510
Total Suspended Solids	mg/L	<10		10	2027864
Sulphide	mg/L	<0.02		0.02	2031349
Turbidity	NTU	2.0		0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	404	403	1	2032035
Nitrite (N)	mg/L	<0.01		0.01	2030091
Dissolved Chloride (Cl)	mg/L	18		1	2032469
Nitrate (N)	mg/L	0.7		0.1	2030091
Nitrate + Nitrite	mg/L	0.7		0.1	2030091
Dissolved Bromide (Br-)	mg/L	<1		1	2032469
Dissolved Sulphate (SO4)	mg/L	338		1	2032469

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN9003		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**5300 NO1 SDRD FINUCCI**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2029098
Total Aluminum (Al)	mg/L	0.010	0.005	2031362
Total Antimony (Sb)	mg/L	<0.0005	0.0005	2031362
Total Arsenic (As)	mg/L	<0.001	0.001	2031362
Total Barium (Ba)	mg/L	0.014	0.005	2031362
Total Beryllium (Be)	mg/L	<0.0005	0.0005	2031362
Total Bismuth (Bi)	mg/L	<0.001	0.001	2031362
Total Boron (B)	mg/L	3.0	0.01	2031362
Total Cadmium (Cd)	mg/L	<0.0001	0.0001	2031362
Total Calcium (Ca)	mg/L	89	0.2	2031362
Total Chromium (Cr)	mg/L	<0.005	0.005	2031362
Total Cobalt (Co)	mg/L	<0.0005	0.0005	2031362
Total Copper (Cu)	mg/L	0.016	0.001	2031362
Total Iron (Fe)	mg/L	0.2	0.1	2031362
Total Lead (Pb)	mg/L	0.0016	0.0005	2031362
Total Lithium (Li)	mg/L	0.16	0.005	2031362
Total Magnesium (Mg)	mg/L	71	0.05	2031362
Total Manganese (Mn)	mg/L	0.017	0.002	2031362
Total Molybdenum (Mo)	mg/L	0.003	0.001	2031362
Total Nickel (Ni)	mg/L	0.001	0.001	2031362
Total Potassium (K)	mg/L	23	0.2	2031362
Total Selenium (Se)	mg/L	<0.002	0.002	2031362
Total Silicon (Si)	mg/L	5.6	0.05	2031362
Total Silver (Ag)	mg/L	<0.0001	0.0001	2031362
Total Sodium (Na)	mg/L	97	0.1	2031362
Total Strontium (Sr)	mg/L	14	0.001	2031362
Total Tellurium (Te)	mg/L	<0.001	0.001	2031362
Total Thallium (Tl)	mg/L	<0.00005	0.00005	2031362
Total Thorium (Th)	mg/L	<0.001	0.001	2031362
Total Tin (Sn)	mg/L	<0.001	0.001	2031362
Total Titanium (Ti)	mg/L	<0.005	0.005	2031362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN9003		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**5300 NO1 SDRD FINUCCI**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	<0.001	0.001	2031362
Total Uranium (U)	mg/L	0.0003	0.0001	2031362
Total Vanadium (V)	mg/L	<0.001	0.001	2031362
Total Zinc (Zn)	mg/L	0.083	0.005	2031362
Total Zirconium (Zr)	mg/L	<0.001	0.001	2031362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	11.3°C
Package 2	8.7°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.

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: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027715	LHA	Matrix Spike	Free Cyanide	2009/12/07		103	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/07		98	%	80 - 120
		Method Blank	Free Cyanide	2009/12/07	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/07	NC		%	25
2027751	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2027864	JDO	QC Standard	Total Suspended Solids	2009/12/04		96	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/04	2.9		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD	Turbidity	2009/12/07	0.8		%	25
2029098	MC	Matrix Spike	Mercury (Hg)	2009/12/08		105	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/08		102	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/08	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/08	NC		%	25
2030091	CCI	Matrix Spike	Nitrite (N)	2009/12/08		102	%	75 - 125
			Nitrate (N)	2009/12/08		91	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/08		104	%	80 - 120
			Nitrate (N)	2009/12/08		99	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/08	<0.01		mg/L	
			Nitrate (N)	2009/12/08	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/08	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/08	NC		%	25
			Nitrate (N)	2009/12/08	NC		%	25
			Nitrate + Nitrite	2009/12/08	NC		%	25
2031349	SAC	Matrix Spike	Sulphide	2009/12/10		83	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		99	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	NC		%	25
2031362	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/09		NC	%	80 - 120
			Total Antimony (Sb)	2009/12/09		105	%	80 - 120
			Total Arsenic (As)	2009/12/09		100	%	80 - 120
			Total Barium (Ba)	2009/12/09		96	%	80 - 120
			Total Beryllium (Be)	2009/12/09		104	%	75 - 125
			Total Bismuth (Bi)	2009/12/09		97	%	75 - 125
			Total Boron (B)	2009/12/09		110	%	75 - 125
			Total Cadmium (Cd)	2009/12/09		100	%	80 - 120
			Total Calcium (Ca)	2009/12/09		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/09		96	%	80 - 120
			Total Cobalt (Co)	2009/12/09		96	%	80 - 120
			Total Copper (Cu)	2009/12/09		96	%	80 - 120
			Total Iron (Fe)	2009/12/09		97	%	80 - 120
			Total Lead (Pb)	2009/12/09		96	%	80 - 120
			Total Lithium (Li)	2009/12/09		101	%	75 - 125
			Total Magnesium (Mg)	2009/12/09		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/09		97	%	80 - 120
			Total Molybdenum (Mo)	2009/12/09		106	%	80 - 120
			Total Nickel (Ni)	2009/12/09		94	%	80 - 120
			Total Potassium (K)	2009/12/09		96	%	75 - 125
			Total Selenium (Se)	2009/12/09		99	%	75 - 125
			Total Silicon (Si)	2009/12/09		95	%	75 - 125
			Total Silver (Ag)	2009/12/09		93	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362	HRE	Matrix Spike	Total Sodium (Na)	2009/12/09		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/09		NC	%	80 - 120
			Total Tellurium (Te)	2009/12/09		100	%	75 - 125
			Total Thallium (Tl)	2009/12/09		95	%	80 - 120
			Total Thorium (Th)	2009/12/09		103	%	75 - 125
			Total Tin (Sn)	2009/12/09		103	%	75 - 125
			Total Titanium (Ti)	2009/12/09		101	%	75 - 125
			Total Tungsten (W)	2009/12/09		103	%	75 - 125
			Total Uranium (U)	2009/12/09		103	%	80 - 120
			Total Vanadium (V)	2009/12/09		97	%	80 - 120
			Total Zinc (Zn)	2009/12/09		98	%	80 - 120
			Total Zirconium (Zr)	2009/12/09		104	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/09		102	%	80 - 120
			Total Antimony (Sb)	2009/12/09		98	%	82 - 120
			Total Arsenic (As)	2009/12/09		101	%	86 - 119
			Total Barium (Ba)	2009/12/09		98	%	83 - 115
			Total Beryllium (Be)	2009/12/09		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/09		99	%	78 - 120
			Total Boron (B)	2009/12/09		103	%	78 - 133
			Total Cadmium (Cd)	2009/12/09		101	%	85 - 116
			Total Calcium (Ca)	2009/12/09		100	%	75 - 125
			Total Chromium (Cr)	2009/12/09		98	%	80 - 120
			Total Cobalt (Co)	2009/12/09		98	%	82 - 117
			Total Copper (Cu)	2009/12/09		99	%	80 - 117
			Total Iron (Fe)	2009/12/09		100	%	80 - 120
			Total Lead (Pb)	2009/12/09		99	%	80 - 120
			Total Lithium (Li)	2009/12/09		100	%	86 - 131
			Total Magnesium (Mg)	2009/12/09		101	%	80 - 120
			Total Manganese (Mn)	2009/12/09		98	%	80 - 120
			Total Molybdenum (Mo)	2009/12/09		99	%	82 - 117
			Total Nickel (Ni)	2009/12/09		96	%	81 - 117
			Total Potassium (K)	2009/12/09		98	%	75 - 125
			Total Selenium (Se)	2009/12/09		102	%	82 - 118
			Total Silicon (Si)	2009/12/09		96	%	67 - 140
			Total Silver (Ag)	2009/12/09		95	%	80 - 120
			Total Sodium (Na)	2009/12/09		98	%	75 - 125
			Total Strontium (Sr)	2009/12/09		99	%	83 - 120
			Total Tellurium (Te)	2009/12/09		97	%	80 - 116
			Total Thallium (Tl)	2009/12/09		97	%	80 - 129
			Total Thorium (Th)	2009/12/09		102	%	80 - 125
			Total Tin (Sn)	2009/12/09		97	%	83 - 119
			Total Titanium (Ti)	2009/12/09		98	%	60 - 125
			Total Tungsten (W)	2009/12/09		98	%	81 - 123
			Total Uranium (U)	2009/12/09		104	%	82 - 120
			Total Vanadium (V)	2009/12/09		98	%	82 - 118
			Total Zinc (Zn)	2009/12/09		102	%	80 - 120
			Total Zirconium (Zr)	2009/12/09		98	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/09	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/09	<0.001		mg/L	
			Total Barium (Ba)	2009/12/09	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Total Boron (B)	2009/12/09	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/09	<0.0001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362	HRE	Method Blank	Total Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/09	<0.001		mg/L	
			Total Iron (Fe)	2009/12/09	<0.1		mg/L	
			Total Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/09	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Total Potassium (K)	2009/12/09	<0.2		mg/L	
			Total Selenium (Se)	2009/12/09	<0.002		mg/L	
			Total Silicon (Si)	2009/12/09	<0.05		mg/L	
			Total Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/09	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/09	<0.001		mg/L	
			Total Tin (Sn)	2009/12/09	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Total Tungsten (W)	2009/12/09	<0.001		mg/L	
			Total Uranium (U)	2009/12/09	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/09	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Total Barium (Ba)	2009/12/09	4.2		%	25
			Total Boron (B)	2009/12/09	3.7		%	25
			Total Calcium (Ca)	2009/12/09	5.2		%	25
			Total Magnesium (Mg)	2009/12/09	5.0		%	25
			Total Potassium (K)	2009/12/09	4.0		%	25
			Total Silicon (Si)	2009/12/09	5.7		%	25
			Total Sodium (Na)	2009/12/09	2.9		%	25
2031510	AHA	Matrix Spike	Total Phosphorus	2009/12/10		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		100	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		98	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/10	2.1		%	25
2032034	YPA	Matrix Spike [EN9003-01]	Fluoride (F-)	2009/12/09		106	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/09		108	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/09	<0.1		mg/L	
		RPD [EN9003-01]	Fluoride (F-)	2009/12/09	NC		%	25
2032035	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/09		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/09	<1		mg/L	
		RPD [EN9003-01]	Alkalinity (Total as CaCO3)	2009/12/09	0.08		%	25
2032046	DRM	Matrix Spike	Orthophosphate (P)	2009/12/10		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/10		101	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/10	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/10	NC		%	25
2032408	ADB	Matrix Spike [EN8999-04]	Total Ammonia-N	2009/12/10		93	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/10		100	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/10	<0.05		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032469	FD	Matrix Spike						
		[EN8999-01]	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/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.

