Prepared By:

Annual Monitoring Report (2022)

Glenelg Waste Disposal Site
Municipality of West Grey

MECP Certificate of Approval No. A261803

GMBP File: 213088

April 2023

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1. INTRODUCTION

The Glenelg Landfill Site is located approximately 8.5 kilometres east-northeast of Durham in the south Part of Lot 20 Concession 2, North of Durham Road (NDR) in the former Township of Glenelg, Municipality of West Grey, where shown on Figure 1. More specifically, it is located approximately 1.3 km north of Grey Road 4 on the west side of Baptist Church Road. According to the County mapping, the closed Glenelg Landfill Site and the associated buffer lands comprise an area of 5.32 hectares (13.12 acres), of which 0.48 hectares (1.2 acres) was approved for landfilling. The landfill site is currently maintained by the Corporation of the Municipality of West Grey.

The closed Glenelg Landfill site was in operation for approximately 33 years. Reportedly, the Township began accepting waste at the Site in December 1972 and the landfill was closed to the public in 2002, accepting only curbside pick-up until 2005. Since that time, all refuse from the Glenelg area has been diverted to the Durham and Bentinck Landfill Sites. A Provisional Certificate of Approval (CofA) for the waste disposal facility (CofA No. A261803) was issued to the Township of Glenelg by the Ministry of the Environment, Conservation and Parks (MECP) on September 29, 1985 and was revised on December 23, 1985 and August 31, 1989. An amendment to the existing CofA (August 1989) was issued on August 1, 1991 to include the requirement for the submission of an annual monitoring report by April 30th of each calendar year. A copy of the existing CofA and its amendment is provided in Appendix A.

In anticipation of the site capacity being reached in the early 2000's, a closure plan entitled *'Township of Glenelg Waste Disposal Site – Site Closure Plan (December 1998)* was prepared by the Stanley Consulting Group and submitted to the MECP. According to the Closure Plan, final cover was applied to the Site in 2007 and final topsoil and seeding was completed in 2008.

The Closure Plan recommended that the semi-annual groundwater monitoring program continue for a period of at least two years following Site closure after which modifications to the monitoring program could be considered depending on monitoring results and pending MECP approval. In correspondence dated November 19, 2010, the MECP concurred with the recommendation to modify the monitoring program to once per year in the fall. In addition, the Closure Plan recommends that Annual Monitoring Reports continue to be prepared. This annual report is being submitted to satisfy the reporting requirements outlined in the CofA and the approved Closure Plan for the Site.

2. GENERAL SITE OPERATIONS

As of 2005, the Glenelg landfill site has been closed and has not received any additional waste. The site was approved to receive domestic, commercial and 5 percent other waste limited to scrap metal, brush, wood, construction debris and demolition debris.

According to the Hydrogeologic Investigation and Plan of Development and Operation (PDO) prepared for the Glenelg Township Landfill, dated May 1985 (herein referred to as the *PDO*), the total remaining capacity for refuse and cover material was 16,100 m^3 at that time. Reportedly, the landfill area filled prior to that time covered 0.17 ha with the thickness of refuse estimated to be in the range of 3 m to 4 m. Based on this information, it is estimated that an additional volume in the range of 5,000 m^3 to 7,000 m^3 of waste and interim cover (i.e., daily and intermediate cover) was placed at the Site prior to that time. Based on the estimated requirement of 2,300 m^3 for final cover, the capacity used for waste and interim cover between 1985 and 2005 was 13,800 m^3. Therefore, the volume of waste and interim cover placed at the Glenelg Landfill is estimated to be in the range of +/- 20,000 m^3.

Reportedly, the entire landfill area was capped in 2007 with final topsoil and vegetative cover being completed in 2008. Capping the landfill ensures the waste is unexposed, thus reducing infiltration and the subsequent generation of leachate. In the Closure Plan, it was proposed that *'based on the small size of the licensed area of the landfill, the future use after site closure will be practically restricted to a passive use. Potentially the licenced area could be reforested. The buffer lands adjacent to the licensed area could be used for agricultural uses commonly found in this area of the Township with the most likely use being pasture land'*. Currently, the property continues to be left as an open space with a fence controlling site access. As per the Closure Plan, it is noted that *'before the land use can be changed to something other than waste disposal, the Township will need to submit a land use proposal for approval by the MOECC under Section 46 of the Environmental Protection Act'*.

According to the Closure Plan, the site is to be inspected on a regular basis following Site closure by the owner and/or consultant. It is recommended that Site inspections be completed annually in conjunction with the required annual groundwater monitoring program. The Site inspections are to include an inspection of the following:

(i) potential settlement areas;
(ii) the final cover and vegetation;
(iii) site aesthetics;
(iv) site security (i.e. fencing);
(v) drainage; and
(vi) rodent control.

Settlement areas causing surface ponding should be filled and covered with topsoil and vegetation to promote drainage. During the most recent annual monitoring event, no leachate seeps were observed and the ground cover system, site drainage and fencing continued to appear adequate.

3. `SUMMARY OF SITE SETTING

3.1 Site Setting

The Site is surrounded by general agricultural lands and wooded areas. The topography near the site is undulating and generally slopes towards the west and northwest. There are no residential homes within 250 metres of the Site, with the nearest home situated greater than 250 metres to the east and upgradient of the Site. An additional residence is located greater than 350 m to the north of the licenced landfill area. This residence is serviced by a bedrock well screened to a depth of between 31 to 41 metres below ground surface (mbgs). The well record for this well (i.e., Tomalin well) is provided in Appendix B.

3.2 Geologic Conditions

The Site is located within the physiographic region known as the Horseshoe Moraines. The region is generally characterized by irregular, stony knobs and ridges which are composed partly of till and partly of kamey deposits, and the more or less horizontally embedded sand and gravel terraces and swampy valley floors (Chapman and Putnam, 1984). Consistent with this description, the overburden deposits in this area are classified as ice contact stratified deposits (Grey Bruce Groundwater Study, 2003) and are reported to have a thickness in the range of 20 to 30 meters.

Based on the available physiographic and topographic mapping, the Site is located within a southwest to northeast trending kame moraine deposit which itself is surrounded by spillway deposits. Review of the available well records, borehole logs and geological cross-sections previously prepared by Gamsby and Mannerow Limited (now GMBP) in conjunction with the Hydrogeologic Investigation indicate that the Site is generally underlain by sand/gravel deposits, to a depth of approximately 9 m, which are then underlain by silty/sandy gravelly till (hardpan) to an approximate depth of 30 m. Available borehole information and well construction details for the Site and copies of the cross-sections prepared in conjunction with the Hydrogeologic Investigation are provided in Appendix B.

According to the *Grey and Bruce Counties Groundwater Study* (2003), the bedrock in the area belongs to the Middle Silurian Guelph Formation which is characterized by buff to brown medium bedded dolostone. Reportedly, the bedrock in the area slopes to the west and the inferred bedrock elevation at the landfill site is in the range of +/- 400 m above sea level (masl).

3.3 Hydrogeologic Conditions

3.3.1 Surface Water

The Glenelg Landfill is situated in the Saugeen River watershed. Since the Saugeen River is situated an estimated 2 km to the northwest of the landfill, it is inferred that there is no defined watercourse for drainage to the west/northwest of the landfill area. Furthermore, based on the observed surficial sand and gravel soils noted, surface water runoff and potential ponding at the Site would be limited as water infiltrates readily into the ground.

3.3.2 Groundwater

In January 1984, seven overburden monitoring wells were installed at the Site using a track-mounted auger rig, including wells TW-1 through TW-7 to depths of between 4.6 and 10.4 mbgs. Two additional monitoring wells were installed on September 3, 1998 including TW-7A, which was intended to replace well TW-7 due to consistently ‘dry’ conditions; and TW-8 to monitor groundwater quality at the western compliance boundary located approximately 115 m downgradient of the licensed landfill area. Groundwater monitoring locations are presented on Figure 2.

The borehole logs/well installation records for wells TW-1 and TW-2 and a summary of the test well logs and well construction details for wells TW-1 through TW-7 are provided in Appendix B. It is noted that copies of the borehole/well logs for wells TW-7A and TW-8 were not available to GMBP at the time of report preparation.

Based on the information available, the majority of the wells are screened in the shallow overburden sand/gravel soils. The screened intervals for the shallow overburden wells located in the vicinity of the licensed landfill area, including TW-2, TW-4 and TW-6, extend to an elevation (relative) in the range of between 86.7 m and 90.27 m and further downgradient at wells TW-3 and TW-5, the well screens extend to an elevation of between 84.4 m to 87.2 m. Reportedly, wells TW-1 and TW-7A monitor groundwater in the deeper overburden/hardpan unit.

Water levels are measured in all available wells during each sampling event. The measured water levels are then used to determine the direction of groundwater flow at the landfill site. The historical water level elevations, including the most recent data, are provided in Appendix C and a groundwater contour plan is provided as Figure 2. Consistent with historical results, groundwater flow within the shallow overburden is generally to the west through the shallow sand and gravel unit. A periodic radial flow pattern to the northwest and southwest is noted, particularly on the eastern portion of the Site. Groundwater levels in the deeper overburden wells TW-1 and TW-7A continue to be lower than those in the surrounding shallow overburden wells indicating that a downward gradient into the underlying hardpan unit likely exists in the vicinity of the existing fill area.

4. WATER QUALITY MONITORING

4.1 Monitoring Program

Groundwater monitoring at the Glenelg Township landfill was implemented in 1985 to evaluate the impacts landfill leachate may have on the groundwater resources in the vicinity of the Site. Although the sampling requirements, including the locations and parameters, have been revised several times, according to the CofA the monitoring program was initially to be conducted twice annually in the spring and fall. Based on recommendations in the 2009 annual report and with concurrence from the MECP provided in correspondence dated November 9, 2010 (refer to Appendix F), the sampling frequency has been reduced to once annually in the fall.

Groundwater at the Glenelg Landfill Site is currently monitored by a system of 8 monitoring wells installed throughout the landfill site and the locations of the monitoring wells are presented on Figure 2. The established monitoring program is outlined as follows:

Wells to be Sampled Once Annually in the Fall		Parameters
TW-1 TW-2 TW-3 TW-4 TW-5 TW-6	TW-7A TW-8	pH, conductivity, hardness, alkalinity, sulphide (as H2S), phenols, dissolved organic carbon (DOC), chloride, sulphate, nitrite, nitrate, ammonia, and metals (i.e., Ca, Fe, Mg, Mn, P, K and Na).

The sampling event for the current monitoring year was conducted on September 29th. Summaries of the historical groundwater analytical results and long-term trend analysis graphs are provided in Appendix D.

4.2 Sampling Procedures

For the groundwater sampling, the static groundwater level and well depth are measured in each monitoring well prior to purging three casing volumes of stagnant water from each monitoring well. GMBP personnel also check to ensure that all monitoring wells are properly secured and in compliance with O.Reg. 903. After purging, monitoring wells are allowed to recharge with fresh groundwater before sampling occurs. Groundwater purging and sampling is conducted using dedicated Waterra™ tubing and inertial-type pumps. Samples are collected in laboratory supplied containers and are kept chilled following completion of the sampling program and sent within 24 hours of the sampling event to Bureau Veritas Laboratories (BVL) in Mississauga for analysis. Samples collected for metals are placed in laboratory supplied containers without preservative and are filtered and preserved by BVL prior to analysis. The laboratory analytical report for the current monitoring year is included in Appendix E.

5. DETERMINATION OF REASONABLE USE CRITERIA FOR THE SITE

5.1 Determination of Action Levels

MOE Guideline B-7 establishes the basis for determining what constitutes the reasonable use of groundwater on properties adjacent to landfill sites. By applying the Reasonable Use Concept, the potential use of groundwater for domestic consumption will almost always provide the lowest allowable concentration limits. MOE Procedure B-7-1 provides technical details for the application of the reasonable use approach. A change in the quality of groundwater on an adjacent property, where the reasonable use is determined to be for drinking water, will be acceptable only where:

i) Quality is not degraded by more than 50% of the difference between background concentrations and the Ontario Drinking Water Standards (ODWS) for non-health related parameters, and

ii) Quality is not degraded by more than 25% of the difference between background concentrations and the ODWS for health related parameters.

Background concentrations are considered to be the quality of the groundwater prior to any contamination from landfill activities.

5.2 Background Groundwater Quality

Background concentrations are considered to be the quality of the groundwater prior to any contamination from landfill activities. Historically, monitoring well TW-5 has been selected to be the background monitoring location based on the direction of shallow groundwater flow at the Site and its location relative to the fill area which results in the least potential for impacts from the landfill. It is located approximately 75 m to the southwest of the approved fill area. Historical and on-going water quality results also support the use of TW-5 as a background well as the results indicate that this monitoring location typically has the lowest concentrations of indicator parameters. Historical results, provided in Appendix D, were used to calculate average values of indicator parameters for the subsequent calculation of the RUC values. The background concentration ranges, averages, and resulting RUC values for several indicator parameters are summarized in Table 1.