Validation Signature Page

Maxxam Job #: A9G3994

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, 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. SCC and CALA have approved this reporting process and electronic report format.

HENDERVALE MAIN BARN
HENDERVALE COTTAGE
HENDERVALE MAIN HOUSE

Site: TANSLEY QUARRY
Your C.O.C. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3994
Received: 2009/12/03, 16:48

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	3	N/A	2009/12/09	CAM SOP-00448	SM 2320B
Anions	3	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	3	N/A	2009/12/08	Ont SOP-0094	EPA 9012 Modified
Fluoride	3	2009/12/09	2009/12/09	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	3	N/A	2009/12/11	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/07	2009/12/07	CAM SOP-00453	EPA 7470
Mercury in Water by CVAA	2	2009/12/07	2009/12/08	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	2	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Total Metals Analysis by ICPMS	1	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Ammonia-N	3	N/A	2009/12/10	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	3	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	3	N/A	2009/12/09	CAM SOP-00448	SM 4500H
Phenols (4AAP)	3	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	3	N/A	2009/12/10	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/08	CAM SOP-00455	SM 4500-S G
Sulphide	2	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	3	2009/12/09	2009/12/10	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	3	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	3	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
Phone# (905) 817-5700

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN9000			EN9001	EN9002		
Sampling Date		2009/12/03			2009/12/03	2009/12/03		
COC Number		172018-0			172018-0	172018-0		
	Units	**5244 NO1 SDRD BARN**	**RDL**	**QC Batch**	**5244 NO1 SDRD COTTAGE**	**5244 NO1 SDRD HOUSE**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	260	1	2026931	580	550	1	2026931
Inorganics								
Total Ammonia-N	mg/L	0.31	0.05	2032408	0.42	0.54	0.05	2032408
Fluoride (F-)	mg/L	0.1	0.1	2032034	0.2	0.2	0.1	2032034
Free Cyanide	mg/L	<0.002	0.002	2029599	<0.002	<0.002	0.002	2029599
Orthophosphate (P)	mg/L	0.16	0.01	2032046	<0.01	<0.01	0.01	2032046
pH	pH	7.9		2032036	7.9	8.0		2032036
Phenols-4AAP	mg/L	<0.001	0.001	2027751	<0.001	<0.001	0.001	2027751
Total Phosphorus	mg/L	0.34	0.006	2031510	<0.002	<0.002	0.002	2031510
Total Suspended Solids	mg/L	46	10	2027695	<10	<10	10	2027695
Sulphide	mg/L	<0.02	0.02	2027993	<0.02	<0.02	0.02	2031349
Turbidity	NTU	94	0.1	2029074	17	8.3	0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	220	1	2032035	356	360	1	2032035
Nitrite (N)	mg/L	0.04	0.01	2030079	<0.01	0.02	0.01	2030079
Dissolved Chloride (Cl)	mg/L	14	1	2032469	131	83	1	2032469
Nitrate (N)	mg/L	0.9	0.1	2030079	<0.1	<0.1	0.1	2030079
Nitrate + Nitrite	mg/L	0.9	0.1	2030079	<0.1	<0.1	0.1	2030079
Dissolved Bromide (Br-)	mg/L	<1	1	2032469	<1	<1	1	2032469
Dissolved Sulphate (SO4)	mg/L	45	1	2032469	144	197	1	2032469

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN9002		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**5244 NO1 SDRD HOUSE Lab-Dup**	**RDL**	**QC Batch**

Inorganics				
Total Suspended Solids	mg/L	<10	10	2027695

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN9000		EN9001		EN9002		
Sampling Date		2009/12/03		2009/12/03		2009/12/03		
COC Number		172018-0		172018-0		172018-0		
	Units	**5244 NO1 SDRD BARN**	**QC Batch**	**5244 NO1 SDRD COTTAGE**	**QC Batch**	**5244 NO1 SDRD HOUSE**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/L	<0.0001	2028919	<0.0001	2029098	<0.0001	0.0001	2029098
Total Aluminum (Al)	mg/L	4.4	2031362	0.006	2031362	0.007	0.005	2032726
Total Antimony (Sb)	mg/L	<0.0005	2031362	<0.0005	2031362	<0.0005	0.0005	2032726
Total Arsenic (As)	mg/L	0.004	2031362	0.014	2031362	0.013	0.001	2032726
Total Barium (Ba)	mg/L	0.047	2031362	0.029	2031362	0.025	0.005	2032726
Total Beryllium (Be)	mg/L	<0.0005	2031362	<0.0005	2031362	<0.0005	0.0005	2032726
Total Bismuth (Bi)	mg/L	<0.001	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Boron (B)	mg/L	0.14	2031362	0.48	2031362	0.75	0.01	2032726
Total Cadmium (Cd)	mg/L	<0.0001	2031362	<0.0001	2031362	<0.0001	0.0001	2032726
Total Calcium (Ca)	mg/L	58	2031362	90	2031362	85	0.2	2032726
Total Chromium (Cr)	mg/L	<0.005	2031362	<0.005	2031362	<0.005	0.005	2032726
Total Cobalt (Co)	mg/L	0.0014	2031362	<0.0005	2031362	<0.0005	0.0005	2032726
Total Copper (Cu)	mg/L	0.007	2031362	0.006	2031362	0.018	0.001	2032726
Total Iron (Fe)	mg/L	3.6	2031362	1.3	2031362	1.3	0.1	2032726
Total Lead (Pb)	mg/L	0.0053	2031362	<0.0005	2031362	<0.0005	0.0005	2032726
Total Lithium (Li)	mg/L	0.025	2031362	0.067	2031362	0.081	0.005	2032726
Total Magnesium (Mg)	mg/L	28	2031362	78	2031362	84	0.05	2032726
Total Manganese (Mn)	mg/L	0.10	2031362	0.029	2031362	0.042	0.002	2032726
Total Molybdenum (Mo)	mg/L	<0.001	2031362	0.002	2031362	0.005	0.001	2032726
Total Nickel (Ni)	mg/L	0.004	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Potassium (K)	mg/L	11	2031362	7.4	2031362	9.4	0.2	2032726
Total Selenium (Se)	mg/L	<0.002	2031362	<0.002	2031362	<0.002	0.002	2032726
Total Silicon (Si)	mg/L	15	2031362	9.6	2031362	9.2	0.05	2032726
Total Silver (Ag)	mg/L	<0.0001	2031362	<0.0001	2031362	<0.0001	0.0001	2032726
Total Sodium (Na)	mg/L	12	2031362	46	2031362	64	0.1	2032726
Total Strontium (Sr)	mg/L	1.1	2031362	4.3	2031362	5.6	0.001	2032726
Total Tellurium (Te)	mg/L	<0.001	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Thallium (Tl)	mg/L	0.00006	2031362	<0.00005	2031362	<0.00005	0.00005	2032726
Total Thorium (Th)	mg/L	<0.001	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Tin (Sn)	mg/L	<0.001	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Titanium (Ti)	mg/L	0.18	2031362	<0.005	2031362	<0.005	0.005	2032726

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN9000		EN9001		EN9002		
Sampling Date		2009/12/03		2009/12/03		2009/12/03		
COC Number		172018-0		172018-0		172018-0		
	Units	**5244 NO1 SDRD BARN**	**QC Batch**	**5244 NO1 SDRD COTTAGE**	**QC Batch**	**5244 NO1 SDRD HOUSE**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	<0.001	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Uranium (U)	mg/L	0.0007	2031362	0.0013	2031362	0.0012	0.0001	2032726
Total Vanadium (V)	mg/L	0.009	2031362	<0.001	2031362	<0.001	0.001	2032726
Total Zinc (Zn)	mg/L	0.20	2031362	0.007	2031362	0.006	0.005	2032726
Total Zirconium (Zr)	mg/L	0.004	2031362	<0.001	2031362	<0.001	0.001	2032726

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	11.3°C
Package 2	8.7°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.

Results relate only to the items tested.

Quality Assurance Report

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027695	JDO	QC Standard	Total Suspended Solids	2009/12/04		102	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
		RPD [EN9002-02]	Total Suspended Solids	2009/12/04	NC		%	25
2027751	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2027993	SAC	Matrix Spike	Sulphide	2009/12/08		99	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		106	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD	Sulphide	2009/12/08	NC		%	25
2028919	MC	Matrix Spike	Mercury (Hg)	2009/12/07		117	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/07		106	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD	Turbidity	2009/12/07	0.8		%	25
2029098	MC	Matrix Spike	Mercury (Hg)	2009/12/08		105	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/08		102	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/08	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/08	NC		%	25
2029599	LHA	Matrix Spike	Free Cyanide	2009/12/08		99	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/08		96	%	80 - 120
		Method Blank	Free Cyanide	2009/12/08	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/08	NC		%	25
2030079	CCI	Matrix Spike	Nitrite (N)	2009/12/10		101	%	75 - 125
			Nitrate (N)	2009/12/10		NC	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		104	%	80 - 120
			Nitrate (N)	2009/12/10		94	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/10	NC		%	25
			Nitrate (N)	2009/12/10	5.0		%	25
			Nitrate + Nitrite	2009/12/10	5.0		%	25
2031349	SAC	Matrix Spike	Sulphide	2009/12/10		83	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		99	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	NC		%	25
2031362	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/09		NC	%	80 - 120
			Total Antimony (Sb)	2009/12/09		105	%	80 - 120
			Total Arsenic (As)	2009/12/09		100	%	80 - 120
			Total Barium (Ba)	2009/12/09		96	%	80 - 120
			Total Beryllium (Be)	2009/12/09		104	%	75 - 125
			Total Bismuth (Bi)	2009/12/09		97	%	75 - 125
			Total Boron (B)	2009/12/09		110	%	75 - 125
			Total Cadmium (Cd)	2009/12/09		100	%	80 - 120
			Total Calcium (Ca)	2009/12/09		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/09		96	%	80 - 120
			Total Cobalt (Co)	2009/12/09		96	%	80 - 120
			Total Copper (Cu)	2009/12/09		96	%	80 - 120
			Total Iron (Fe)	2009/12/09		97	%	80 - 120
			Total Lead (Pb)	2009/12/09		96	%	80 - 120
			Total Lithium (Li)	2009/12/09		101	%	75 - 125