The background water quality is typical of a carbonate system and is generally highly mineralized with an average background hardness of less than 300 mg/L. In general, the background chloride and sodium concentrations are typically less than 5 mg/L, sulphate concentrations are less than 10 mg/L and the background specific conductance (i.e., conductivity at 25° Celsius) is, on average, approximately 475 uS/cm.

It is noted that the hardness typically exceeds the RUC at all monitored locations. Therefore, the elevated hardness concentrations alone do not appear to be related to impacts from landfill leachate and can be attributed to the natural background conditions.

5.3 Calculation of Objective Levels

The objective levels for several groundwater quality indicator parameters were calculated to evaluate the acceptable level of contaminant concentrations at the Site boundary. Background concentrations (Cb) are the site-specific values (discussed in the previous section). The Provincial maximum concentrations (Cr) are identified in the Ontario Drinking Water Standards. Acceptable concentrations at the site boundary (Cm) are calculated from MOECC Procedure B-7-1 using the following formula:

$$Cm = Cb + x(Cr - Cb)$$

Where:

Cm = Maximum concentration acceptable in groundwater beneath an adjacent property.
Cb = Background concentration.
Cr = Maximum concentration that should be present in groundwater for domestic consumption according to the ODWS.
x = 0.5 for non-health related parameters (AO and OG) and 0.25 for health related parameters (MAC and IMAC).

AO = Aesthetic Objective
OG = Operational Guideline
MAC = Maximum Acceptable Concentration, Parameters Related to Health
IMAC = Interim Maximum Acceptable Concentration, Parameters Related to Health

It should be noted that if background concentrations exceed the ODWS, the objective level is set at the background concentration. A summary of the average background concentrations and resulting RUC values are provided in Table 1 and a summary of the analytical results from the current monitoring year compared to the RUC and ODWS is provided in Table 2.

To determine if leachate is impacting groundwater, individual indicator parameters were evaluated in conjunction with other indicator parameters and concentration trends. Monitoring wells with elevated and stable concentrations of the identified naturally elevated constituents, that show no increases in other leachate indicator parameters, are deemed un-impacted by landfill leachate. Additionally, comparison of known leachate impacted groundwater is compared to the groundwater chemistry at locations with naturally elevated concentrations to determine if leachate contributes to the elevated concentrations measured.

6. MONITORING RESULTS AND DISCUSSION

Leachate is produced when surface water percolates down through refuse resulting in impacted water that has the potential to migrate along the surface or in the ground. Landfill derived leachate that enters into the surface water and/or groundwater is often attenuated by natural mechanisms along the water migration pathway. The attenuation of leachate can occur by dilution, biologic activity, and geochemical mechanisms. To determine the presence of (or potential impacts from) leachate, several indicator parameters are monitored and a trend analysis is conducted to determine changes in water quality over time.

At the Glenelg Waste Disposal Site, it is anticipated that leachate production will be reduced in comparison to the leachate produced prior to closure and capping of the Site in 2007/2008. The cover material acts to limit the volume of surface water percolating down through the refuse, thereby limiting leachate production through surface water percolation.

Additionally, review of the available cross-sections and borehole logs suggests that limited waste was disposed of at this Site and that the waste was likely placed above the water table. Therefore, the production of leachate by the migration of groundwater through the bottom of the refuse pile is unlikely.

The following sections discuss the potential impacts to groundwater on-site and leaving the property boundaries in reference to compliance with the RUC. The groundwater quality results for the current monitoring year are summarized in Table 2. Historical groundwater sampling results and graphical trends of indicator parameters are included in Appendix D.

It should be noted that, consistent with groundwater flowing through carbonate-rich soils, hardness concentrations consistently exceed the ODWS operational guidelines. Therefore, references to hardness exceedences are only made where the concentrations are significantly higher than those measured in the background well, such as at wells TW-2 and TW-4.

6.1 Groundwater Quality in Proximity to the Landfill Footprint

6.1.1 Shallow Overburden

Groundwater quality in the vicinity of the approved fill area is measured in the shallow overburden aquifer at monitoring wells TW-2, TW-4 and TW-6, where shown on Figure 2. Similar to the background well TW-5, these wells are screened within the sand and gravel unit approximately four to nine meters below ground surface (mbgs).

Test well TW-2 monitors groundwater quality directly downgradient of the fill area and within approximately 5 meters of the limit of placed waste. TW-2 is considered a near-source well and this monitoring location represents leachate impacted groundwater quality at the Site. An evaluation of the historical analytical results indicates that the primary leachate indicator parameters for the Site include conductivity, alkalinity, hardness, chloride, sulphate and to a lesser degree, DOC, iron, potassium and manganese. Consistent with historical results, RUC exceedances for alkalinity, hardness, DOC and manganese were noted. Review of the groundwater quality trend graph provided in Appendix D indicates that since the cessation of landfill activities at the Site and the subsequent closure of the fill area, the leachate indicator concentrations have been stable to decreasing at this monitoring location. Of particular note, the chloride concentrations which historically ranged from 50 to up to 350 mg/L have decreased significantly, remaining below 10 mg/L since 2008. This chloride trend, combined with the overall analytical results at this near-source monitoring well, suggests that the landfill closure and capping operations have effectively reduced the level of groundwater infiltration and subsequent leachate generation at the Site.

Based on the periodic radial flow pattern observed on the eastern portion of the Site, monitoring wells TW-4 and TW-6 are inferred to be located cross-gradient to downgradient of the fill area. TW-4 is situated to the north and within 15 meters of the limit of placed waste and TW-6 is located closer to the landfill footprint, approximately 5 meters to the south. No sample could be collected from TW-4 during the current monitoring period, due to GMBP staff being unable to locate the monitoring well. It was noted that tire tracks were observed in the area of the monitoring well, associated with the neighbouring agricultural field, and it is inferred that the monitoring well may have been damaged or destroyed. It is recommended that the status of the monitoring well be confirmed by municipal staff. If the monitoring well has been destroyed, the installation of a replacement well is recommended since TW-4 is the only monitoring well located to the north of the landfill footprint. The reported concentrations of indicator parameters at TW-6 did not exceed the RUC, with exception to hardness. The long-term trend evaluation for leachate indicator concentrations at TW-4 indicates that concentrations are primarily stable and have remained stable for a period of over ten years (i.e., since site closure in 2007/08).

Although concentrations at TW-4 have been relatively stable, with chloride concentrations typically remaining below 15 mg/L, the concentrations measured in well TW-6 have historically been more variable, particularly during the time that the landfill site was operational (i.e., prior to 2005). However, since 2005, concentrations have been stable to decreasing and chloride concentrations have remained below 10 mg/L since 2008. Therefore, although landfill leachate-influenced groundwater has been historically noted at these monitoring locations, recent groundwater monitoring results indicate that impacts related to landfill leachate are minor. It should be noted that TW-4 and TW-6 do not represent the water quality leaving the site as buffer lands extend to the north and south of the approved landfill footprint. Further discussion of the groundwater quality in proximity to the property boundary is provided in Section 6.2.

6.1.2 Deep Overburden

Groundwater quality in the deeper overburden aquifer is monitored at wells TW-1 and TW-7A. TW-1 is located directly downgradient of the landfill footprint in the vicinity of TW-2 and is closer to the limit of placed waste than TW-2. TW-7A is located along the southern landfill limit in close proximity to the access road. Groundwater elevations reported for these deeper overburden monitoring locations compared to nearby shallow overburden wells indicate that a downward gradient exists in the vicinity of the landfill.

Similar to the groundwater quality noted in the leachate characterization well TW-2, during the current monitoring year the concentration of hardness and manganese exceed the RUC at TW-1, and several other leachate indicator parameter concentrations were elevated relative to background. Historically, the occurrence of several elevated parameters has been attributed to landfill leachate. However, these parameter concentrations are below the ODWS and RUC and are still considered to be minor. A review of water quality parameters suggests that the deeper groundwater generally has somewhat differing chemical characteristics with a difference in the relative occurrence of leachate indicator parameters. At TW-1, relative to leachate impacted wells, the alkalinity, ammonia, and potassium are low, while sulphate and chloride are high, and the ratio of chloride to sodium is high.

In particular, the alkalinity is typically elevated in association with landfill leachate due to the acidic nature of leachate which causes the dissolution of carbonates. It is noted that at the monitoring locations with inferred leachate impacts both the alkalinity and hardness are elevated (such as TW-2). In comparison, at TW-1 the concentration of alkalinity has consistently been similar to background with a stable long-term trend. It is reasonable to expect this contrast in the relative levels of hardness and alkalinity is due to the use of calcium and/or sodium chloride salts along the roadway, which will increase dissolved calcium (directly or through cation exchange) and thus, calculated hardness. However, the addition of salt does not typically have the same level of effect on alkalinity.

In addition, a review of chloride versus sodium concentrations provides information regarding the potential source of chloride. Based on our experience with many landfills in Grey and Bruce Counties, typical with influence from road salt application, the ratio of chloride to sodium is typically in the range of 2:1 or greater. In contrast, wells showing influence from leachate typically have a ratio of chloride to sodium in the range of 1:1. At TW-1, the chloride concentration was reported to be 72 mg/L, as compared to less than 10 mg/L in all the shallow overburden wells monitored in 2022 (Figure 2). The reported sodium concentration at TW-1 is 17 mg/L and therefore, the ratio of chloride to sodium is approximately 4:1.

Review of the parameter concentration trends for well TW-1 suggests that the alkalinity is stable but the chloride and conductivity indicator parameters have been steadily increasing (trend graph is provided in Appendix D). Therefore, the increasing trend is considered to be related to potential larger scale differences in water quality, likely associated with road salting. However, based on the historical interpretation and potential for landfill leachate influence due to downwards gradients, it is recommended that the potential for influence to the deeper overburden system continue to be assessed as part of the monitoring program.

It should also be noted that, based on the borehole log (Appendix B), TW-1 is at a depth of 10.4 mbgs within a sand and gravel silt till and some mixing of shallow groundwater quality based on the well screen location across both the deeper portion of the shallow overburden, and the upper portion of the deeper system may also be occurring. Regardless, the migration of leachate-influenced groundwater into the underlying bedrock unit and/or to the compliance boundary is not anticipated based on the well depth of 10.4 m bgs; the approximate overburden thickness of 30 m; the low permeability associated with the hardpan unit observed below the sand and gravel till; and the additional distance of approximately 130 m to the western compliance boundary.

Consistent with recent data, the current groundwater quality at well TW-7A was characterized by slightly elevated and relatively stable conductivity and chloride concentrations. The chloride concentration was reported to be 19 mg/L during the current monitoring period. Other typical leachate indicator parameter concentrations are generally stable. As per the above noted discussion, it is suspected that much of the variation in water quality at TW-7A is a result of differing water quality at depth. However, the difference is less apparent than at TW-1, which may be a result of some leachate influence, and/or a mixing of shallow groundwater quality at TW-1. Based on a long-term trend analysis at the location of TW-7A, the reported analytical concentrations have remained stable since the initial sampling events were completed in the late 1990s (i.e., a period of over twenty years).

6.2 Boundary Conditions

Since groundwater flow has been measured to be in a westerly direction since annual monitoring was initiated at the Site, the property boundaries to the north, east and south are considered to be hydraulically upgradient and/or crossgradient of the landfill footprint. Therefore, the flow of potentially leachate impacted groundwater from the landfill across these compliance boundaries is not anticipated.

Groundwater quality to the west of the landfilled area is monitored at the locations of TW-3 and TW-8, which are located approximately 70 m and 115 m downgradient of the landfill footprint, respectively. Review of the historical water quality trends for TW-3 indicates that the migration of leachate-influenced groundwater in a westerly direction occurred while the landfill Site was in operation. However, a significant decrease in the concentrations of several leachate indicator parameters since the landfill was closed (i.e., placement of final cover and topsoil) is evident. The long-term trends for selected leachate indicator parameters display stable and steadily decreasing concentrations since about 2000. The hardness and alkalinity concentrations have decreased to being at or below 300 mg/L and continue the stable to slightly decreasing trend over time. Recent water quality results for TW-3 suggest that the groundwater quality continues to improve even further with concentrations remaining at background levels (i.e., the reported chloride concentration was <1.0 mg/L in 2022 and the concentrations have remained below 3.0 mg/L since 2009).

TW-8 is considered to be a compliance well based on its proximity to the western compliance limit (i.e., within 30 m of the property boundary). Consistent with historical results, the long-term trend analysis depicts stable long-term trends for the leachate indicator parameters and the groundwater quality at this compliance well continues to be consistent with background conditions.

6.3 Water Quality Summary

At the Site, the migration of leachate-impacted groundwater into the shallow overburden aquifer in the vicinity of the fill area was evident while the Site was operational (i.e., until 2005). Historical impacts were also noted at the location of TW-3, suggesting that leachate impacted groundwater was migrating through the shallow overburden to a distance of greater than 70 m downgradient of the fill area. However, since the cessation of landfill operations in 2005 and the final closure of the Site in 2007/2008, key leachate indicator parameter concentrations have generally displayed decreasing to stable concentration trends. Furthermore, at this time chloride concentrations in the shallow overburden wells generally remain below 10 mg/L and have remained below 3.0 mg/L at the downgradient boundary wells for a period of over ten years. Therefore, although leachate impacted groundwater has historically been noted at the Site, the groundwater monitoring results since closure and capping of the Site was completed in 2007/08 indicate that impacts related to landfill leachate are minor and are only observed in the monitoring wells that are located directly at the edge of the approved landfill footprint.