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362 HRE	Matrix Spike	Total Magnesium (Mg)	2009/12/09		NC	%	80 - 120
		Total Manganese (Mn)	2009/12/09		97	%	80 - 120
		Total Molybdenum (Mo)	2009/12/09		106	%	80 - 120
		Total Nickel (Ni)	2009/12/09		94	%	80 - 120
		Total Potassium (K)	2009/12/09		96	%	75 - 125
		Total Selenium (Se)	2009/12/09		99	%	75 - 125
		Total Silicon (Si)	2009/12/09		95	%	75 - 125
		Total Silver (Ag)	2009/12/09		93	%	80 - 120
		Total Sodium (Na)	2009/12/09		NC	%	75 - 125
		Total Strontium (Sr)	2009/12/09		NC	%	80 - 120
		Total Tellurium (Te)	2009/12/09		100	%	75 - 125
		Total Thallium (Tl)	2009/12/09		95	%	80 - 120
		Total Thorium (Th)	2009/12/09		103	%	75 - 125
		Total Tin (Sn)	2009/12/09		103	%	75 - 125
		Total Titanium (Ti)	2009/12/09		101	%	75 - 125
		Total Tungsten (W)	2009/12/09		103	%	75 - 125
		Total Uranium (U)	2009/12/09		103	%	80 - 120
		Total Vanadium (V)	2009/12/09		97	%	80 - 120
		Total Zinc (Zn)	2009/12/09		98	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		104	%	75 - 125
	Spiked Blank	Total Aluminum (Al)	2009/12/09		102	%	80 - 120
		Total Antimony (Sb)	2009/12/09		98	%	82 - 120
		Total Arsenic (As)	2009/12/09		101	%	86 - 119
		Total Barium (Ba)	2009/12/09		98	%	83 - 115
		Total Beryllium (Be)	2009/12/09		103	%	85 - 132
		Total Bismuth (Bi)	2009/12/09		99	%	78 - 120
		Total Boron (B)	2009/12/09		103	%	78 - 133
		Total Cadmium (Cd)	2009/12/09		101	%	85 - 116
		Total Calcium (Ca)	2009/12/09		100	%	75 - 125
		Total Chromium (Cr)	2009/12/09		98	%	80 - 120
		Total Cobalt (Co)	2009/12/09		98	%	82 - 117
		Total Copper (Cu)	2009/12/09		99	%	80 - 117
		Total Iron (Fe)	2009/12/09		100	%	80 - 120
		Total Lead (Pb)	2009/12/09		99	%	80 - 120
		Total Lithium (Li)	2009/12/09		100	%	86 - 131
		Total Magnesium (Mg)	2009/12/09		101	%	80 - 120
		Total Manganese (Mn)	2009/12/09		98	%	80 - 120
		Total Molybdenum (Mo)	2009/12/09		99	%	82 - 117
		Total Nickel (Ni)	2009/12/09		96	%	81 - 117
		Total Potassium (K)	2009/12/09		98	%	75 - 125
		Total Selenium (Se)	2009/12/09		102	%	82 - 118
		Total Silicon (Si)	2009/12/09		96	%	67 - 140
		Total Silver (Ag)	2009/12/09		95	%	80 - 120
		Total Sodium (Na)	2009/12/09		98	%	75 - 125
		Total Strontium (Sr)	2009/12/09		99	%	83 - 120
		Total Tellurium (Te)	2009/12/09		97	%	80 - 116
		Total Thallium (Tl)	2009/12/09		97	%	80 - 129
		Total Thorium (Th)	2009/12/09		102	%	80 - 125
		Total Tin (Sn)	2009/12/09		97	%	83 - 119
		Total Titanium (Ti)	2009/12/09		98	%	60 - 125
		Total Tungsten (W)	2009/12/09		98	%	81 - 123
		Total Uranium (U)	2009/12/09		104	%	82 - 120
		Total Vanadium (V)	2009/12/09		98	%	82 - 118
		Total Zinc (Zn)	2009/12/09		102	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		98	%	84 - 118

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362	HRE	Method Blank	Total Aluminum (Al)	2009/12/09	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/09	<0.001		mg/L	
			Total Barium (Ba)	2009/12/09	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Total Boron (B)	2009/12/09	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/09	<0.001		mg/L	
			Total Iron (Fe)	2009/12/09	<0.1		mg/L	
			Total Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/09	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Total Potassium (K)	2009/12/09	<0.2		mg/L	
			Total Selenium (Se)	2009/12/09	<0.002		mg/L	
			Total Silicon (Si)	2009/12/09	<0.05		mg/L	
			Total Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/09	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/09	<0.001		mg/L	
			Total Tin (Sn)	2009/12/09	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Total Tungsten (W)	2009/12/09	<0.001		mg/L	
			Total Uranium (U)	2009/12/09	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/09	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Total Barium (Ba)	2009/12/09	4.2		%	25
			Total Boron (B)	2009/12/09	3.7		%	25
			Total Calcium (Ca)	2009/12/09	5.2		%	25
			Total Magnesium (Mg)	2009/12/09	5.0		%	25
			Total Potassium (K)	2009/12/09	4.0		%	25
			Total Silicon (Si)	2009/12/09	5.7		%	25
			Total Sodium (Na)	2009/12/09	2.9		%	25
2031510	AHA	Matrix Spike	Total Phosphorus	2009/12/10		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		100	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		98	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/10	2.1		%	25
2032034	YPA	Matrix Spike [EN9003-01]	Fluoride (F-)	2009/12/09		106	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/09		108	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/09	<0.1		mg/L	
2032035	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/09		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/09	<1		mg/L	
2032046	DRM	Matrix Spike	Orthophosphate (P)	2009/12/10		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/10		101	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032046	DRM	Method Blank	Orthophosphate (P)	2009/12/10	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/10	NC		%	25
2032408	ADB	Matrix Spike						
		[EN8999-04]	Total Ammonia-N	2009/12/10		93	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/10		100	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/10	<0.05		mg/L	
2032469	FD	Matrix Spike						
		[EN8999-01]	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
2032726	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/10		104	%	80 - 120
			Total Antimony (Sb)	2009/12/10		104	%	80 - 120
			Total Arsenic (As)	2009/12/10		100	%	80 - 120
			Total Barium (Ba)	2009/12/10		101	%	80 - 120
			Total Beryllium (Be)	2009/12/10		106	%	75 - 125
			Total Bismuth (Bi)	2009/12/10		107	%	75 - 125
			Total Boron (B)	2009/12/10		97	%	75 - 125
			Total Cadmium (Cd)	2009/12/10		104	%	80 - 120
			Total Calcium (Ca)	2009/12/10		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/10		97	%	80 - 120
			Total Cobalt (Co)	2009/12/10		97	%	80 - 120
			Total Copper (Cu)	2009/12/10		100	%	80 - 120
			Total Iron (Fe)	2009/12/10		97	%	80 - 120
			Total Lead (Pb)	2009/12/10		105	%	80 - 120
			Total Lithium (Li)	2009/12/10		101	%	75 - 125
			Total Magnesium (Mg)	2009/12/10		98	%	80 - 120
			Total Manganese (Mn)	2009/12/10		99	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		106	%	80 - 120
			Total Nickel (Ni)	2009/12/10		100	%	80 - 120
			Total Potassium (K)	2009/12/10		100	%	75 - 125
			Total Selenium (Se)	2009/12/10		102	%	75 - 125
			Total Silicon (Si)	2009/12/10		90	%	75 - 125
			Total Silver (Ag)	2009/12/10		95	%	80 - 120
			Total Sodium (Na)	2009/12/10		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/10		101	%	80 - 120
			Total Tellurium (Te)	2009/12/10		98	%	75 - 125
			Total Thallium (Tl)	2009/12/10		102	%	80 - 120
			Total Thorium (Th)	2009/12/10		115	%	75 - 125
			Total Tin (Sn)	2009/12/10		101	%	75 - 125
			Total Titanium (Ti)	2009/12/10		99	%	75 - 125
			Total Tungsten (W)	2009/12/10		106	%	75 - 125
			Total Uranium (U)	2009/12/10		117	%	80 - 120
			Total Vanadium (V)	2009/12/10		96	%	80 - 120
			Total Zinc (Zn)	2009/12/10		104	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		106	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/10		102	%	80 - 120
			Total Antimony (Sb)	2009/12/10		101	%	82 - 120
			Total Arsenic (As)	2009/12/10		100	%	86 - 119
			Total Barium (Ba)	2009/12/10		99	%	83 - 115