Compliance with MOE Guideline B-7 is monitored further downgradient and along the western compliance boundary at the locations of TW-3 and TW-8. Based on the analytical results, there does not appear to be groundwater exceedances of the RUC across the western boundary and the groundwater quality in this downgradient location is generally consistent with background conditions.

Downwards hydraulic gradients have been observed in the vicinity of the landfill footprint. Groundwater quality in the deeper overburden is monitored at wells TW-1, which is immediately downgradient of the landfill, and at TW-7A, located directly upgradient of the landfill and at the limit of the landfill footprint. Historically, some elevated leachate indicator parameters have been noted at these locations as part of previous annual reports.
Based on this review, it appears that the slightly elevated parameters are likely associated with natural differences in groundwater quality between the shallow and deep systems. However, based on the downwards gradients, the potential for leachate influence is considered to exist. Based on the well depth at TW-1, (10.4 mbgs), the overburden thickness of 30 m, the relatively minor extent of leachate influence, and the additional distance of approximately 130 m to the western compliance boundary, the migration of leachate-influenced groundwater into the underlying bedrock unit and/or to the compliance boundary is not anticipated.

Based on the limited size of the landfill and since the landfill was closed in 2005, it is reasonable to expect that groundwater quality will improve over time. Based on the relatively limited potential for continued impacts to groundwater quality directly beneath the landfill, the potential for future off-site impacts is considered to be low, particularly since the groundwater quality at the downgradient “boundary” monitoring wells continues to show no impacts related to the landfill.

7. CONCLUSIONS

1. As of 2005, the Glenelg landfill site, which was approved to receive domestic, commercial and 5 percent other waste limited to scrap metal, brush, wood, construction debris and demolition debris has been closed and has not received any additional refuse.

2. The volume of waste and interim cover placed at the Glenelg Landfill is estimated to be in the range of approximately 20,000 m^3.

3. During completion of the onsite sampling and inspection for the current reporting period, no leachate seeps were observed and the ground cover system, site drainage, and fencing continued to appear adequate.

4. The groundwater flow within the shallow overburden is generally to the west through the shallow sand and gravel unit. A periodic radial flow pattern to the northwest and southwest is noted, particularly on the eastern portion of the Site. A downward gradient into the underlying hardpan unit likely exists in the vicinity of the existing fill area.

5. Compliance with the MOE Guideline B-7 criteria is monitored along the western property boundary at TW-8. Based on the analytical results, there are no groundwater exceedences of the RUC at the west property boundary related to the closed landfill and groundwater quality at this location is consistent with background conditions.

6. Based on the limited size and filling rate of the landfill, the cessation of landfilling in 2005 and site closure in 2007/2008, it is reasonable to expect that the groundwater quality will remain stable or will improve over time. Based on the relatively limited potential impacts to groundwater quality directly beneath the landfill, the potential for future off-site impacts is considered to be low, particularly since the groundwater quality along the property boundary continues to show no impacts due to the landfill.

8. RECOMMENDATIONS

1. It is recommended that annual visual inspections of the premises and monitoring wells continue to be conducted annually in conjunction with the groundwater monitoring program.

2. Based on the monitoring data, there continues to be little to no indication of surface water or groundwater quality degradation at the site and no evidence of off-site leachate impacts. Based on the fact that the landfill has now been closed for more than ten years and on the long-term availability of monitoring data showing stable and decreasing long-term trends, it is recommended that consideration be given to reducing the annual monitoring and reporting to a frequency of once every 5-years.

3. Although a reduction in the sampling frequency is recommended, the established groundwater monitoring program should continue to be completed in the fall as outlined below:

Wells to be Sampled Once Annually in the Fall	Parameters
TW-1 TW-7A TW-2 TW-8 TW-3 TW-4 TW-5 TW-6	pH, conductivity, hardness, alkalinity, sulphide (as H2S), phenols, dissolved organic carbon (DOC), chloride, sulphate, nitrite, nitrate, ammonia, and metals (i.e. Ca, Fe, Mg, Mn, P, K and Na).

4. TW-4 could not be located by GMBP staff at the time of the onsite inspection and sampling program. Based on evidence of vehicle or equipment traffic in the immediate area of the well, it appears that it may have been destroyed or damaged. It is recommended that the municipality confirm the location of the monitoring well with the neighbour. If the monitor cannot be located and restored, the installation of a new monitoring well at this location is recommended.

5. An ongoing trend analysis of the groundwater quality at the location of TW-1 is recommended to further evaluate the ongoing analytical trends at this monitoring location.

All of which is respectfully submitted,

GM BLUEPLAN ENGINEERING LIMITED
PER:

A W. Bringleson, B.E.S, C.E.T

M. D. Nelson, M.Sc., P.Eng.

FIGURES:

213088
Annual Monitoring Report
Glenelg Landfill
Municipality of West Grey

Scale = 1:25,000
APRIL 2023

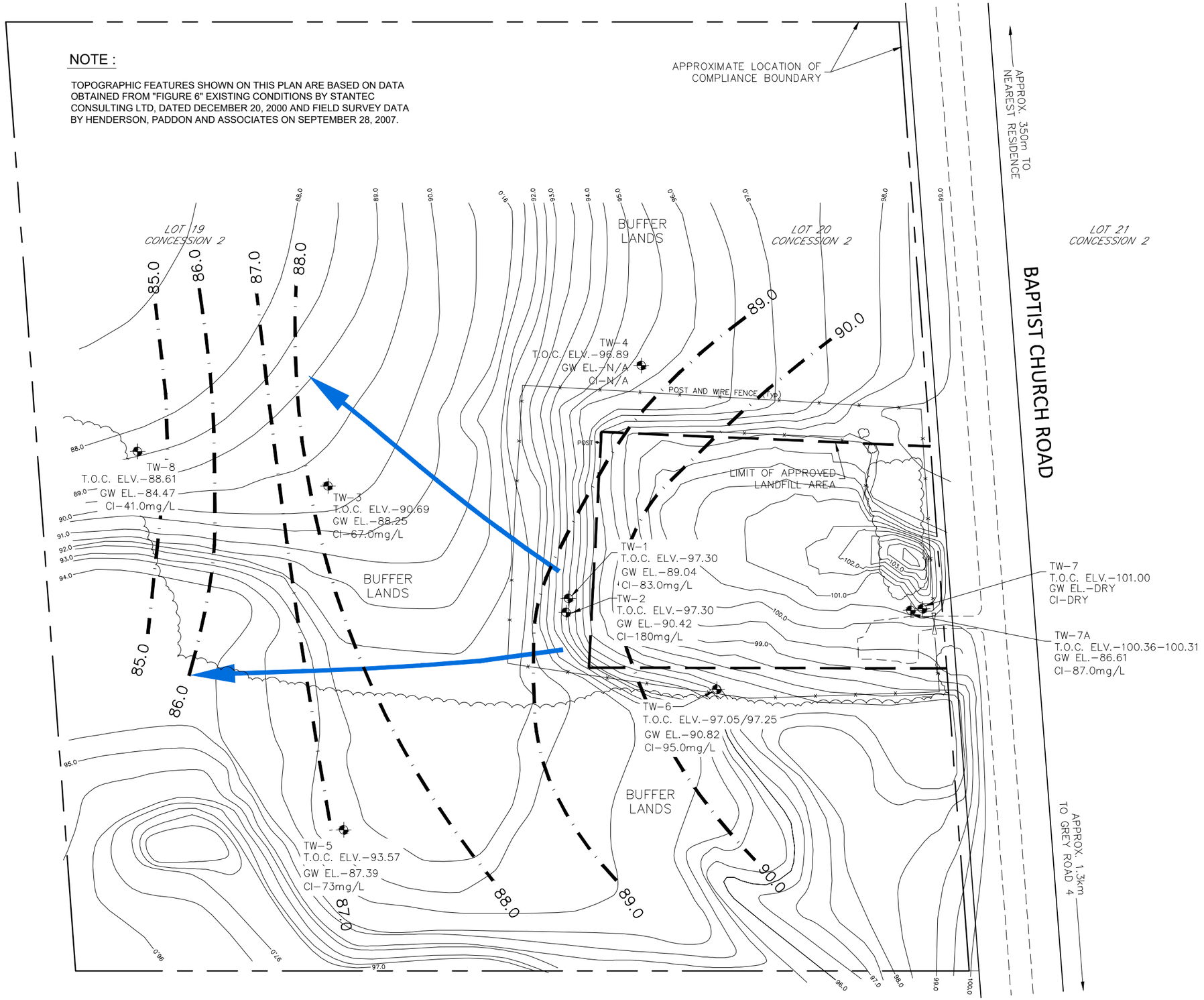
SITE LOCATION MAP AND LANDFILL PROPERTY BOUNDARY

Figure No. 1

BluePlan ENGINEERING

NOTE :

TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN ARE BASED ON DATA OBTAINED FROM "FIGURE 6" EXISTING CONDITIONS BY STANTEC CONSULTING LTD, DATED DECEMBER 20, 2000 AND FIELD SURVEY DATA BY HENDERSON, PADDON AND ASSOCIATES ON SEPTEMBER 28, 2007.



213088
Annual Monitoring Report
Glenelg Landfill
Municipality of West Grey

LEGEND

- ROAD
- EXISTING FENCE
- TREED AREA
- LIMIT OF APPROVED LANDFILL
- TW-1 EXISTING MONITORING WELL
- GENERAL DIRECTION OF GROUNDWATER FLOW
- 89.0 INTERPRETED POTENTIOMETRIC SURFACE
- GW EL. DENOTES GROUNDWATER ELEVATION, masl
- Cl DENOTES CHLORIDE CONCENTRATION, mg/L

Scale = 1:1000

APRIL 2023

SITE PLAN SHOWING GROUNDWATER FLOW DIRECTION AND CHLORIDE CONCENTRATIONS

Figure No. 2

BluePlan ENGINEERING

TABLES:

TABLE 1
SITE SPECIFIC BACKGROUND CONCENTRATIONS AND GUIDELINE B-7-1 RUC DETERMINATION
GLENELG WASTE DISPOSAL SITE

GROUNDWATER INDICATOR PARAMETERS GLENELG LANDFILL SITE					
Parameter (mg/L)	Maximum Concentration (Cr)	ODWS Classification	Background Concentration Range [n]	Background Concentration (Cb)	Objective Level (Cm)
Alkalinity	500	OG	193 - 294 [37]	254	377
Ammonia	NV	NV	<0.01 - 0.18 [34]	0.039	NV
Calcium	NV	NV	50.9 - 72 [38]	61.6	NV
Chloride	250	AO	0.7 - 5.8 [47]	3.12	127
Conductivity (uS/cm)	NV	NV	363 - 593 [47]	475	NV
DOC	5	AO	0.5 - 9 [36]	2.48	3.74
Hardness	80 to 200	OG	222 - 601 [47]	279	279
Sulphide	0.05	AO	<0.01 - 2 [28]	0.40	0.40
Iron	0.3	AO	<0.005 - 26 [46]	0.86	0.86
Magnesium	NV	NV	23 - 31.9 [38]	27.8	NV
Manganese	0.05	AO	<0.001 - 0.062 [34]	0.007	0.029
Nitrate	10	MAC	0.2 - 1.8 [37]	0.99	3.24
Nitrite	1	MAC	<0.1 [32]	<0.1	0.25
pH (no units)	6.5 to 8.5	OG	6.59 - 8.12 [37]	7.65	6.5 to 8.5
Phenols	NV	NV	<0.001 - 0.0064 [46]	0.0009	NV
Potassium	NV	NV	0.1 - 1.1 [31]	0.39	NV
Sodium	200	AO	1.0 - 10.4 [36]	2.09	101
Sulphate	500	AO	3.0 - 9.9 [35]	5.88	253

Notes:

1. [n] = number of data points used to determine the average background concentration.
2. Available data from TW-5 collected from 1988 to Nov 2013 was used to calculate background concentrations.
3. mg/L = milligrams per litre; uS/cm = microsiemens per centimetre; NV = No Value.

4. AO = Aesthetic Objective; OG = Operational Guideline
   MAC = Maximum Acceptable Concentration, Parameters Related to Health
   IMAC = Interim Maximum Acceptable Concentration, Parameters Related to Health

MOE Procedure B-7-1

$Cm = Cb + x(Cr - Cb)$

Where:

Cm = Maximum concentration acceptable in groundwater beneath an adjacent property.
Cb = Background concentration.
Cr = Maximum concentration that should be present in groundwater for domestic consumption according to the Ontario Drinking Water Standards (ODWS).
x = 0.5 for non-health related parameters and 0.25 for health related parameters.