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032726 HRE	Spiked Blank	Total Beryllium (Be)	2009/12/10		103	%	85 - 132
		Total Bismuth (Bi)	2009/12/10		104	%	78 - 120
		Total Boron (B)	2009/12/10		96	%	78 - 133
		Total Cadmium (Cd)	2009/12/10		101	%	85 - 116
		Total Calcium (Ca)	2009/12/10		103	%	75 - 125
		Total Chromium (Cr)	2009/12/10		95	%	80 - 120
		Total Cobalt (Co)	2009/12/10		96	%	82 - 117
		Total Copper (Cu)	2009/12/10		98	%	80 - 117
		Total Iron (Fe)	2009/12/10		99	%	80 - 120
		Total Lead (Pb)	2009/12/10		102	%	80 - 120
		Total Lithium (Li)	2009/12/10		98	%	86 - 131
		Total Magnesium (Mg)	2009/12/10		99	%	80 - 120
		Total Manganese (Mn)	2009/12/10		99	%	80 - 120
		Total Molybdenum (Mo)	2009/12/10		103	%	82 - 117
		Total Nickel (Ni)	2009/12/10		98	%	81 - 117
		Total Potassium (K)	2009/12/10		99	%	75 - 125
		Total Selenium (Se)	2009/12/10		104	%	82 - 118
		Total Silicon (Si)	2009/12/10		91	%	67 - 140
		Total Silver (Ag)	2009/12/10		93	%	80 - 120
		Total Sodium (Na)	2009/12/10		95	%	75 - 125
		Total Strontium (Sr)	2009/12/10		100	%	83 - 120
		Total Tellurium (Te)	2009/12/10		96	%	80 - 116
		Total Thallium (Tl)	2009/12/10		100	%	80 - 129
		Total Thorium (Th)	2009/12/10		110	%	80 - 125
		Total Tin (Sn)	2009/12/10		98	%	83 - 119
		Total Titanium (Ti)	2009/12/10		98	%	60 - 125
		Total Tungsten (W)	2009/12/10		103	%	81 - 123
		Total Uranium (U)	2009/12/10		113	%	82 - 120
		Total Vanadium (V)	2009/12/10		93	%	82 - 118
		Total Zinc (Zn)	2009/12/10		101	%	80 - 120
		Total Zirconium (Zr)	2009/12/10		103	%	84 - 118
	Method Blank	Total Aluminum (Al)	2009/12/10	<0.005		mg/L	
		Total Antimony (Sb)	2009/12/10	<0.0005		mg/L	
		Total Arsenic (As)	2009/12/10	<0.001		mg/L	
		Total Barium (Ba)	2009/12/10	<0.005		mg/L	
		Total Beryllium (Be)	2009/12/10	<0.0005		mg/L	
		Total Bismuth (Bi)	2009/12/10	<0.001		mg/L	
		Total Boron (B)	2009/12/10	<0.01		mg/L	
		Total Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
		Total Calcium (Ca)	2009/12/10	<0.2		mg/L	
		Total Chromium (Cr)	2009/12/10	<0.005		mg/L	
		Total Cobalt (Co)	2009/12/10	<0.0005		mg/L	
		Total Copper (Cu)	2009/12/10	<0.001		mg/L	
		Total Iron (Fe)	2009/12/10	<0.1		mg/L	
		Total Lead (Pb)	2009/12/10	<0.0005		mg/L	
		Total Lithium (Li)	2009/12/10	<0.005		mg/L	
		Total Magnesium (Mg)	2009/12/10	<0.05		mg/L	
		Total Manganese (Mn)	2009/12/10	<0.002		mg/L	
		Total Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
		Total Nickel (Ni)	2009/12/10	<0.001		mg/L	
		Total Potassium (K)	2009/12/10	<0.2		mg/L	
		Total Selenium (Se)	2009/12/10	<0.002		mg/L	
		Total Silicon (Si)	2009/12/10	<0.05		mg/L	
		Total Silver (Ag)	2009/12/10	<0.0001		mg/L	
		Total Sodium (Na)	2009/12/10	<0.1		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032726 HRE	Method Blank	Total Strontium (Sr)	2009/12/10	<0.001		mg/L	
		Total Tellurium (Te)	2009/12/10	<0.001		mg/L	
		Total Thallium (Tl)	2009/12/10	<0.00005		mg/L	
		Total Thorium (Th)	2009/12/10	<0.001		mg/L	
		Total Tin (Sn)	2009/12/10	<0.001		mg/L	
		Total Titanium (Ti)	2009/12/10	<0.005		mg/L	
		Total Tungsten (W)	2009/12/10	<0.001		mg/L	
		Total Uranium (U)	2009/12/10	<0.0001		mg/L	
		Total Vanadium (V)	2009/12/10	<0.001		mg/L	
		Total Zinc (Zn)	2009/12/10	<0.005		mg/L	
		Total Zirconium (Zr)	2009/12/10	<0.001		mg/L	
	RPD	Total Aluminum (Al)	2009/12/10	3.8		%	25
		Total Antimony (Sb)	2009/12/10	NC		%	25
		Total Arsenic (As)	2009/12/10	NC		%	25
		Total Barium (Ba)	2009/12/10	NC		%	25
		Total Beryllium (Be)	2009/12/10	NC		%	25
		Total Bismuth (Bi)	2009/12/10	NC		%	25
		Total Boron (B)	2009/12/10	9.8		%	25
		Total Cadmium (Cd)	2009/12/10	NC		%	25
		Total Calcium (Ca)	2009/12/10	2.9		%	25
		Total Chromium (Cr)	2009/12/10	NC		%	25
		Total Cobalt (Co)	2009/12/10	NC		%	25
		Total Copper (Cu)	2009/12/10	3.9		%	25
		Total Iron (Fe)	2009/12/10	NC		%	25
		Total Lead (Pb)	2009/12/10	NC		%	25
		Total Lithium (Li)	2009/12/10	NC		%	25
		Total Magnesium (Mg)	2009/12/10	1.1		%	25
		Total Manganese (Mn)	2009/12/10	1.2		%	25
		Total Molybdenum (Mo)	2009/12/10	NC		%	25
		Total Nickel (Ni)	2009/12/10	NC		%	25
		Total Potassium (K)	2009/12/10	NC		%	25
		Total Selenium (Se)	2009/12/10	NC		%	25
		Total Silicon (Si)	2009/12/10	4.5		%	25
		Total Silver (Ag)	2009/12/10	NC		%	25
		Total Sodium (Na)	2009/12/10	5.5		%	25
		Total Strontium (Sr)	2009/12/10	0.2		%	25
		Total Tellurium (Te)	2009/12/10	NC		%	25
		Total Thallium (Tl)	2009/12/10	NC		%	25
		Total Thorium (Th)	2009/12/10	NC		%	25
		Total Tin (Sn)	2009/12/10	NC		%	25
		Total Titanium (Ti)	2009/12/10	NC		%	25
		Total Tungsten (W)	2009/12/10	NC		%	25
		Total Uranium (U)	2009/12/10	1.5		%	25
		Total Vanadium (V)	2009/12/10	NC		%	25
		Total Zinc (Zn)	2009/12/10	0.7		%	25
		Total Zirconium (Zr)	2009/12/10	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 #: A9G3994

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, 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. SCC and CALA have approved this reporting process and electronic report format.

SICARD

Maxxam Analytics

Driven by Service and Science

Site: TANSLEY QUARRY
Your C.O.C. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G4697
Received: 2009/12/04, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/10	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/08	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/10	2009/12/10	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/14	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/09	2009/12/10	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/11	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/10	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/10	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/11	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/10	2009/12/11	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/07	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/08	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
Phone# (905) 817-5700

==

Site: TANSLEY QUARRY
Your C.O.C. #: 17201805, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

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. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EO2326	EO2326		
Sampling Date		2009/12/04	2009/12/04		
COC Number		172018-0	172018-0		
	Units	**3278 TREMAINE ROAD**	**3278 TREMAINE ROAD Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	1300		1	2027949
Inorganics					
Total Ammonia-N	mg/L	4.2		0.05	2033031
Fluoride (F-)	mg/L	0.5		0.1	2033127
Free Cyanide	mg/L	<0.002		0.002	2029599
Orthophosphate (P)	mg/L	<0.01		0.01	2033114
pH	pH	7.9			2033121
Phenols-4AAP	mg/L	<0.001	<0.001	0.001	2031417
Total Phosphorus	mg/L	<0.002		0.002	2032834
Total Suspended Solids	mg/L	<10		10	2029724
Sulphide	mg/L	<0.02		0.02	2032416
Turbidity	NTU	1.4		0.1	2029772
Alkalinity (Total as CaCO3)	mg/L	134		1	2033115
Nitrite (N)	mg/L	<0.01		0.01	2031274
Dissolved Chloride (Cl)	mg/L	1780		10	2032833
Nitrate (N)	mg/L	0.2		0.1	2031274
Nitrate + Nitrite	mg/L	0.2		0.1	2031274
Dissolved Bromide (Br-)	mg/L	21		1	2032833
Dissolved Sulphate (SO4)	mg/L	1030		10	2032833

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2326		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**3278 TREMAINE ROAD**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2032022
Total Aluminum (Al)	mg/L	<0.05	0.05	2030651
Total Antimony (Sb)	mg/L	<0.005	0.005	2030651
Total Arsenic (As)	mg/L	<0.01	0.01	2030651
Total Barium (Ba)	mg/L	<0.05	0.05	2030651
Total Beryllium (Be)	mg/L	<0.005	0.005	2030651
Total Bismuth (Bi)	mg/L	<0.01	0.01	2030651
Total Boron (B)	mg/L	6.5	0.1	2030651
Total Cadmium (Cd)	mg/L	<0.001	0.001	2030651
Total Calcium (Ca)	mg/L	370	2	2030651
Total Chromium (Cr)	mg/L	<0.05	0.05	2030651
Total Cobalt (Co)	mg/L	<0.005	0.005	2030651
Total Copper (Cu)	mg/L	0.02	0.01	2030651
Total Iron (Fe)	mg/L	<1	1	2030651
Total Lead (Pb)	mg/L	<0.005	0.005	2030651
Total Lithium (Li)	mg/L	0.97	0.05	2030651
Total Magnesium (Mg)	mg/L	110	0.5	2030651
Total Manganese (Mn)	mg/L	0.13	0.02	2030651
Total Molybdenum (Mo)	mg/L	<0.01	0.01	2030651
Total Nickel (Ni)	mg/L	<0.01	0.01	2030651
Total Potassium (K)	mg/L	42	2	2030651
Total Selenium (Se)	mg/L	<0.02	0.02	2030651
Total Silicon (Si)	mg/L	3.8	0.5	2030651
Total Silver (Ag)	mg/L	<0.001	0.001	2030651
Total Sodium (Na)	mg/L	1200	1	2030651
Total Strontium (Sr)	mg/L	11	0.01	2030651
Total Tellurium (Te)	mg/L	<0.01	0.01	2030651
Total Thallium (Tl)	mg/L	<0.0005	0.0005	2030651
Total Thorium (Th)	mg/L	<0.01	0.01	2030651
Total Tin (Sn)	mg/L	<0.01	0.01	2030651
Total Titanium (Ti)	mg/L	<0.05	0.05	2030651

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G4697
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EO2326		
Sampling Date		2009/12/04		
COC Number		172018-0		
	Units	**3278 TREMAINE ROAD**	**RDL**	**QC Batch**
Total Tungsten (W)	mg/L	<0.01	0.01	2030651
Total Uranium (U)	mg/L	<0.001	0.001	2030651
Total Vanadium (V)	mg/L	<0.01	0.01	2030651
Total Zinc (Zn)	mg/L	<0.05	0.05	2030651
Total Zirconium (Zr)	mg/L	<0.01	0.01	2030651

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	10.0°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised report: Sample identification adjusted, per request.