TABLE 2
SUMMARY OF GROUNDWATER QUALITY DATA AND COMPARISON TO THE RUC
GLENELG WASTE DISPOSAL SITE

Parameter	Background	ODWS		RUC	Background	Upgradient (to the East)	Down/Crossgradient (North)	Down/Crossgradient (South)	Downgradient (to the West)		West Boundary	
					TW-5	**TW-7A**	**TW-4**	**TW-6**	**TW-1**	**TW-2**	**TW-3**	**TW-8**
					29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22
Alkalinity	254	500	OG	377	300	370	--	340	310	**610**	270	210
Ammonia	0.039	NV	NV	NV	<0.05	<0.05	--	<0.05	0.26	8.7	0.07	<0.05
Calcium	61.6	NV	NV	NV	73	87	--	95	83	180	67	41
Chloride	3.12	250	AO	127	2.7	19	--	8.9	72	6.2	<1.0	6.0
Conductivity (uS/cm)	475	NV	NV	NV	570	760	--	680	870	1100	510	460
DOC	2.48	5	AO	3.74	1.0	0.59	--	1.0	0.9	**4.6**	0.75	0.42
Hardness	279	80 to 200	OG	279	**320**	**420**	--	**360**	**420**	**590**	**280**	230
Sulphide	0.40	0.05	AO	0.40	<0.02	<0.02	--	<0.02	0.21	<0.02	<0.02	<0.02
Iron	0.86	0.3	AO	0.86	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	27.8	NV	NV	NV	33	50	--	29	52	37	27	31
Manganese	0.007	0.05	AO	0.029	0.004	**0.07**	--	0.02	**0.09**	**1.4**	<0.002	<0.002
Nitrate	0.99	10	MAC	3.24	1.2	3.0	--	2.5	<0.10	<0.10	<0.10	<0.10
Nitrite	<0.1	1	MAC	0.25	0.05	0.11	--	0.10	<0.01	0.14	<0.01	<0.01
pH (no units)	7.65	6.5 to 8.5	OG	6.5 to 8.5	8.15	7.96	--	7.91	7.79	7.71	8.04	8.21
Phenols	0.0009	NV	NV	NV	<0.001	<0.001	--	0.005	<0.001	0.006	0.003	<0.001
Phosphorus	NV	NV	NV	NV	0.18	0.12	--	0.33	0.23	0.89	0.52	0.03
Potassium	0.39	NV	NV	NV	0.40	1.1	--	0.86	1.2	9.6	1.3	0.79
Sodium	2.09	200	AO	101	1.3	6.0	--	4.6	15	7.7	1.3	9.0
Sulphate	5.88	500	AO	253	<1.0	14	--	5.8	46	5.3	<1.0	32

Notes:

1. ODWS = Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. AO: Aesthetic Objective; OG = Operational Guideline; MAC = Maximum Acceptable Concentration; IMAC = Interim Maximum Acceptable Concentration.
3. NV = no value specified
4. Values in bold represent results greater than the Reasonable Use Criteria
5. Shaded values represent results greater than the ODWS
6. Samples Analyzed at Maxxam Analytics Inc.
7. Results presented in mg/L (milligrams per litre) unless otherwise specified. µS/cm = microsiemens per centimeter.

APPENDIX A:
CERTIFICATE OF APPROVAL NO. A261803
(AUGUST 1989) & AMENDMENT (AUGUST 1991)

Ontario
Ministry of the Environment
Ministère de l'Environnement

Southwestern Region
Our File No.

Région du Sud-Ouest

985 Adelaide Street South
London Ontario
N6E 1V3
519/661-2200

985, rue Adelaide sud
London (Ontario)
N6E 1V3
519 661-2200

August 1, 1991

Township of Glenelg
R. R. #1
Markdale, ON
N0C 1H0

Attention: Mr. John S. Black, Clerk

Dear Sir:

Re: Township of Glenelg
Waste Disposal Site #A261803

Please find enclosed a Notice to amend the Certificate of Approval No. A261803 dated August 31, 1989 for the Township of Glenelg waste disposal site.

It is suggested that this Notice be carefully read in order to ensure that all conditions are met.

Should you have any questions, please call either Mr. Bill Hutchison of the Owen Sound District Office at (519) 371-2901 or myself at (416) 440-3726 at any time.

Yours truly,

D. A. McTavish
Regional Director

JFJ/lb
080104

Township of Glenelg
R. R. #1
Markdale, Ontario
N0C 1H0

The Provisional Certificate of Approval No. A261803 dated August 31 1989 is hereby amended as follows:

The following condition and corresponding reason is added to the Provisional certificate of Approval.

4. The Township shall submit an annual report prepared by their consultant to the Owen Sound District Office, Ministry of the Environment, addressing the following requirements;;

   1) volumes of waste received; remaining capacity and site life expectancy.

   2) review of operating procedures, and any deficiencies therein,

   3) the results of any surface water or ground water monitoring programs which may be initiated; and

   4) the extent and success of the recycling program established by the town.

   This report is to be submitted each year by April 30th, commencing April 30th, 1992.

The reason for this addition is to ensure that the necessary studies are completed in order to ensure the protection of the natural environment.

You may by written notice serve upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 122a of the Environmental Protection Act, as amended in 1983, provides that the Notice requiring a 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.

In addition to these statutory requirements, the Notice should 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 should be serviced upon:

The Secretary,
Environmental Appeal Board
112 St. Clair Avenue West
5th Floor
Toronto, Ontario
M4V 1N3

AND

The Director
Southwest Region
Ministry of the Environment
985 Adelaide Street South
London, Ontario
N6E 1V3

Dated at London this 1st day of August, 1991.

JFJ\080103

Ontario

Ministry of the Environment / *Min. de l'Environnement*

Provisional Certificate of Approval for a Waste Disposal Site

Certificat provisoire d'autorisation du lieu d'élimination des déchets

Provisional Certificate of Approval No. / *Certificat provisoire d'autorisation nº* A261803

Page / *page* of / *de*

Under the Environmental Protection Act and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Aux termes de la Loi sur la protection de l'environnement et des règlements y afférents et sous réserve des restrictions qui s'y appliquent, ce Certificat provisoire d'autorisation est délivré à:

Township of Glenelg,
R. R. #1,
Markdale, Ontario.
N0C 1H0

for the use and operation of a 0.48 hectare landfilling site within a total site area of approximately 4.8 hectares

all in accordance with the following plans and specifications:

Hydrogeologic Investigation and Plan of Development and Operation Glenelg Township Landfill dated May 1985.

Located: Part of Lots 19 and 20, Concession 2,
North of the Durham Road,
Township of Glenelg, County of Grey and
Being Parts 1 and 2 on Deposited Plan No. 17R-1872

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval)

Domestic, commercial and 5% other, limited to scrap metal, brush, wood, construction debris and demolition debris.

and subject to the following conditions:

1. No waste other than segregated brush, lumber and clean wood is to be burned at the site and only under conditions that prevent off site impact.

2. Access to the waste disposal site by the public and other unauthorized personnel is prohibited when burning is carried out.

3. No burning is to be carried out unless supervision is being provided by the operating authority at all times.

Dated this / *date le* 31 day of / *jour de* August, 19 89

Director, Section 39

APPENDIX B:
AVAILABLE TESTHOLE INFORMATION & WELL CONSTRUCTION DETAILS

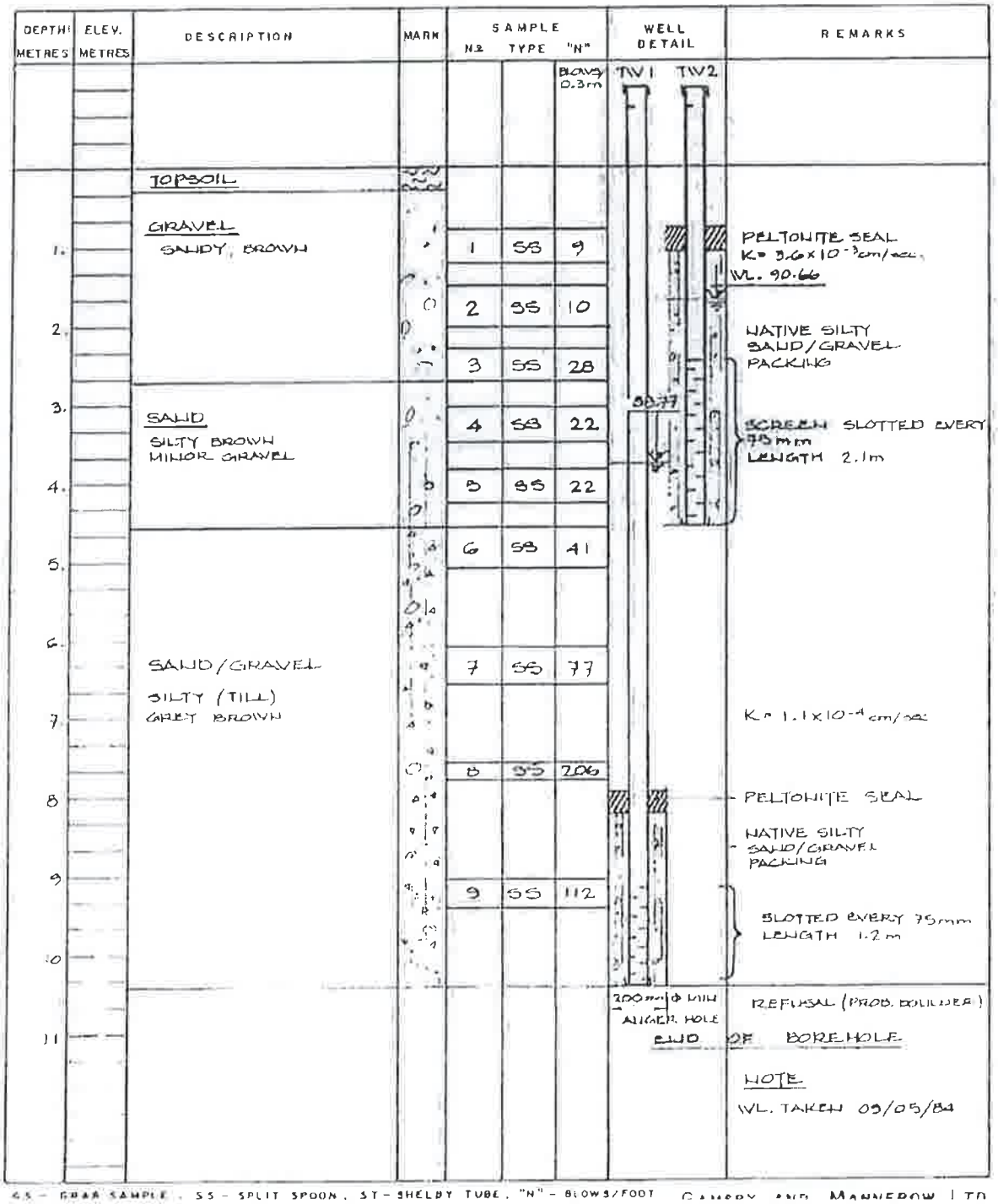
RECORD OF WELL Nº 1 & 2

PROJECT Glenelg Landfill — PROJECT Nº M-1173

CLIENT Township of Glenelg — HYDROLOGIST/ENGINEER R. Slaughter

WELL TYPE 40 mm dia. ABS piezometer — DATE Jan. 11, 1984

LOCATION Lot 20, Con. 2 North of Durham Road, Township of Glenelg



GS - GRAB SAMPLE, SS - SPLIT SPOON, ST - SHELBY TUBE, "N" - BLOWS/FOOT

SUMMARY OF TEST WELL DATA - GLENELG TOWNSHIP LANDFILL

TEST WELL	TEST HOLE DEPTH FROM GROUND LEVEL (m)	ELEVATION (m) TOP OF CASING	ELEVATION (m) GROUND LEVEL	TEST WELL LOG (m)	TEST WELL DATA: WELL DEPTH FROM GROUND LEVEL (m)	SCREEN LENGTH (m)	WELL SCREEN LOCATION DEPTH (m)	SCREEN PACKING LOCATION (m)	PELTONITE OR BENTONITE SEAL DEPTH (m)	SAMPLE: NO.	LOCATION (m)	TYPE	NUMBER OF BLOWS/.3m	GROUNDWATER: DATE	WATER LEVEL ELEVATION (m)	STATIC LEVEL T. OF C. (m)
	10.4	93.56	92.51	See Record of Test Well 1	10.4	--	--	--	--	--	--	--	--	Feb. 16/84 May 3/84	88.90 88.77	4.66 4.79
2	4.6	93.40	92.25	See Record of Test Well 2	4.6	--	--	--	--	--	--	--	--	Feb. 16/84 May 3/84	91.12 90.66	2.28 2.74
3	7.3	90.69	89.59	0 - .3 TOPSOIL .3 - .9 SAND, silty, brown .9-1.8 SAND, brown 1.8-2.7 SAND, silty, minor gravel, stoney, brown 2.7-3.7 SAND, silty, minor gravel, brown 3.7-7.3 SAND/GRAVEL, silty, TILL, brown	5.2	2.3	2.4-5.2	Native SILTY SAND/GRAVEL 1.5-5.2m	1.3-1.5P	1 2 3 4 5 6 7 8 9	.8-1.2 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	SS SS SS SS SS SS SS SS SS	21 — 25 31 31 26 53 78 112	Feb. 16/84 May 3/84	89.24 86.34	1.45 2.35
4	9.6	96.89	95.89	0 -0.4 TOPSOIL 0.4-1.4 SAND fine, silty TILL, brown 1.4-2.1 GRAVEL, silty, sandy, brown 2.1-2.3 SAND/GRAVEL, silty brown, stoney 2.3-9.6 SAND/GRAVEL, silty TILL, grey brown	9.3	2.6	[illegible]	Native SAND 4.0-9.1m	3.7-4.0P	1 2 3 4 5 6 7 8 9 10	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	SS SS SS SS SS SS SS SS SS SS	13 41 -- 114 65 220 131 168 63 95	Feb. 16/84 May 3/84	89.18 88.92	7.71 7.97
5	[illegible]	93.57	92.57	0 -0.2 TOPSOIL 0.2-1.5 SAND, fine to med., brown 1.5-4.8 SAND, gravelly, minor silt, brown 4.8-9.1 SAND/GRAVEL, silty TILL, grey brown	7.6	1.8	5.8-7.6	Native SAND 2.4-7.6m	2.1-2.4P	1 2 3 4 5 6 7 8	.8-1.2 1.5-2.0 2.3-2.7 [illegible] [illegible] [illegible] [illegible] [illegible]	SS SS SS SS SS SS SS SS	9 13 13 17 14 24 19 112	Feb. 16/84 May 3/84	86.89 87.85	6.68 5.72
[illegible]	8.0	97.05	95.77	0 - .2 TOPSOIL .2-3.5 SAND, fine silty, minor gravel 3.5-7.0 SAND/GRAVEL, minor silt 7.0-8.8 SAND/GRAVEL, silty TILL	7.3	1.8	5.5-7.3	Native SILTY SAND/GRAVEL 2.4-7.3m	2.1-2.4P	1 2 3 4 5 6 7 8	.8-1.2 1.5-2.1 2.3-2.7 [illegible] [illegible] [illegible] [illegible] [illegible]	SS SS SS SS SS SS SS SS	16 20 38 44 74 31 22 45	Feb. 16/84 May 3/84	91.46 91.96	5.59 5.09
[illegible]	9.4	101.00	99.99	0 -4.6 SAND/GRAVEL, minor SILT 4.6-8.2 SAND/GRAVEL, silty few stones 8.2-9.4 SAND/GRAVEL, silty TILL	[illegible]	2.4	6.7-9.1	Native SILTY SAND/GRAVEL [illegible]	3.8-4.1P	1 2 3 4 5 6 7 8 9	.8-1.2 1.5-2.0 2.3-2.7 [illegible] [illegible] [illegible] 6.2 7.3 [illegible]	SS SS SS SS SS SS -- -- SS	15 19 43 79 91 16 No sample upon recovering 22	Feb. 16/84 May 3/84	91.00 90.95	10.00 10.05

TABLE 1

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

2507689

[redacted] olg
R. 2 Priceville, Ont.
Con. 2 DRN

LOG OF OVERBURDEN AND BEDROCK MATERIALS

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
black	topsoil			0	1
brown	gravel	boulders, clay		1	55
grey	hardpan	gravel		55	102
brown	limestone			102	112
grey	limestone			112	135

WATER RECORD

WATER FOUND AT FEET	KIND OF WATER
0135	X FRESH

CASING & OPEN HOLE RECORD

MATERIAL	DIAMETER INCHES	DEPTH FEET FROM	DEPTH FEET TO
04 X	188	0	0103
X		103	0135

SCREEN

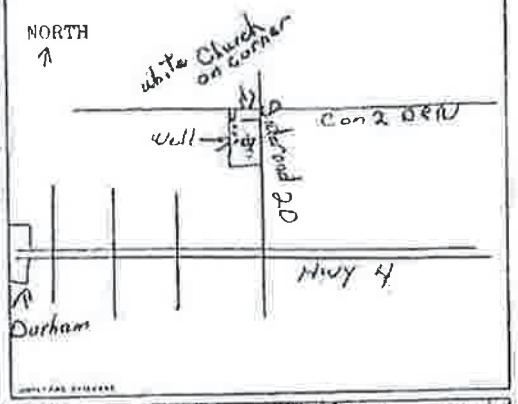
PLUGGING & SEALING RECORD

PUMPING TEST

	0012	01 00	
041	055	055	
	80		
	080	0012	

LOCATION OF WELL

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



FINAL STATUS OF WELL	1
WATER USE	02
METHOD OF DRILLING	2

CONTRACTOR

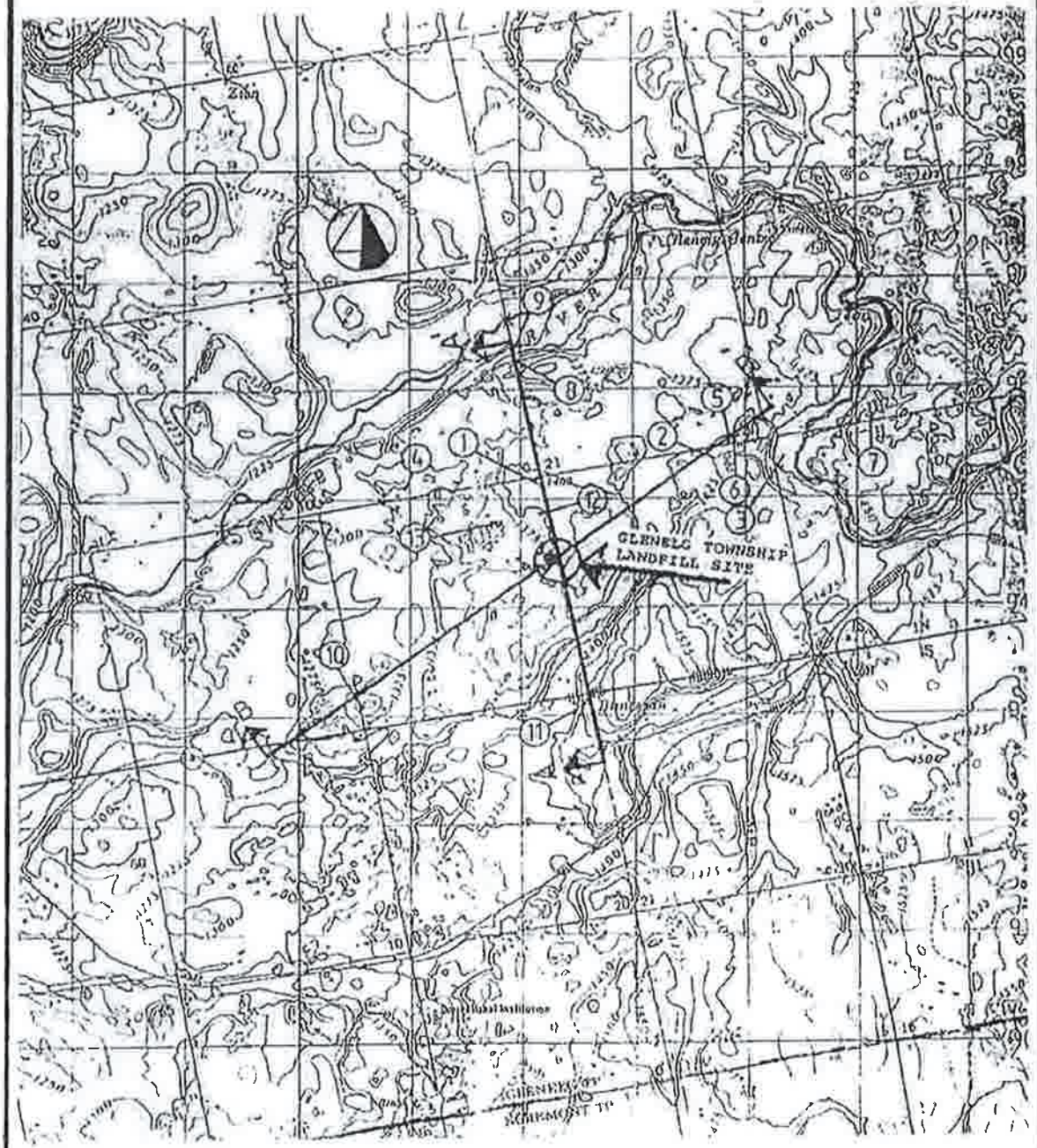
Hugh Morrison Well Drilling Ltd. 3740
R.R. 5 Mount Forest, Ont
Hugh Morrison 3740
Hugh Morrison

OFFICE USE ONLY 1 3740 10 05 82

MINISTRY OF THE ENVIRONMENT COPY

LOCATION OF SURROUNDING WATER WELLS

(14) WATER WELL (BED ROCK)