Sample EO2326-01: Metal 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: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2029599	LHA	Matrix Spike	Free Cyanide	2009/12/08		99	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/08		96	%	80 - 120
		Method Blank	Free Cyanide	2009/12/08	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/08	NC		%	25
2029724	JDO	QC Standard	Total Suspended Solids	2009/12/07		99	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/07	<10		mg/L	
		RPD	Total Suspended Solids	2009/12/07	NC		%	25
2029772	KTH	QC Standard	Turbidity	2009/12/08		101	%	85 - 115
		Method Blank	Turbidity	2009/12/08	<0.1		NTU	
		RPD	Turbidity	2009/12/08	NC		%	25
2030651	ADA	Matrix Spike	Total Aluminum (Al)	2009/12/09		NC	%	80 - 120
			Total Antimony (Sb)	2009/12/09		102	%	80 - 120
			Total Arsenic (As)	2009/12/09		100	%	80 - 120
			Total Barium (Ba)	2009/12/09		97	%	80 - 120
			Total Beryllium (Be)	2009/12/09		98	%	75 - 125
			Total Bismuth (Bi)	2009/12/09		96	%	75 - 125
			Total Boron (B)	2009/12/09		97	%	75 - 125
			Total Cadmium (Cd)	2009/12/09		98	%	80 - 120
			Total Calcium (Ca)	2009/12/09		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/09		98	%	80 - 120
			Total Cobalt (Co)	2009/12/09		97	%	80 - 120
			Total Copper (Cu)	2009/12/09		94	%	80 - 120
			Total Iron (Fe)	2009/12/09		100	%	80 - 120
			Total Lead (Pb)	2009/12/09		96	%	80 - 120
			Total Lithium (Li)	2009/12/09		93	%	75 - 125
			Total Magnesium (Mg)	2009/12/09		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/09		98	%	80 - 120
			Total Molybdenum (Mo)	2009/12/09		99	%	80 - 120
			Total Nickel (Ni)	2009/12/09		94	%	80 - 120
			Total Potassium (K)	2009/12/09		105	%	75 - 125
			Total Selenium (Se)	2009/12/09		98	%	75 - 125
			Total Silicon (Si)	2009/12/09		103	%	75 - 125
			Total Silver (Ag)	2009/12/09		91	%	80 - 120
			Total Sodium (Na)	2009/12/09		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/09		NC	%	80 - 120
			Total Tellurium (Te)	2009/12/09		98	%	75 - 125
			Total Thallium (Tl)	2009/12/09		96	%	80 - 120
			Total Thorium (Th)	2009/12/09		101	%	75 - 125
			Total Tin (Sn)	2009/12/09		100	%	75 - 125
			Total Titanium (Ti)	2009/12/09		102	%	75 - 125
			Total Tungsten (W)	2009/12/09		98	%	75 - 125
			Total Uranium (U)	2009/12/09		102	%	80 - 120
			Total Vanadium (V)	2009/12/09		99	%	80 - 120
			Total Zinc (Zn)	2009/12/09		98	%	80 - 120
			Total Zirconium (Zr)	2009/12/09		101	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/09		100	%	80 - 120
			Total Antimony (Sb)	2009/12/09		104	%	82 - 120
			Total Arsenic (As)	2009/12/09		101	%	86 - 119
			Total Barium (Ba)	2009/12/09		97	%	83 - 115
			Total Beryllium (Be)	2009/12/09		101	%	85 - 132
			Total Bismuth (Bi)	2009/12/09		99	%	78 - 120
			Total Boron (B)	2009/12/09		99	%	78 - 133
			Total Cadmium (Cd)	2009/12/09		101	%	85 - 116
			Total Calcium (Ca)	2009/12/09		100	%	75 - 125
			Total Chromium (Cr)	2009/12/09		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030651	ADA	Spiked Blank	Total Cobalt (Co)	2009/12/09		97	%	82 - 117
			Total Copper (Cu)	2009/12/09		98	%	80 - 117
			Total Iron (Fe)	2009/12/09		100	%	80 - 120
			Total Lead (Pb)	2009/12/09		100	%	80 - 120
			Total Lithium (Li)	2009/12/09		97	%	86 - 131
			Total Magnesium (Mg)	2009/12/09		103	%	80 - 120
			Total Manganese (Mn)	2009/12/09		100	%	80 - 120
			Total Molybdenum (Mo)	2009/12/09		101	%	82 - 117
			Total Nickel (Ni)	2009/12/09		97	%	81 - 117
			Total Potassium (K)	2009/12/09		102	%	75 - 125
			Total Selenium (Se)	2009/12/09		100	%	82 - 118
			Total Silicon (Si)	2009/12/09		98	%	67 - 140
			Total Silver (Ag)	2009/12/09		95	%	80 - 120
			Total Sodium (Na)	2009/12/09		102	%	75 - 125
			Total Strontium (Sr)	2009/12/09		97	%	83 - 120
			Total Tellurium (Te)	2009/12/09		100	%	80 - 116
			Total Thallium (Tl)	2009/12/09		99	%	80 - 129
			Total Thorium (Th)	2009/12/09		97	%	80 - 125
			Total Tin (Sn)	2009/12/09		101	%	83 - 119
			Total Titanium (Ti)	2009/12/09		102	%	60 - 125
			Total Tungsten (W)	2009/12/09		100	%	81 - 123
			Total Uranium (U)	2009/12/09		102	%	82 - 120
			Total Vanadium (V)	2009/12/09		101	%	82 - 118
			Total Zinc (Zn)	2009/12/09		99	%	80 - 120
			Total Zirconium (Zr)	2009/12/09		103	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/09	0.006, RDL=0.005		mg/L	
			Total Antimony (Sb)	2009/12/09	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/09	<0.001		mg/L	
			Total Barium (Ba)	2009/12/09	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/09	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/09	<0.001		mg/L	
			Total Boron (B)	2009/12/09	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/09	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/09	<0.001		mg/L	
			Total Iron (Fe)	2009/12/09	<0.1		mg/L	
			Total Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/09	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Total Potassium (K)	2009/12/09	<0.2		mg/L	
			Total Selenium (Se)	2009/12/09	<0.002		mg/L	
			Total Silicon (Si)	2009/12/09	<0.05		mg/L	
			Total Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/09	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/09	<0.001		mg/L	
			Total Tin (Sn)	2009/12/09	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/09	<0.005		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2030651	ADA	Method Blank	Total Tungsten (W)	2009/12/09	<0.001		mg/L	
			Total Uranium (U)	2009/12/09	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/09	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Total Arsenic (As)	2009/12/09	NC		%	25
			Total Beryllium (Be)	2009/12/09	NC		%	25
			Total Boron (B)	2009/12/09	8.2		%	25
			Total Cadmium (Cd)	2009/12/09	NC		%	25
			Total Calcium (Ca)	2009/12/09	11.9		%	25
			Total Chromium (Cr)	2009/12/09	NC		%	25
			Total Cobalt (Co)	2009/12/09	NC		%	25
			Total Copper (Cu)	2009/12/09	NC		%	25
			Total Iron (Fe)	2009/12/09	NC		%	25
			Total Lead (Pb)	2009/12/09	NC		%	25
			Total Magnesium (Mg)	2009/12/09	8.7		%	25
			Total Manganese (Mn)	2009/12/09	6.8		%	25
			Total Molybdenum (Mo)	2009/12/09	NC		%	25
			Total Nickel (Ni)	2009/12/09	NC		%	25
			Total Selenium (Se)	2009/12/09	NC		%	25
			Total Silver (Ag)	2009/12/09	NC		%	25
			Total Sodium (Na)	2009/12/09	8.8		%	25
			Total Vanadium (V)	2009/12/09	NC		%	25
			Total Zinc (Zn)	2009/12/09	8.4		%	25
2031274	CCI	Matrix Spike	Nitrite (N)	2009/12/10		100	%	75 - 125
			Nitrate (N)	2009/12/10		93	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		104	%	80 - 120
			Nitrate (N)	2009/12/10		96	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/10	NC		%	25
			Nitrate (N)	2009/12/10	NC		%	25
2031417	BMO	Matrix Spike [EO2326-08]	Phenols-4AAP	2009/12/10		97	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/10		101	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/10	<0.001		mg/L	
		RPD [EO2326-08]	Phenols-4AAP	2009/12/10	NC		%	25
2032022	MC	Matrix Spike	Mercury (Hg)	2009/12/10		102	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/10		106	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/10	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/10	NC		%	25
2032416	SAC	Matrix Spike	Sulphide	2009/12/10		NC (1)	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		102	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	10.3		%	25
2032833	SAC	Matrix Spike [EO2327-01]	Dissolved Chloride (Cl)	2009/12/10		NC	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		108	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		97	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		107	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		100	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G4697

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032833	SAC	Method Blank	Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
2032834	AHA	Matrix Spike	Total Phosphorus	2009/12/11		106	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/11		104	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/11		105	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/11	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/11	NC		%	25
2033031	ADB	Matrix Spike	Total Ammonia-N	2009/12/11		100	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/11		101	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/11	<0.05		mg/L	
		RPD	Total Ammonia-N	2009/12/11	NC		%	25
2033114	DRM	Matrix Spike	Orthophosphate (P)	2009/12/11		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/11		98	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/11	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/11	NC		%	25
2033115	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/10		95	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/10	<1		mg/L	
		RPD	Alkalinity (Total as CaCO3)	2009/12/10	0.4		%	25
2033127	YPA	Matrix Spike	Fluoride (F-)	2009/12/10		100	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/10		110	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/10	<0.1		mg/L	
		RPD	Fluoride (F-)	2009/12/10	1.5		%	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.

Validation Signature Page

Maxxam Job #: A9G4697

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

===

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. SCC and CALA have approved this reporting process and electronic report format.

SIMMS

Site: TANSLEY QUARRY
Your C.O.C. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3994
Received: 2009/12/03, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/09	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/08	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/09	2009/12/09	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/11	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/07	2009/12/07	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2009/12/09	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/10	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/10	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/09	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/10	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/08	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/09	2009/12/10	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN8999	EN8999		
Sampling Date		2009/12/03	2009/12/03		
COC Number		172018-0	172018-0		
	Units	**5400 NO2 SDRD**	**5400 NO2 SDRD Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters					
Hardness (CaCO3)	mg/L	650		1	2026931
Inorganics					
Total Ammonia-N	mg/L	<0.05	<0.05	0.05	2032408
Fluoride (F-)	mg/L	0.2		0.1	2032034
Free Cyanide	mg/L	<0.002		0.002	2029599
Orthophosphate (P)	mg/L	<0.01		0.01	2032046
pH	pH	7.9			2032036
Phenols-4AAP	mg/L	<0.001		0.001	2027751
Total Phosphorus	mg/L	<0.002		0.002	2031510
Total Suspended Solids	mg/L	<10		10	2027695
Sulphide	mg/L	<0.02		0.02	2027993
Turbidity	NTU	0.6		0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	164		1	2032035
Nitrite (N)	mg/L	<0.01		0.01	2030079
Dissolved Chloride (Cl)	mg/L	7	7	1	2032469
Nitrate (N)	mg/L	0.4		0.1	2030079
Nitrate + Nitrite	mg/L	0.4		0.1	2030079
Dissolved Bromide (Br-)	mg/L	<1	<1	1	2032469
Dissolved Sulphate (SO4)	mg/L	597	601	5	2032469

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8999		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**5400 NO2 SDRD**	**RDL**	**QC Batch**
Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2028919
Total Aluminum (Al)	mg/L	0.019	0.005	2031362
Total Antimony (Sb)	mg/L	0.0007	0.0005	2031362
Total Arsenic (As)	mg/L	<0.001	0.001	2031362
Total Barium (Ba)	mg/L	0.068	0.005	2031362
Total Beryllium (Be)	mg/L	<0.0005	0.0005	2031362
Total Bismuth (Bi)	mg/L	<0.001	0.001	2031362
Total Boron (B)	mg/L	0.45	0.01	2031362
Total Cadmium (Cd)	mg/L	<0.0001	0.0001	2031362
Total Calcium (Ca)	mg/L	150	0.2	2031362
Total Chromium (Cr)	mg/L	<0.005	0.005	2031362
Total Cobalt (Co)	mg/L	<0.0005	0.0005	2031362
Total Copper (Cu)	mg/L	0.008	0.001	2031362
Total Iron (Fe)	mg/L	<0.1	0.1	2031362
Total Lead (Pb)	mg/L	0.0006	0.0005	2031362
Total Lithium (Li)	mg/L	0.030	0.005	2031362
Total Magnesium (Mg)	mg/L	55	0.05	2031362
Total Manganese (Mn)	mg/L	0.003	0.002	2031362
Total Molybdenum (Mo)	mg/L	0.004	0.001	2031362
Total Nickel (Ni)	mg/L	0.002	0.001	2031362
Total Potassium (K)	mg/L	8.3	0.2	2031362
Total Selenium (Se)	mg/L	<0.002	0.002	2031362
Total Silicon (Si)	mg/L	3.3	0.05	2031362
Total Silver (Ag)	mg/L	<0.0001	0.0001	2031362
Total Sodium (Na)	mg/L	55	0.1	2031362
Total Strontium (Sr)	mg/L	4.6	0.001	2031362
Total Tellurium (Te)	mg/L	<0.001	0.001	2031362
Total Thallium (Tl)	mg/L	<0.00005	0.00005	2031362
Total Thorium (Th)	mg/L	<0.001	0.001	2031362
Total Tin (Sn)	mg/L	<0.001	0.001	2031362
Total Titanium (Ti)	mg/L	<0.005	0.005	2031362
Total Tungsten (W)	mg/L	<0.001	0.001	2031362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8999		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**5400 NO2 SDRD**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0041	0.0001	2031362
Total Vanadium (V)	mg/L	<0.001	0.001	2031362
Total Zinc (Zn)	mg/L	1.6	0.005	2031362
Total Zirconium (Zr)	mg/L	<0.001	0.001	2031362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	11.3°C
Package 2	8.7°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.