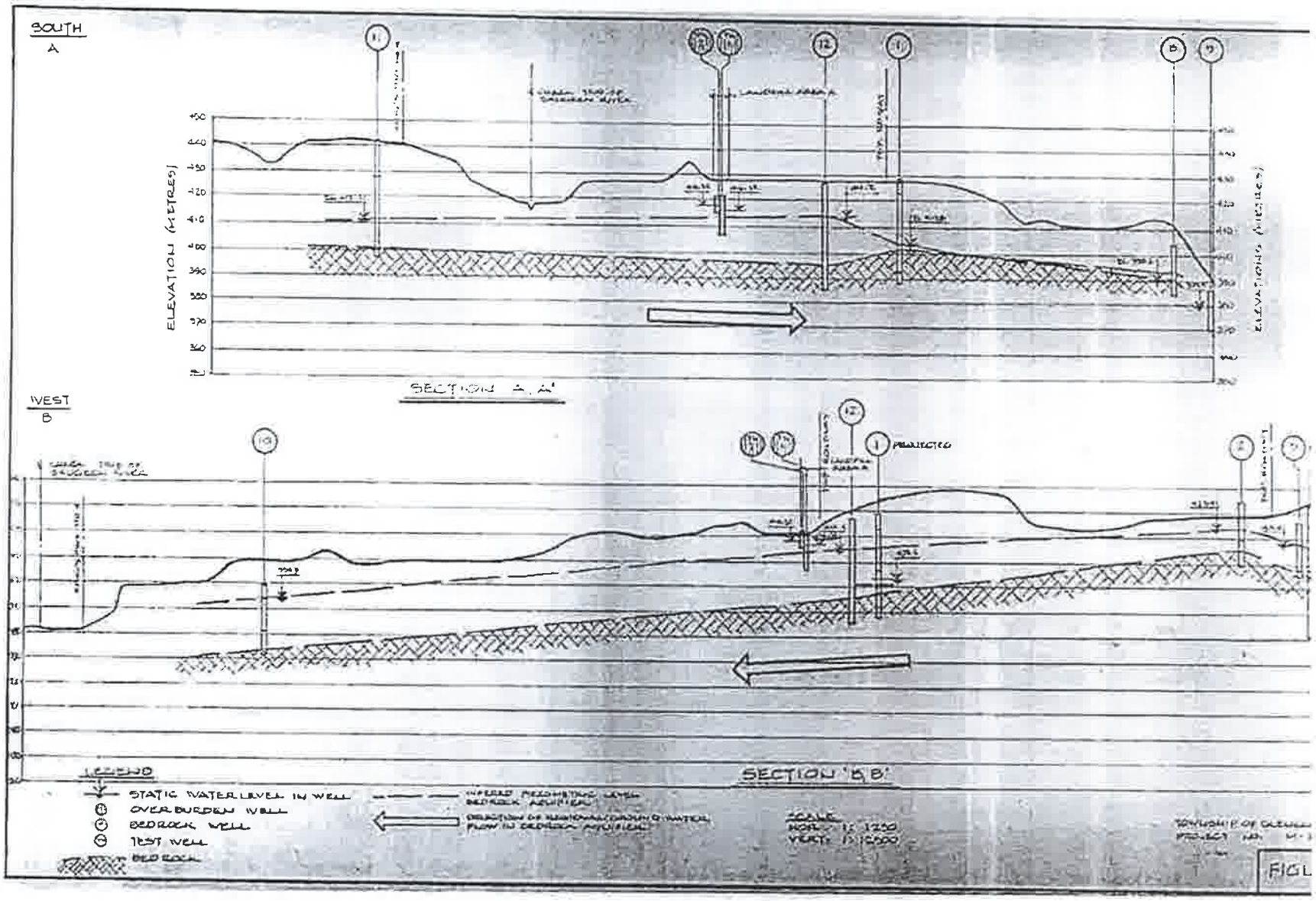


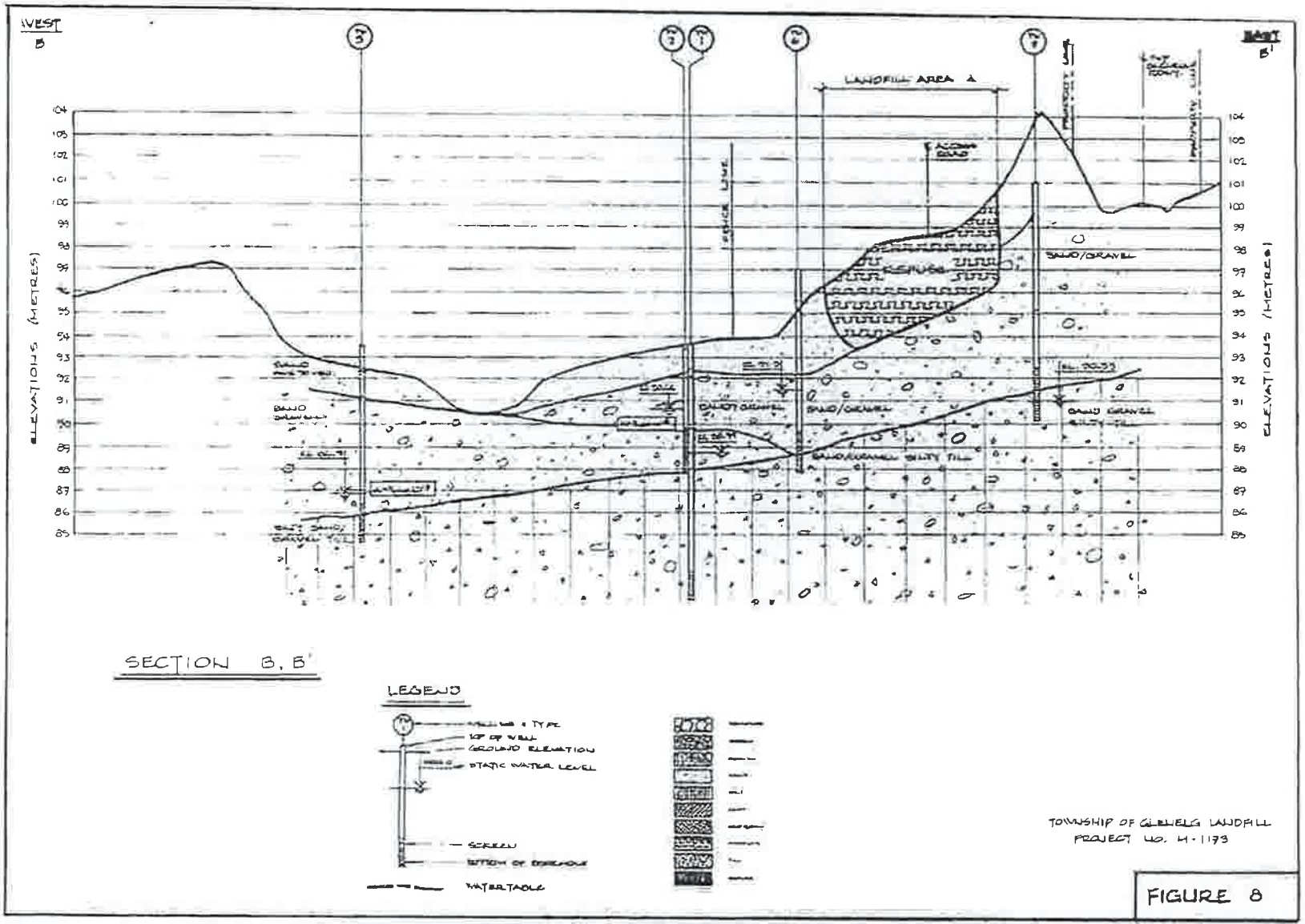
PROJECT NO. M-1173

SCALE - 1: 50 000

0 500m 1km 2km 3km 4 km 5km

FIGURE 2.

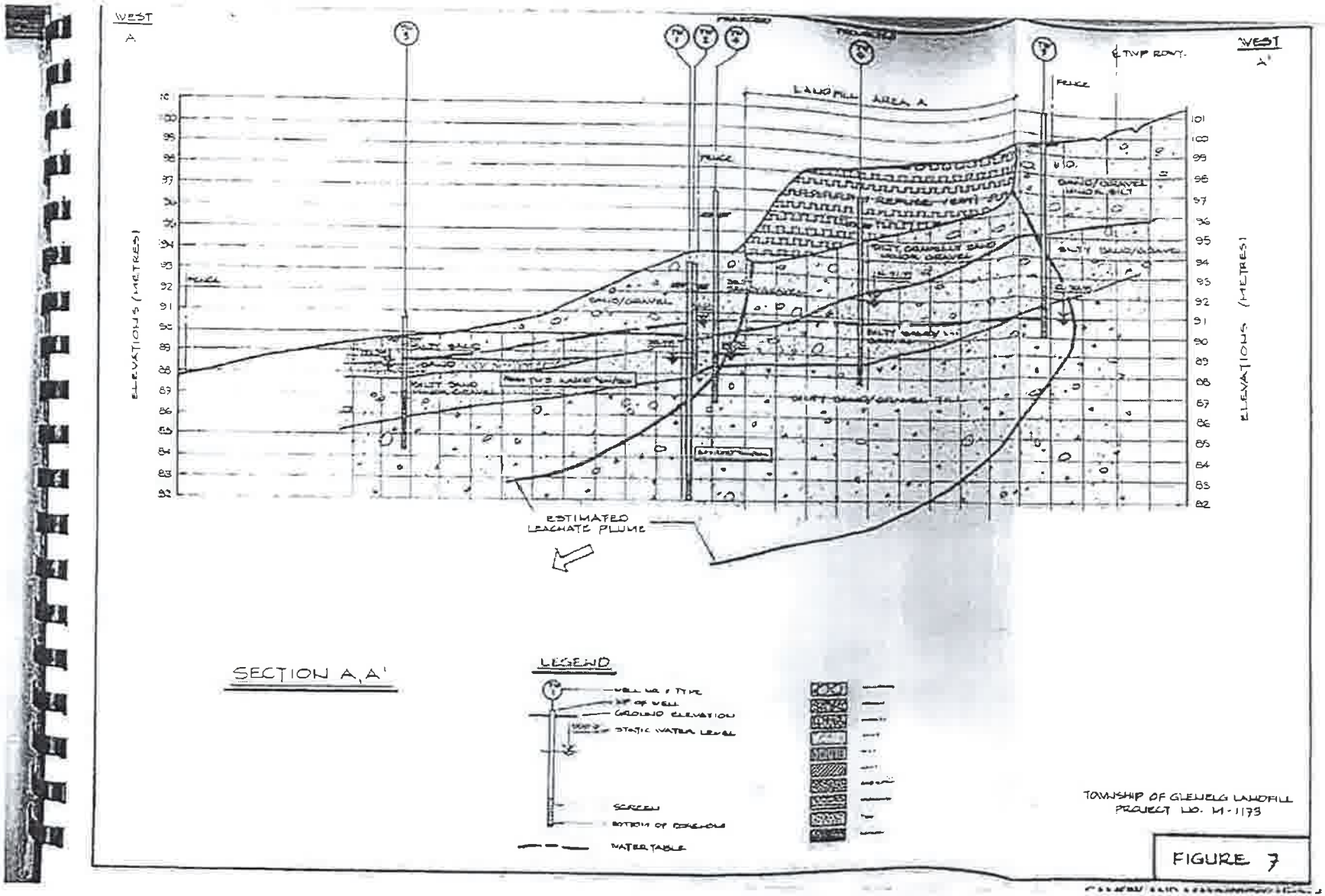

SOUTH
A
ELEVATION (METRES)
SECTION A-A'
WEST
B
SECTION 'B-B'
LEGEND
STATIC WATER LEVEL IN WELL
OVERBURDEN WELL
BEDROCK WELL
TEST WELL
BEDROCK
SCALE
HORIZ. 1: 1250
VERT. 1: 1000



SECTION B, B'

TOWNSHIP OF GLOUCESTER LANDFILL
PROJECT NO. M-1173

FIGURE 8


WEST
A
WEST
A'
ELEVATIONS (METRES)
LANDFILL AREA A
FENCE
TWP ROW.
ESTIMATED
LEACHATE PLUME
SECTION A,A'
LEGEND
WELL NO. & TYPE
TOP OF WELL
GROUND ELEVATION
STATIC WATER LEVEL
SCREEN
BOTTOM OF BOREHOLE
WATER TABLE
TOWNSHIP OF GLENELG LANDFILL
PROJECT NO. M-1173
FIGURE 7

APPENDIX C:
HISTORIC GROUNDWATER ELEVATION DATA
1994 TO PRESENT

APPENDIX C
HISTORIC GROUNDWATER ELEVATION DATA - 1994 TO PRESENT
GLENELG TOWNSHIP LANDFILL

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	18-Apr-94		28-Oct-94		21-Apr-95		10-Nov-95		24-May-96		15-Nov-96		9-May-97	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	7.87	89.43	8.52	88.78	8.10	89.20	8.85	88.45	7.80	89.50	8.38	88.92	7.80	89.50
TW-2	96.25	97.30	5.68	91.62	6.65	90.65	6.15	91.15	6.03	91.27	5.70	91.60	6.03	91.27	5.83	91.47
TW-3	89.59	90.69	1.38	89.31	2.15	88.54	2.00	88.69	1.75	88.94	1.59	89.10	1.49	89.20	1.65	89.04
TW-4	95.80	96.89	7.45	89.44	7.42	89.47	7.39	89.50	7.88	89.01	7.37	89.52	7.30	89.60	7.39	89.50
TW-5	92.57	93.57	6.04	87.53	6.24	87.33	5.88	87.69	6.42	87.15	5.22	88.35	6.30	87.27	5.20	88.37
TW-6 [8]	95.77	97.05/97.25	5.30	91.75	6.35	90.70	5.37	91.68	6.30	90.75	4.98	92.07	6.05	91.00	5.10	91.95
TW-7 [7]	99.98	101.00	9.48	91.52	-	-	-	-	-	-	-	-	-	-	-	-
TW-7A [6]	99.71	100.36/100.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
TW-8	88.08	88.61	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	19-Dec-97		14-May-98		10-Dec-98		8-Jun-99		8-Dec-99		9-Jun-00		19-Dec-00	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	8.81	88.49	8.59	88.71	9.17	88.13	8.76	88.54	8.79	88.51	8.50	88.80	8.60	88.70
TW-2	96.25	97.30	6.61	90.69	6.44	90.86	6.64	90.66	6.15	91.15	5.86	91.44	6.23	91.07	6.19	91.11
TW-3	89.59	90.69	2.29	88.40	2.40	88.29	2.45	88.24	2.13	88.56	1.69	89.00	2.21	88.48	1.80	88.89
TW-4	95.80	96.89	7.40	89.49	7.45	89.44	8.32	88.57	7.41	89.48	7.39	89.50	7.43	89.46	7.40	89.49
TW-5	92.57	93.57	6.46	87.11	6.10	87.47	6.65	86.92	6.32	87.25	6.30	87.27	5.99	87.58	6.27	87.30
TW-6 [8]	95.77	97.05/97.25	6.37	90.68	5.70	91.35	6.56	90.49	5.78	91.27	5.86	91.19	5.31	91.74	-	-
TW-7 [7]	99.98	101.00	-	-	-	-	-	-	DRY		DRY		DRY		DRY	
TW-7A [6]	99.71	100.36/100.31	NI	NI	NI	NI	13.24	87.12	13.47	86.89	13.77	86.59	13.55	86.81	13.71	86.65
TW-8	88.08	88.61	NI	NI	NI	NI	4.52	84.09	3.82	84.79	3.6	85.01	3.52	85.09	3.5	85.11

See last page of Apendix for Notes:

APPENDIX C
HISTORIC GROUNDWATER ELEVATION DATA - 1994 TO PRESENT
GLENELG TOWNSHIP LANDFILL

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	11-Jul-01		12-Oct-01		26-Jun-02		28-Oct-02		21-May-03		11-Nov-03		21-Apr-04		12-May-05	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	-	-	8.38	88.92	8.09	89.21	8.45	88.85	8.00	89.30	8.04	89.26	8.52	88.78	7.65	89.65
TW-2	96.25	97.30	6.30	91.00	6.10	91.20	6.25	91.05	6.97	90.33	5.86	91.44	5.79	91.51	5.75	91.55	5.99	91.31
TW-3	89.59	90.69	-	-	1.92	88.77	2.08	88.61	2.68	88.01	1.80	88.89	1.60	89.09	1.70	88.99	1.83	88.86
TW-4	95.80	96.89	-	-	7.80	89.09	7.35	89.54	7.96	88.93	7.28	89.61	7.22	89.67	7.37	89.52	7.27	89.62
TW-5	92.57	93.57	6.10	87.47	6.37	87.20	5.68	87.89	6.33	87.24	5.94	87.63	6.27	87.30	5.41	88.16	5.64	87.93
TW-6 [8]	95.77	97.05/97.25	5.40	91.65	5.98	91.07	5.42	91.63	6.52	90.53	5.24	91.81	5.71	91.34	4.64	92.41	-	-
TW-7 [7]	99.98	101.00	DRY		DRY		DRY		DRY		9.81	91.19	DRY		9.62	91.38	4.70	96.30
TW-7A [6]	99.71	100.36/100.31	13.00	87.36	13.90	86.46	13.15	87.21	13.93	86.43	13.37	86.99	13.85	86.51	12.17	88.19	12.54	87.82
TW-8	88.08	88.61	3.60	85.01	3.83	84.78	3.48	85.13	4.34	84.27	3.30	85.31	3.34	85.27	2.65	85.96	2.91	85.70