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: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027695	JDO	QC Standard	Total Suspended Solids	2009/12/04		102	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
2027751	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2027993	SAC	Matrix Spike	Sulphide	2009/12/08		99	%	75 - 125
		Spiked Blank	Sulphide	2009/12/08		106	%	85 - 115
		Method Blank	Sulphide	2009/12/08	<0.02		mg/L	
		RPD	Sulphide	2009/12/08	NC		%	25
2028919	MC	Matrix Spike	Mercury (Hg)	2009/12/07		117	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/07		106	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/07	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/07	NC		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD	Turbidity	2009/12/07	0.8		%	25
2029599	LHA	Matrix Spike	Free Cyanide	2009/12/08		99	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/08		96	%	80 - 120
		Method Blank	Free Cyanide	2009/12/08	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/08	NC		%	25
2030079	CCI	Matrix Spike	Nitrite (N)	2009/12/10		101	%	75 - 125
			Nitrate (N)	2009/12/10		NC	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/10		104	%	80 - 120
			Nitrate (N)	2009/12/10		94	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/10	<0.01		mg/L	
			Nitrate (N)	2009/12/10	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/10	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/10	NC		%	25
			Nitrate (N)	2009/12/10	5.0		%	25
			Nitrate + Nitrite	2009/12/10	5.0		%	25
2031362	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/09		NC	%	80 - 120
			Total Antimony (Sb)	2009/12/09		105	%	80 - 120
			Total Arsenic (As)	2009/12/09		100	%	80 - 120
			Total Barium (Ba)	2009/12/09		96	%	80 - 120
			Total Beryllium (Be)	2009/12/09		104	%	75 - 125
			Total Bismuth (Bi)	2009/12/09		97	%	75 - 125
			Total Boron (B)	2009/12/09		110	%	75 - 125
			Total Cadmium (Cd)	2009/12/09		100	%	80 - 120
			Total Calcium (Ca)	2009/12/09		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/09		96	%	80 - 120
			Total Cobalt (Co)	2009/12/09		96	%	80 - 120
			Total Copper (Cu)	2009/12/09		96	%	80 - 120
			Total Iron (Fe)	2009/12/09		97	%	80 - 120
			Total Lead (Pb)	2009/12/09		96	%	80 - 120
			Total Lithium (Li)	2009/12/09		101	%	75 - 125
			Total Magnesium (Mg)	2009/12/09		NC	%	80 - 120
			Total Manganese (Mn)	2009/12/09		97	%	80 - 120
			Total Molybdenum (Mo)	2009/12/09		106	%	80 - 120
			Total Nickel (Ni)	2009/12/09		94	%	80 - 120
			Total Potassium (K)	2009/12/09		96	%	75 - 125
			Total Selenium (Se)	2009/12/09		99	%	75 - 125
			Total Silicon (Si)	2009/12/09		95	%	75 - 125
			Total Silver (Ag)	2009/12/09		93	%	80 - 120
			Total Sodium (Na)	2009/12/09		NC	%	75 - 125

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
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Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362 HRE	Matrix Spike	Total Strontium (Sr)	2009/12/09		NC	%	80 - 120
		Total Tellurium (Te)	2009/12/09		100	%	75 - 125
		Total Thallium (Tl)	2009/12/09		95	%	80 - 120
		Total Thorium (Th)	2009/12/09		103	%	75 - 125
		Total Tin (Sn)	2009/12/09		103	%	75 - 125
		Total Titanium (Ti)	2009/12/09		101	%	75 - 125
		Total Tungsten (W)	2009/12/09		103	%	75 - 125
		Total Uranium (U)	2009/12/09		103	%	80 - 120
		Total Vanadium (V)	2009/12/09		97	%	80 - 120
		Total Zinc (Zn)	2009/12/09		98	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		104	%	75 - 125
	Spiked Blank	Total Aluminum (Al)	2009/12/09		102	%	80 - 120
		Total Antimony (Sb)	2009/12/09		98	%	82 - 120
		Total Arsenic (As)	2009/12/09		101	%	86 - 119
		Total Barium (Ba)	2009/12/09		98	%	83 - 115
		Total Beryllium (Be)	2009/12/09		103	%	85 - 132
		Total Bismuth (Bi)	2009/12/09		99	%	78 - 120
		Total Boron (B)	2009/12/09		103	%	78 - 133
		Total Cadmium (Cd)	2009/12/09		101	%	85 - 116
		Total Calcium (Ca)	2009/12/09		100	%	75 - 125
		Total Chromium (Cr)	2009/12/09		98	%	80 - 120
		Total Cobalt (Co)	2009/12/09		98	%	82 - 117
		Total Copper (Cu)	2009/12/09		99	%	80 - 117
		Total Iron (Fe)	2009/12/09		100	%	80 - 120
		Total Lead (Pb)	2009/12/09		99	%	80 - 120
		Total Lithium (Li)	2009/12/09		100	%	86 - 131
		Total Magnesium (Mg)	2009/12/09		101	%	80 - 120
		Total Manganese (Mn)	2009/12/09		98	%	80 - 120
		Total Molybdenum (Mo)	2009/12/09		99	%	82 - 117
		Total Nickel (Ni)	2009/12/09		96	%	81 - 117
		Total Potassium (K)	2009/12/09		98	%	75 - 125
		Total Selenium (Se)	2009/12/09		102	%	82 - 118
		Total Silicon (Si)	2009/12/09		96	%	67 - 140
		Total Silver (Ag)	2009/12/09		95	%	80 - 120
		Total Sodium (Na)	2009/12/09		98	%	75 - 125
		Total Strontium (Sr)	2009/12/09		99	%	83 - 120
		Total Tellurium (Te)	2009/12/09		97	%	80 - 116
		Total Thallium (Tl)	2009/12/09		97	%	80 - 129
		Total Thorium (Th)	2009/12/09		102	%	80 - 125
		Total Tin (Sn)	2009/12/09		97	%	83 - 119
		Total Titanium (Ti)	2009/12/09		98	%	60 - 125
		Total Tungsten (W)	2009/12/09		98	%	81 - 123
		Total Uranium (U)	2009/12/09		104	%	82 - 120
		Total Vanadium (V)	2009/12/09		98	%	82 - 118
		Total Zinc (Zn)	2009/12/09		102	%	80 - 120
		Total Zirconium (Zr)	2009/12/09		98	%	84 - 118
	Method Blank	Total Aluminum (Al)	2009/12/09	<0.005		mg/L	
		Total Antimony (Sb)	2009/12/09	<0.0005		mg/L	
		Total Arsenic (As)	2009/12/09	<0.001		mg/L	
		Total Barium (Ba)	2009/12/09	<0.005		mg/L	
		Total Beryllium (Be)	2009/12/09	<0.0005		mg/L	
		Total Bismuth (Bi)	2009/12/09	<0.001		mg/L	
		Total Boron (B)	2009/12/09	<0.01		mg/L	
		Total Cadmium (Cd)	2009/12/09	<0.0001		mg/L	
		Total Calcium (Ca)	2009/12/09	<0.2		mg/L	

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2031362	HRE	Method Blank	Total Chromium (Cr)	2009/12/09	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/09	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/09	<0.001		mg/L	
			Total Iron (Fe)	2009/12/09	<0.1		mg/L	
			Total Lead (Pb)	2009/12/09	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/09	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/09	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/09	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/09	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/09	<0.001		mg/L	
			Total Potassium (K)	2009/12/09	<0.2		mg/L	
			Total Selenium (Se)	2009/12/09	<0.002		mg/L	
			Total Silicon (Si)	2009/12/09	<0.05		mg/L	
			Total Silver (Ag)	2009/12/09	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/09	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/09	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/09	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/09	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/09	<0.001		mg/L	
			Total Tin (Sn)	2009/12/09	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/09	<0.005		mg/L	
			Total Tungsten (W)	2009/12/09	<0.001		mg/L	
			Total Uranium (U)	2009/12/09	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/09	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/09	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/09	<0.001		mg/L	
		RPD	Total Barium (Ba)	2009/12/09	4.2		%	25
			Total Boron (B)	2009/12/09	3.7		%	25
			Total Calcium (Ca)	2009/12/09	5.2		%	25
			Total Magnesium (Mg)	2009/12/09	5.0		%	25
			Total Potassium (K)	2009/12/09	4.0		%	25
			Total Silicon (Si)	2009/12/09	5.7		%	25
			Total Sodium (Na)	2009/12/09	2.9		%	25
2031510	AHA	Matrix Spike	Total Phosphorus	2009/12/10		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		100	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		98	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/10	2.1		%	25
2032034	YPA	Matrix Spike [EN9003-01]	Fluoride (F-)	2009/12/09		106	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/09		108	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/09	<0.1		mg/L	
2032035	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/09		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/09	<1		mg/L	
2032046	DRM	Matrix Spike	Orthophosphate (P)	2009/12/10		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/10		101	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/10	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/10	NC		%	25
2032408	ADB	Matrix Spike [EN8999-04]	Total Ammonia-N	2009/12/10		93	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/10		100	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/10	<0.05		mg/L	
		RPD [EN8999-04]	Total Ammonia-N	2009/12/10	NC		%	25
2032469	FD	Matrix Spike [EN8999-01]	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032469	FD	Matrix Spike [EN8999-01]	Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115
			Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
		RPD [EN8999-01]	Dissolved Chloride (Cl)	2009/12/10	4.0		%	25
			Dissolved Bromide (Br-)	2009/12/10	NC		%	25
			Dissolved Sulphate (SO4)	2009/12/10	0.7		%	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 #: A9G3994

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

==

SUGIYAMA

Site: TANSLEY QUARRY
Your C.O.C. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9G3994
Received: 2009/12/03, 16:48