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	21-Sep-04		19-Apr-07		11-Oct-07		12-Sep-12		22-Nov-13		6-Nov-14		11-Nov-15		8-Nov-16	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	8.41	88.89	7.24	90.06	8.54	88.76	8.56	88.74	7.42	89.88	8.04	89.26	8.62	88.68	8.62	88.68
TW-2	96.25	97.30	6.93	90.37	5.46	91.84	7.12	90.18	6.97	90.33	5.44	91.86	6.04	91.26	6.61	90.69	7.07	90.23
TW-3	89.59	90.69	2.61	88.08	1.50	89.19	2.73	87.96	2.61	88.08	1.13	89.56	1.68	89.01	2.10	88.59	1.59	89.10
TW-4	95.80	96.89	7.41	89.48	7.33	89.56	7.94	88.95	7.89	89.00	7.23	89.66	7.28	89.61	7.36	89.53	6.03	90.86
TW-5	92.57	93.57	6.40	87.17	5.59	87.98	6.57	87.00	6.38	87.19	5.58	87.99	6.01	87.56	6.27	87.30	6.22	87.35
TW-6 [8]	95.77	97.05/97.25	-	-	5.12	91.93	-	-	6.53	90.72	4.70	92.55	5.70	91.55	6.40	90.85	6.52	90.73
TW-7 [7]	99.98	101.00	DRY		9.34	91.66	DRY		DRY		9.22	91.78	9.50	82.02	DRY		DRY	
TW-7A [6]	99.71	100.36/100.31	13.66	86.70	11.99	88.37	13.90	86.41	13.75	86.56	12.35	87.96	12.67	87.64	13.90	86.41	13.88	86.43
TW-8	88.08	88.61	4.01	84.60	2.45	86.16	4.31	84.30	4.28	84.33	2.49	86.12	3.23	85.38	4.11	84.50	4.36	84.25

See last page of Apendix for Notes:

APPENDIX C
HISTORIC GROUNDWATER ELEVATION DATA - 1994 TO PRESENT
GLENELG TOWNSHIP LANDFILL

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	27-Sep-05		25-Apr-06		19-Sep-06		1-May-08		27-Nov-08	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	8.44	88.86	7.37	89.93	8.40	88.90	7.48	89.82	7.88	89.42
TW-2	96.25	97.30	6.96	90.34	5.52	91.78	6.96	90.34	5.71	91.59	6.07	91.23
TW-3	89.59	90.69	2.71	87.98	1.45	89.24	2.67	88.02	1.86	88.83	1.87	88.82
TW-4	95.80	96.89	7.70	89.19	7.36	89.53	7.93	88.96	7.30	89.59	7.33	89.56
TW-5	92.57	93.57	6.35	87.22	5.55	88.02	6.46	87.11	5.25	88.32	6.14	87.43
TW-6 [8]	95.77	97.05/97.25	-	-	-	-	-	-	4.47	92.58	5.56	91.49
TW-7 [7]	99.98	101.00	DRY		9.61	91.39	DRY		9.65	91.35	9.51	91.49
TW-7A [6]	99.71	100.36/100.31	13.83	86.53	12.23	88.13	13.80	86.56	11.93	88.38	13.00	87.31
TW-8	88.08	88.61	4.23	84.38	2.50	86.11	4.16	84.45	2.74	85.87	2.97	85.64

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	13-Nov-17		27-Sep-18		15-Nov-19		10-Nov-20		22-Oct-21	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	7.84	89.46	8.37	88.93	8.22	89.08	8.06	89.24	7.63	89.67
TW-2	96.25	97.30	5.91	91.39	6.88	90.42	6.52	90.78	6.41	90.89	5.80	91.50
TW-3	89.59	90.69	1.67	89.02	2.61	88.08	1.95	88.74	1.81	88.88	2.15	88.54
TW-4	95.80	96.89	7.21	89.68	7.71	89.18	7.30	89.59	7.22	89.67	7.21	89.68
TW-5	92.57	93.57	5.92	87.65	6.13	87.44	6.23	87.34	6.13	87.44	6.21	87.36
TW-6 [8]	95.77	97.05/97.25	5.47	91.78	6.30	90.75	6.24	90.81	6.20	90.85	5.81	91.24
TW-7 [7]	99.98	101.00	9.36	87.89	DRY		DRY		DRY		DRY	
TW-7A [6]	99.71	100.36/100.31	13.00	87.31	13.62	86.74	13.81	86.55	13.82	86.54	13.78	86.58
TW-8	88.08	88.61	3.64	84.97	4.19	84.42	3.96	84.65	3.74	84.87	3.81	84.80

See last page of Apendix for Notes:

APPENDIX C
HISTORIC GROUNDWATER ELEVATION DATA - 1994 TO PRESENT
GLENELG TOWNSHIP LANDFILL

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	23-Apr-09		17-Sep-09		14-Apr-10		16-Nov-10		6-Oct-11	
			WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)	WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	7.60	89.70	8.32	88.98	8.10	89.20	8.34	88.96	8.59	88.71
TW-2	96.25	97.30	5.73	91.57	6.76	90.54	6.16	91.14	6.63	90.67	6.89	90.41
TW-3	89.59	90.69	1.74	88.95	2.28	88.41	1.90	88.79	2.10	88.59	2.47	88.22
TW-4	95.80	96.89	7.21	89.68	7.37	89.52	7.31	89.58	7.30	89.59	8.79	88.10
TW-5	92.57	93.57	5.01	88.56	6.29	87.28	5.95	87.62	6.23	87.34	6.19	87.38
TW-6 [8]	95.77	97.05/97.25	4.58	92.67	6.25	91.00	5.38	91.87	5.85	91.40	6.30	90.95
TW-7 [7]	99.98	101.00	9.63	91.37	DRY		9.86	91.14	DRY		DRY	
TW-7A [6]	99.71	100.36/100.31	12.03	88.28	13.55	86.76	13.19	87.12	13.40	86.91	13.71	86.60
TW-8	88.08	88.61	2.69	85.92	3.93	84.68	3.33	85.28	3.75	84.86	4.18	84.43

Test Well	Ground Elevation (m)	Measuring Point Elevation (m)	29-Sep-22	
			WL BMP (m)	WL Elev. (m)
TW-1 [5]	96.25	97.30	8.26	89.04
TW-2	96.25	97.30	6.88	90.42
TW-3	89.59	90.69	2.44	88.25
TW-4	95.80	96.89	--	--
TW-5	92.57	93.57	6.18	87.39
TW-6 [8]	95.77	97.05/97.25	6.23	90.82
TW-7 [7]	99.98	101.00	DRY	
TW-7A [6]	99.71	100.36/100.31	13.75	86.61
TW-8	88.08	88.61	4.14	84.47

See last page of Apendix for Notes:

APPENDIX D:
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS (TABLES & GRAPHS)

GLENELG WASTE DISPOSAL SITE
HISTORIC GROUNDWATER QUALITY RESULTS NOTES

Notes:

1. ODWS= Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. - = No Value
3. ND = Not Detected; NA = Not Applicable
4. * indicates outlier interpreted as sample or lab error.
5. Data prior to 2013 is from the Annual Monitoring Report (2012), Genivar.
6. Results presented in mg/L unless otherwise specified; conductivity in µS/cm = microsiemens per centimeter; pH = Unitless.
7. Values in bold represent results greater than the ODWS
8. IMAC indicates an interim maximum acceptable concentration.
9. AO indicates an aesthetic objective, not health related.
10. OG indicates an operational guideline, not health related.
11. c indicates that the guideline applies to water at the point of consumption.
12. d, where nitrate and nitrite are present the total of the two should not exceed 10 mg/L.
13. < indicates parameter not detected above method detection limit.
14. DOC = Dissolved Organic Carbon
15 . Only samples collected are presented

MONITORING WELL TW-1
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Spring /90	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95
Parameter (mg/L)	ODWS														
Alkalinity (as $CaCO_3$)	30 - 500 [OG]											252	264	238	177
Aluminum	0.1 [OG]												0.078	<0.030	
Ammonia	-											0.025	0.095	0.075	0.75
Arsenic	0.025 [IMAC]												0.0012	0.0013	
Barium	1.0 [MAC]												0.016	0.006	
Beryllium	-												<0.0002	<0.0002	
Bismuth	-														
Boron	5.0 [IMAC]												0.12	<0.10	
Cadmium	0.005 [MAC]												<0.002	0.002	
Calcium	-											45.2	60.5	46.5	49.4
Chloride	250 [AO]	2.41	2.87	2.4	2.9	2.9	3.1	1.9	4.4	5.3	4.7	5.6	7	4.7	6.1
Chromium	0.05 [MAC]												0.002	<0.002	
Cobalt	-												<0.0050	<0.0050	
Conductivity (µmho/cm)	-	426	423	441	438	450	446	447	462	468	457	480	527	476	477
Copper	1.0 [AO]												<0.004	<0.004	
DOC	5.0 [AO]											1.6	2.2	6.6	2.5
Hardness (as $CaCO_3$)	80-100 [OG]	283	276	257	262	249	295	233	230	239	261	246	295	254	260
Hydrogen Sulphide	0.05 (AO)												0.06	0.05	<0.02
Iron	0.3 [AO]		2.38	0.59	0.95	0.74	2.6	0.37	0.01	0.15	0.02	0.19	0.036	<0.010	0.2
Lead	0.01 [MAC,c]												<0.030	<0.030	
Magnesium	-											32.3	34.9	33.5	33.1
Manganese	0.05 [AO]												0.106	0.017	0.107
Molybdenum	-												<0.0030	<0.0030	
Nickel	-												<0.010	<0.010	
Nitrate	10 [MAC,d]											0.1	0.3	0.2	0.1
Nitrite	1 [MAC,d]											<0.01	0.01	0.01	0.01
pH	6.5-8.5 [OG]											7.79	7.56	7.7	8.1
Phenols	-	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.002		0.003	0.0027	0.0106	0.0014
Phosphorus, Total	-											0.01	0.122	0.003	0.04
Potassium	-												1.5	1.2	1.61
Selenium	0.01 [MAC]												<0.0002	<0.0002	
Silver	-												<0.010	<0.010	
Sodium	200 [AO]												5.8	5.5	4.9
Strontium													0.1055	0.0937	
Sulphate	500 [AO]												19.6	15.2	16.5
Tin	-												0.07	0.06	
Titanium	-												<0.0010	<0.0010	
Total Kjeldahl Nitrogen	-											0.45	1.26	0.12	0.63
Vanadium	-												0.003	0.002	
Zinc	5.0 [AO]												<0.005	0.006	