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Alkalinity	1	N/A	2009/12/09	CAM SOP-00448	SM 2320B
Anions	1	N/A	2009/12/10	CAM SOP-00435	SM 4110B
Free Cyanide	1	N/A	2009/12/08	Ont SOP-0094	EPA 9012 Modified
Fluoride	1	2009/12/09	2009/12/09	CAM SOP-00456	APHA 4500FC
Hardness (calculated as CaCO3)	1	N/A	2009/12/11	CAM SOP 00102	SM 2340 B
Mercury in Water by CVAA	1	2009/12/07	2009/12/08	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	1	N/A	2009/12/10	CAM SOP-00447	EPA 6020
Ammonia-N	1	N/A	2009/12/10	CAM SOP-00441	US GS I-2522-90
Nitrate (NO3) and Nitrite (NO2) in Water (1)	1	N/A	2009/12/09	CAM SOP-00440	SM 4500 NO3I/NO2B
pH	1	N/A	2009/12/09	CAM SOP-00448	SM 4500H
Phenols (4AAP)	1	N/A	2009/12/04	CAM SOP-00444	MOE ROPHEN-E3179
Orthophosphate	1	N/A	2009/12/10	CAM SOP-00461	SM 4500 P-F
Sulphide	1	N/A	2009/12/10	CAM SOP-00455	SM 4500-S G
Total Phosphorus (Colourimetric)	1	2009/12/09	2009/12/10	CAM SOP-00407	APHA 4500 P,B,F
Total Suspended Solids	1	N/A	2009/12/04	CAM SOP-00428	SM 2540D
Turbidity	1	N/A	2009/12/07	CAM SOP-00417	APHA 2130

(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.

CHRISTINE MCLEAN, Project Manager
Email: christine.mclean@maxxamanalytics.com
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. #: 17201804, 172018-0

Attention: Sharon Wood
Golder Associates Ltd
Mississauga - Standing Offer
2390 Argentia Rd
Mississauga, ON
L5N 5Z7

Report Date: 2010/01/05

CERTIFICATE OF ANALYSIS

-2-

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

RESULTS OF ANALYSES OF WATER

Maxxam ID		EN8998		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**

Calculated Parameters				
Hardness (CaCO3)	mg/L	1400	1	2026931
Inorganics				
Total Ammonia-N	mg/L	2.0	0.05	2032408
Fluoride (F-)	mg/L	0.4	0.1	2032034
Free Cyanide	mg/L	<0.002	0.002	2029599
Orthophosphate (P)	mg/L	<0.01	0.01	2032046
pH	pH	7.7		2032036
Phenols-4AAP	mg/L	<0.001	0.001	2027751
Total Phosphorus	mg/L	<0.002	0.002	2031510
Total Suspended Solids	mg/L	<10	10	2027695
Sulphide	mg/L	<0.02	0.02	2031349
Turbidity	NTU	2.7	0.1	2029074
Alkalinity (Total as CaCO3)	mg/L	168	1	2032035
Nitrite (N)	mg/L	0.05	0.01	2030095
Dissolved Chloride (Cl)	mg/L	1620	10	2032469
Nitrate (N)	mg/L	1.6	0.1	2030095
Nitrate + Nitrite	mg/L	1.7	0.1	2030095
Dissolved Bromide (Br-)	mg/L	18	1	2032469
Dissolved Sulphate (SO4)	mg/L	907	10	2032469

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8998		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**

Metals				
Mercury (Hg)	mg/L	<0.0001	0.0001	2029098
Total Aluminum (Al)	mg/L	<0.005	0.005	2032726
Total Antimony (Sb)	mg/L	<0.0005	0.0005	2032726
Total Arsenic (As)	mg/L	<0.005 (1)	0.005	2032726
Total Barium (Ba)	mg/L	0.012	0.005	2032726
Total Beryllium (Be)	mg/L	<0.0005	0.0005	2032726
Total Bismuth (Bi)	mg/L	<0.001	0.001	2032726
Total Boron (B)	mg/L	5.0	0.01	2032726
Total Cadmium (Cd)	mg/L	<0.0001	0.0001	2032726
Total Calcium (Ca)	mg/L	360	0.2	2032726
Total Chromium (Cr)	mg/L	<0.005	0.005	2032726
Total Cobalt (Co)	mg/L	<0.0005	0.0005	2032726
Total Copper (Cu)	mg/L	0.034	0.001	2032726
Total Iron (Fe)	mg/L	0.4	0.1	2032726
Total Lead (Pb)	mg/L	<0.0005	0.0005	2032726
Total Lithium (Li)	mg/L	0.87	0.005	2032726
Total Magnesium (Mg)	mg/L	130	0.05	2032726
Total Manganese (Mn)	mg/L	0.061	0.002	2032726
Total Molybdenum (Mo)	mg/L	0.006	0.001	2032726
Total Nickel (Ni)	mg/L	<0.005 (1)	0.005	2032726
Total Potassium (K)	mg/L	38	0.2	2032726
Total Selenium (Se)	mg/L	<0.01 (1)	0.01	2032726
Total Silicon (Si)	mg/L	3.9	0.05	2032726
Total Silver (Ag)	mg/L	<0.0001	0.0001	2032726
Total Sodium (Na)	mg/L	880	1	2032726
Total Strontium (Sr)	mg/L	21	0.001	2032726
Total Tellurium (Te)	mg/L	<0.001	0.001	2032726
Total Thallium (Tl)	mg/L	<0.00005	0.00005	2032726
Total Thorium (Th)	mg/L	<0.001	0.001	2032726
Total Tin (Sn)	mg/L	<0.001	0.001	2032726

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Golder Associates Ltd

Maxxam Job #: A9G3994
Report Date: 2010/01/05

Project name: TANSLEY QUARRY
Sampler Initials: AF

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		EN8998		
Sampling Date		2009/12/03		
COC Number		172018-0		
	Units	**3287 TREMAINE ROAD**	**RDL**	**QC Batch**
Total Titanium (Ti)	mg/L	<0.005	0.005	2032726
Total Tungsten (W)	mg/L	<0.001	0.001	2032726
Total Uranium (U)	mg/L	0.0001	0.0001	2032726
Total Vanadium (V)	mg/L	<0.005 (1)	0.005	2032726
Total Zinc (Zn)	mg/L	0.078	0.005	2032726
Total Zirconium (Zr)	mg/L	<0.001	0.001	2032726

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Detection Limit was raised due to matrix interferences.

Package 1	11.3°C
Package 2	8.7°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.

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: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2027695	JDO	QC Standard	Total Suspended Solids	2009/12/04		102	%	85 - 115
		Method Blank	Total Suspended Solids	2009/12/04	<10		mg/L	
2027751	BMO	Matrix Spike	Phenols-4AAP	2009/12/04		99	%	75 - 125
		Spiked Blank	Phenols-4AAP	2009/12/04		100	%	75 - 125
		Method Blank	Phenols-4AAP	2009/12/04	<0.001		mg/L	
		RPD	Phenols-4AAP	2009/12/04	NC		%	25
2029074	KTH	QC Standard	Turbidity	2009/12/07		100	%	85 - 115
		Method Blank	Turbidity	2009/12/07	<0.1		NTU	
		RPD	Turbidity	2009/12/07	0.8		%	25
2029098	MC	Matrix Spike	Mercury (Hg)	2009/12/08		105	%	80 - 120
		Spiked Blank	Mercury (Hg)	2009/12/08		102	%	80 - 120
		Method Blank	Mercury (Hg)	2009/12/08	<0.0001		mg/L	
		RPD	Mercury (Hg)	2009/12/08	NC		%	25
2029599	LHA	Matrix Spike	Free Cyanide	2009/12/08		99	%	80 - 120
		Spiked Blank	Free Cyanide	2009/12/08		96	%	80 - 120
		Method Blank	Free Cyanide	2009/12/08	<0.002		mg/L	
		RPD	Free Cyanide	2009/12/08	NC		%	25
2030095	CCI	Matrix Spike	Nitrite (N)	2009/12/09		106	%	75 - 125
			Nitrate (N)	2009/12/09		97	%	75 - 125
		Spiked Blank	Nitrite (N)	2009/12/09		106	%	80 - 120
			Nitrate (N)	2009/12/09		100	%	80 - 120
		Method Blank	Nitrite (N)	2009/12/09	<0.01		mg/L	
			Nitrate (N)	2009/12/09	<0.1		mg/L	
			Nitrate + Nitrite	2009/12/09	<0.1		mg/L	
		RPD	Nitrite (N)	2009/12/09	NC		%	25
			Nitrate (N)	2009/12/09	0.08		%	25
2031349	SAC	Matrix Spike	Sulphide	2009/12/10		83	%	75 - 125
		Spiked Blank	Sulphide	2009/12/10		99	%	85 - 115
		Method Blank	Sulphide	2009/12/10	<0.02		mg/L	
		RPD	Sulphide	2009/12/10	NC		%	25
2031510	AHA	Matrix Spike	Total Phosphorus	2009/12/10		NC	%	75 - 125
		QC Standard	Total Phosphorus	2009/12/10		100	%	85 - 115
		Spiked Blank	Total Phosphorus	2009/12/10		98	%	75 - 125
		Method Blank	Total Phosphorus	2009/12/10	<0.002		mg/L	
		RPD	Total Phosphorus	2009/12/10	2.1		%	25
2032034	YPA	Matrix Spike [EN9003-01]	Fluoride (F-)	2009/12/09		106	%	80 - 120
		Spiked Blank	Fluoride (F-)	2009/12/09		108	%	80 - 120
		Method Blank	Fluoride (F-)	2009/12/09	<0.1		mg/L	
2032035	YPA	QC Standard	Alkalinity (Total as CaCO3)	2009/12/09		96	%	85 - 115
		Method Blank	Alkalinity (Total as CaCO3)	2009/12/09	<1		mg/L	
2032046	DRM	Matrix Spike	Orthophosphate (P)	2009/12/10		101	%	75 - 125
		Spiked Blank	Orthophosphate (P)	2009/12/10		101	%	80 - 120
		Method Blank	Orthophosphate (P)	2009/12/10	<0.01		mg/L	
		RPD	Orthophosphate (P)	2009/12/10	NC		%	25
2032408	ADB	Matrix Spike [EN8999-04]	Total Ammonia-N	2009/12/10		93	%	80 - 120
		Spiked Blank	Total Ammonia-N	2009/12/10		100	%	80 - 120
		Method Blank	Total Ammonia-N	2009/12/10	<0.05		mg/L	
2032469	FD	Matrix Spike [EN8999-01]	Dissolved Chloride (Cl)	2009/12/10		99	%	80 - 120
			Dissolved Bromide (Br-)	2009/12/10		109	%	80 - 120
			Dissolved Sulphate (SO4)	2009/12/10		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2009/12/10		95	%	85 - 115
			Dissolved Bromide (Br-)	2009/12/10		87	%	85 - 115

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032469	FD	Spiked Blank	Dissolved Sulphate (SO4)	2009/12/10		98	%	85 - 115
		Method Blank	Dissolved Chloride (Cl)	2009/12/10	<1		mg/L	
			Dissolved Bromide (Br-)	2009/12/10	<1		mg/L	
			Dissolved Sulphate (SO4)	2009/12/10	<1		mg/L	
2032726	HRE	Matrix Spike	Total Aluminum (Al)	2009/12/10		104	%	80 - 120
			Total Antimony (Sb)	2009/12/10		104	%	80 - 120
			Total Arsenic (As)	2009/12/10		100	%	80 - 120
			Total Barium (Ba)	2009/12/10		101	%	80 - 120
			Total Beryllium (Be)	2009/12/10		106	%	75 - 125
			Total Bismuth (Bi)	2009/12/10		107	%	75 - 125
			Total Boron (B)	2009/12/10		97	%	75 - 125
			Total Cadmium (Cd)	2009/12/10		104	%	80 - 120
			Total Calcium (Ca)	2009/12/10		NC	%	75 - 125
			Total Chromium (Cr)	2009/12/10		97	%	80 - 120
			Total Cobalt (Co)	2009/12/10		97	%	80 - 120
			Total Copper (Cu)	2009/12/10		100	%	80 - 120
			Total Iron (Fe)	2009/12/10		97	%	80 - 120
			Total Lead (Pb)	2009/12/10		105	%	80 - 120
			Total Lithium (Li)	2009/12/10		101	%	75 - 125
			Total Magnesium (Mg)	2009/12/10		98	%	80 - 120
			Total Manganese (Mn)	2009/12/10		99	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		106	%	80 - 120
			Total Nickel (Ni)	2009/12/10		100	%	80 - 120
			Total Potassium (K)	2009/12/10		100	%	75 - 125
			Total Selenium (Se)	2009/12/10		102	%	75 - 125
			Total Silicon (Si)	2009/12/10		90	%	75 - 125
			Total Silver (Ag)	2009/12/10		95	%	80 - 120
			Total Sodium (Na)	2009/12/10		NC	%	75 - 125
			Total Strontium (Sr)	2009/12/10		101	%	80 - 120
			Total Tellurium (Te)	2009/12/10		98	%	75 - 125
			Total Thallium (Tl)	2009/12/10		102	%	80 - 120
			Total Thorium (Th)	2009/12/10		115	%	75 - 125
			Total Tin (Sn)	2009/12/10		101	%	75 - 125
			Total Titanium (Ti)	2009/12/10		99	%	75 - 125
			Total Tungsten (W)	2009/12/10		106	%	75 - 125
			Total Uranium (U)	2009/12/10		117	%	80 - 120
			Total Vanadium (V)	2009/12/10		96	%	80 - 120
			Total Zinc (Zn)	2009/12/10		104	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		106	%	75 - 125
		Spiked Blank	Total Aluminum (Al)	2009/12/10		102	%	80 - 120
			Total Antimony (Sb)	2009/12/10		101	%	82 - 120
			Total Arsenic (As)	2009/12/10		100	%	86 - 119
			Total Barium (Ba)	2009/12/10		99	%	83 - 115
			Total Beryllium (Be)	2009/12/10		103	%	85 - 132
			Total Bismuth (Bi)	2009/12/10		104	%	78 - 120
			Total Boron (B)	2009/12/10		96	%	78 - 133
			Total Cadmium (Cd)	2009/12/10		101	%	85 - 116
			Total Calcium (Ca)	2009/12/10		103	%	75 - 125
			Total Chromium (Cr)	2009/12/10		95	%	80 - 120
			Total Cobalt (Co)	2009/12/10		96	%	82 - 117
			Total Copper (Cu)	2009/12/10		98	%	80 - 117
			Total Iron (Fe)	2009/12/10		99	%	80 - 120
			Total Lead (Pb)	2009/12/10		102	%	80 - 120
			Total Lithium (Li)	2009/12/10		98	%	86 - 131
			Total Magnesium (Mg)	2009/12/10		99	%	80 - 120

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032726	HRE	Spiked Blank	Total Manganese (Mn)	2009/12/10		99	%	80 - 120
			Total Molybdenum (Mo)	2009/12/10		103	%	82 - 117
			Total Nickel (Ni)	2009/12/10		98	%	81 - 117
			Total Potassium (K)	2009/12/10		99	%	75 - 125
			Total Selenium (Se)	2009/12/10		104	%	82 - 118
			Total Silicon (Si)	2009/12/10		91	%	67 - 140
			Total Silver (Ag)	2009/12/10		93	%	80 - 120
			Total Sodium (Na)	2009/12/10		95	%	75 - 125
			Total Strontium (Sr)	2009/12/10		100	%	83 - 120
			Total Tellurium (Te)	2009/12/10		96	%	80 - 116
			Total Thallium (Tl)	2009/12/10		100	%	80 - 129
			Total Thorium (Th)	2009/12/10		110	%	80 - 125
			Total Tin (Sn)	2009/12/10		98	%	83 - 119
			Total Titanium (Ti)	2009/12/10		98	%	60 - 125
			Total Tungsten (W)	2009/12/10		103	%	81 - 123
			Total Uranium (U)	2009/12/10		113	%	82 - 120
			Total Vanadium (V)	2009/12/10		93	%	82 - 118
			Total Zinc (Zn)	2009/12/10		101	%	80 - 120
			Total Zirconium (Zr)	2009/12/10		103	%	84 - 118
		Method Blank	Total Aluminum (Al)	2009/12/10	<0.005		mg/L	
			Total Antimony (Sb)	2009/12/10	<0.0005		mg/L	
			Total Arsenic (As)	2009/12/10	<0.001		mg/L	
			Total Barium (Ba)	2009/12/10	<0.005		mg/L	
			Total Beryllium (Be)	2009/12/10	<0.0005		mg/L	
			Total Bismuth (Bi)	2009/12/10	<0.001		mg/L	
			Total Boron (B)	2009/12/10	<0.01		mg/L	
			Total Cadmium (Cd)	2009/12/10	<0.0001		mg/L	
			Total Calcium (Ca)	2009/12/10	<0.2		mg/L	
			Total Chromium (Cr)	2009/12/10	<0.005		mg/L	
			Total Cobalt (Co)	2009/12/10	<0.0005		mg/L	
			Total Copper (Cu)	2009/12/10	<0.001		mg/L	
			Total Iron (Fe)	2009/12/10	<0.1		mg/L	
			Total Lead (Pb)	2009/12/10	<0.0005		mg/L	
			Total Lithium (Li)	2009/12/10	<0.005		mg/L	
			Total Magnesium (Mg)	2009/12/10	<0.05		mg/L	
			Total Manganese (Mn)	2009/12/10	<0.002		mg/L	
			Total Molybdenum (Mo)	2009/12/10	<0.001		mg/L	
			Total Nickel (Ni)	2009/12/10	<0.001		mg/L	
			Total Potassium (K)	2009/12/10	<0.2		mg/L	
			Total Selenium (Se)	2009/12/10	<0.002		mg/L	
			Total Silicon (Si)	2009/12/10	<0.05		mg/L	
			Total Silver (Ag)	2009/12/10	<0.0001		mg/L	
			Total Sodium (Na)	2009/12/10	<0.1		mg/L	
			Total Strontium (Sr)	2009/12/10	<0.001		mg/L	
			Total Tellurium (Te)	2009/12/10	<0.001		mg/L	
			Total Thallium (Tl)	2009/12/10	<0.00005		mg/L	
			Total Thorium (Th)	2009/12/10	<0.001		mg/L	
			Total Tin (Sn)	2009/12/10	<0.001		mg/L	
			Total Titanium (Ti)	2009/12/10	<0.005		mg/L	
			Total Tungsten (W)	2009/12/10	<0.001		mg/L	
			Total Uranium (U)	2009/12/10	<0.0001		mg/L	
			Total Vanadium (V)	2009/12/10	<0.001		mg/L	
			Total Zinc (Zn)	2009/12/10	<0.005		mg/L	
			Total Zirconium (Zr)	2009/12/10	<0.001		mg/L	
		RPD	Total Aluminum (Al)	2009/12/10	3.8		%	25

Golder Associates Ltd
Attention: Sharon Wood
Client Project #:
P.O. #:
Project name: TANSLEY QUARRY

Quality Assurance Report (Continued)

Maxxam Job Number: MA9G3994

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2032726	HRE	RPD	Total Antimony (Sb)	2009/12/10	NC		%	25
			Total Arsenic (As)	2009/12/10	NC		%	25
			Total Barium (Ba)	2009/12/10	NC		%	25
			Total Beryllium (Be)	2009/12/10	NC		%	25
			Total Bismuth (Bi)	2009/12/10	NC		%	25
			Total Boron (B)	2009/12/10	9.8		%	25
			Total Cadmium (Cd)	2009/12/10	NC		%	25
			Total Calcium (Ca)	2009/12/10	2.9		%	25
			Total Chromium (Cr)	2009/12/10	NC		%	25
			Total Cobalt (Co)	2009/12/10	NC		%	25
			Total Copper (Cu)	2009/12/10	3.9		%	25
			Total Iron (Fe)	2009/12/10	NC		%	25
			Total Lead (Pb)	2009/12/10	NC		%	25
			Total Lithium (Li)	2009/12/10	NC		%	25
			Total Magnesium (Mg)	2009/12/10	1.1		%	25
			Total Manganese (Mn)	2009/12/10	1.2		%	25
			Total Molybdenum (Mo)	2009/12/10	NC		%	25
			Total Nickel (Ni)	2009/12/10	NC		%	25
			Total Potassium (K)	2009/12/10	NC		%	25
			Total Selenium (Se)	2009/12/10	NC		%	25
			Total Silicon (Si)	2009/12/10	4.5		%	25
			Total Silver (Ag)	2009/12/10	NC		%	25
			Total Sodium (Na)	2009/12/10	5.5		%	25
			Total Strontium (Sr)	2009/12/10	0.2		%	25
			Total Tellurium (Te)	2009/12/10	NC		%	25
			Total Thallium (Tl)	2009/12/10	NC		%	25
			Total Thorium (Th)	2009/12/10	NC		%	25
			Total Tin (Sn)	2009/12/10	NC		%	25
			Total Titanium (Ti)	2009/12/10	NC		%	25
			Total Tungsten (W)	2009/12/10	NC		%	25
			Total Uranium (U)	2009/12/10	1.5		%	25
			Total Vanadium (V)	2009/12/10	NC		%	25
			Total Zinc (Zn)	2009/12/10	0.7		%	25
			Total Zirconium (Zr)	2009/12/10	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 #: A9G3994

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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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. SCC and CALA have approved this reporting process and electronic report format.

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.

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Ltd.
2390 Argentia Road
Mississauga, Ontario, L5N 5Z7
Canada
T: +1 (905) 567 4444