Notes are included in first page of this Appendix

MONITORING WELL TW-1
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

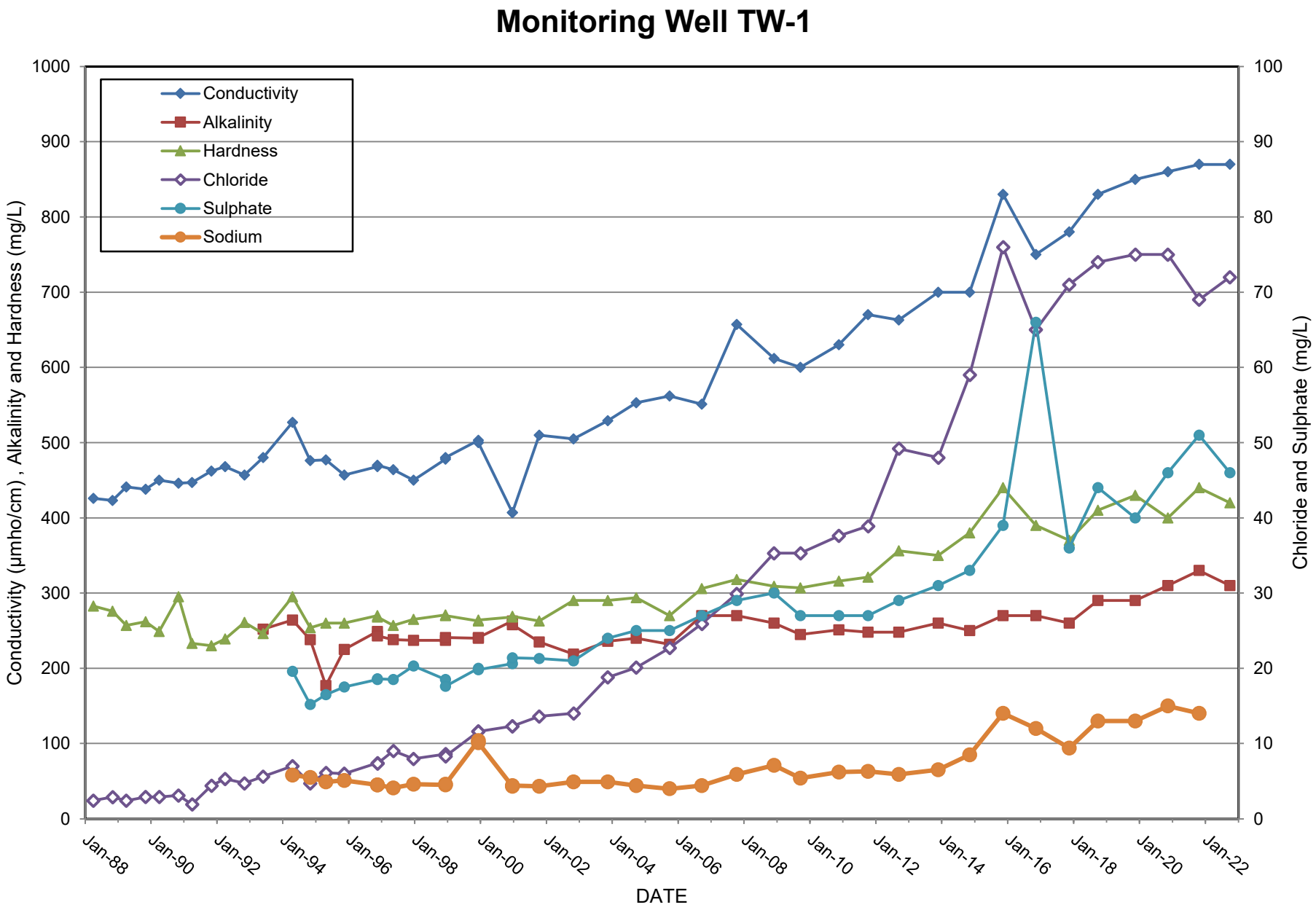
Monitoring Location		TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1
	Sample Date	13-Nov-95	15-Nov-96	15-Nov-96	9-May-97	19-Dec-97	10-Dec-98	10-Dec-98	8-Dec-99	8-Dec-99	19-Dec-00	19-Dec-00	12-Oct-01	28-Oct-02	11-Nov-03
Parameter (mg/L)	ODWS			Replicate				Replicate		Replicate		Replicate			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	225	249	243	238	237	237	241	240	241	263	258	235	219	236
Aluminum	0.1 [OG]		0.096	0.097	0.061	0.064	ND	ND	0.05	0.04			0.27	<0.01	<0.005
Ammonia	-	0.16	0.28		0.08		ND	ND	0.05	0.05	0.04	0.04	0.03	0.01	<0.01
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]		0.011	0.011	0.008	0.008	0.008	0.008	0.523	0.523			0.01	0.01	0.008
Beryllium	-		<0.005	<0.005			ND	ND	ND	ND			<0.002	<0.005	<0.001
Bismuth	-		<0.05	<0.05			ND	ND	ND	ND			<0.05	<0.05	<0.02
Boron	5.0 [IMAC]		0.01	0.01			ND	ND	0.08	0.09			<0.01	0.01	0.007
Cadmium	0.005 [MAC]		<0.003	<0.003			ND	ND	ND	ND			<0.005	<0.0001	<0.005
Calcium	-	48.6	52.4	53.1	50.5	50.9	53.8	53.1	51.6	51.4	52	52.3	49.9	59.8	57.5
Chloride	250 [AO]	6	7.41	7.32	9.01	7.96	8.6	8.3	11.6	11.6	12.3	12.3	13.6	14	18.8
Chromium	0.05 [MAC]		<0.005	<0.005			ND	ND	ND	ND			<0.01	<0.01	
Cobalt	-		<0.005	<0.005			ND	ND	ND	ND			<0.02	<0.01	<0.005
Conductivity (µmho/cm)	-	457	468	470	464	450	478	480	503	500	407	407	510	505	529
Copper	1.0 [AO]		<0.003	<0.003			ND	ND	ND	ND			<0.01	<0.01	<0.002
DOC	5.0 [AO]	7.6	1.3		3.3	0.9	1.1	0.8	7.9	8.1	2.2	2.2	<1	1	11
Hardness (as $CaCO_3$)	80-100 [OG]	260	270	268	257	265	271	270	263	264	268	269	263	290	290
Hydrogen Sulphide	0.05 (AO)	<0.02	0.47			0.22	0.01		ND	ND	ND	ND		0.01	<0.5
Iron	0.3 [AO]	0.11	0.152	0.149	0.089	0.059	ND	ND	0.03	0.03	0.06	0.05	2	0.04	0.028
Lead	0.01 [MAC,c]		<0.025	<0.025			ND	ND	ND	ND			<0.1	<0.0002	<0.0002
Magnesium	-	12.3	33.3	33	30.4	33.5	33.4	33.5	32.5	32.7	33.4	33.6	33.6	34.3	35.5
Manganese	0.05 [AO]	0.038	0.049	0.049	0.023	0.047	0.04	0.04	0.011	0.011	0.024	0.024	0.193	0.09	0.061
Molybdenum	-		<0.01	<0.01			ND	ND	ND	ND			<0.04	<0.02	<0.01
Nickel	-		<0.01	<0.01			ND	ND	ND	ND			<0.02	<0.02	<0.01
Nitrate	10 [MAC,d]	0.1	0.07	0.07	0.03		0.11	0.09	ND	ND	ND	ND	<0.1		<0.1
Nitrite	1 [MAC,d]	0.01	<0.03	<0.03			ND	ND	ND	ND	ND	ND	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.65	7.56	7.56	7.5	7.66	8.01	8.07	7.57	7.63	7.75	7.79	7.2	8.04	7.95
Phenols	-	<0.0010	<0.0010				ND	ND	ND	ND	ND	ND	<0.001	<0.001	<0.001
Phosphorus, Total	-	0.03	1.32			0.02	0.01	0.01	0.116	0.119					
Potassium	-	1.15	<1	<1	1.7		1.5	1.7	ND	ND	ND	ND	1.4	<0.4	0.8
Selenium	0.01 [MAC]														
Silver	-		<0.003	<0.003			ND	ND	ND	ND			<0.01	<0.01	<0.005
Sodium	200 [AO]	5.1	4.5	4.5	4.09	4.6	4.5	4.6	10.4	10.1	4.3	4.4	4.3	4.9	4.9
Strontium						0.084	0.087	0.088	0.084	0.083	0.074	0.075	0.11	0.075	0.075
Sulphate	500 [AO]	17.5	18.5	18.6	18.5	20.3	18.5	17.6	20	19.8	20.6	21.4	21.3	21	24
Tin	-		<0.05	<0.05			ND	ND	ND	ND					
Titanium	-		<0.05	<0.05			ND	ND	ND	ND					
Total Kjeldahl Nitrogen	-	0.16	1.36		0.73	0.17	0.13	0.12	0.13	0.11	0.11	0.1			
Vanadium	-		<0.01	<0.01			ND	ND	ND	ND			<0.01	<0.005	<0.005
Zinc	5.0 [AO]		1.21	1.17			ND	ND	0.106	0.106			0.05	0.02	<0.005

MONITORING WELL TW-1
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1	TW-1
	Sample Date	21-Sep-04	27-Sep-05	19-Sep-06	11-Oct-07	27-Nov-08	17-Sep-09	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19
Parameter (mg/L)	ODWS																
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	240	232	270	270	260	245	251	248	248	260	250	270	270	260	290	290
Aluminum	0.1 [OG]	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.06							
Ammonia	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.050	0.074	<0.05	<0.050	<0.050	0.11	0.078
Arsenic	0.025 [IMAC]																
Barium	1.0 [MAC]	0.008	0.009	0.01	0.01	0.01	0.008	0.009	0.01	0.011							
Beryllium	-	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002							
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02							
Boron	5.0 [IMAC]	<0.005	0.006	<0.005	0.048	<0.005	<0.005	<0.005	<0.005	<0.005							
Cadmium	0.005 [MAC]	<0.005	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00004							
Calcium	-	56.5	52.8	61.7	64.9	62.2	58.9	60.4	61	71.2	72	74	85	74	72	80	80
Chloride	250 [AO]	20.1	22.7	25.9	29.9	35.3	35.3	37.6	38.9	49.2	48	59	65	71	76	74	75
Chromium	0.05 [MAC]																
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Conductivity (µmho/cm)	-	553	562	551	657	612	600	630	670	663	700	700	830	750	780	830	850
Copper	1.0 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002							
DOC	5.0 [AO]	<0.5	4.7	2.2	<0.5	0.6	0.5	1.0	0.7	0.6	0.69	0.97	1.2	0.69	0.66	0.76	0.55
Hardness (as $CaCO_3$)	80-100 [OG]	294	270	306	318	309	307	316	321	356	350	380	440	390	370	410	430
Hydrogen Sulphide	0.05 (AO)	<0.5	0.4	0.88	0.22	2	2	3.55	0.48	0.07	0.078	<0.02	<0.02	<0.020			
Iron	0.3 [AO]	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	0.01 [MAC,c]	<0.0002	<0.0002	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002							
Magnesium	-	37.1	33.6	36.9	38	37.3	38.9	40.2	40.9	43.4	42	47	55	49	46	52	56
Manganese	0.05 [AO]	0.028	0.02	0.075	0.052	0.047	0.037	0.024	0.074	0.045	0.11	0.039	0.065	0.037	0.037		0.054
Molybdenum	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01						0.05	
Nickel	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							
Nitrate	10 [MAC,d]	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	0.2	<0.10	<0.10	<0.10	<0.10
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.48	7.4	7.13	7	7.12	7.34	7.06	7.73	7.75	7.64	8.01	7.83	8.03	7.84	7.94	7.96
Phenols	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0083	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-										<0.1	1.8	2	0.058	0.81	2.6	0.15
Potassium	-	0.8	0.7	0.8	0.9	0.9	0.9	0.9	1	0.9	0.98	7	1.5	1	1	1	1
Selenium	0.01 [MAC]																
Silver	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002							
Sodium	200 [AO]	4.4	4	4.4	5.9	7.1	5.4	6.2	6.3	5.9	6.5	8.5	14	12	9.4	13	15
Strontium		0.075	0.082	0.08	0.086	0.08	0.079	0.091	0.085	0.100							
Sulphate	500 [AO]	25	25	27	29	30	27	27	27	29	31	33	66	36	39	44	40
Tin	-																
Titanium	-																
Total Kjeldahl Nitrogen	-																
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						<0.020	
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	0.025	0.006	<0.005	<0.005							

MONITORING WELL TW-1
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-1	TW-1	TW-1
	Sample Date	Nov-20	Oct-21	Sep-22
Parameter (mg/L)	ODWS			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	310	330	310
Aluminum	0.1 [OG]			-
Ammonia	-	0.059	<0.050	0.26
Arsenic	0.025 [IMAC]			-
Barium	1.0 [MAC]			-
Beryllium	-			-
Bismuth	-			-
Boron	5.0 [IMAC]			-
Cadmium	0.005 [MAC]			-
Calcium	-	78	87	83
Chloride	250 [AO]	75	69	72
Chromium	0.05 [MAC]			-
Cobalt	-			-
Conductivity (µmho/cm)	-	860	870	870
Copper	1.0 [AO]			-
DOC	5.0 [AO]	0.95	0.66	0.9
Hardness (as $CaCO_3$)	80-100 [OG]	400	440	420
Hydrogen Sulphide	0.05 (AO)			0.21
Iron	0.3 [AO]	<0.1	<0.1	<0.10
Lead	0.01 [MAC,c]			-
Magnesium	-	50	54	52
Manganese	0.05 [AO]	0.14	0.14	0.088
Molybdenum	-			-
Nickel	-			-
Nitrate	10 [MAC,d]	0.46	<0.10	<0.10
Nitrite	1 [MAC,d]	0.021	<0.010	<0.010
pH	6.5-8.5 [OG]	7.58	7.94	7.79
Phenols	-	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-	0.11	0.12	0.23
Potassium	-	1	1	1
Selenium	0.01 [MAC]			-
Silver	-			-
Sodium	200 [AO]	14	17	15
Strontium				-
Sulphate	500 [AO]	46	51	46
Tin	-			-
Titanium	-			-
Total Kjeldahl Nitrogen	-			-
Vanadium	-			-
Zinc	5.0 [AO]			-


Monitoring Well TW-1
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
Sodium
Conductivity (µmho/cm), Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
0
100
200
300
400
500
600
700
800
900
1000
0
10
20
30
40
50
60
70
80
90
100
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-2
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Spring /90	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95	13-Nov-95	27-May-96	27-May-96	15-Nov-96	9-May-97	19-Dec-97
Parameter (mg/L)	ODWS																	Replicate			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]											638	700	1110	359	929	729	746	852	503	970
Aluminum	0.1 [OG]												0.047	<0.030					0.045	0.045	0.111
Ammonia	-											0.6	3.09	11.5	4.72	2.95	1.98		5.72	0.99	6.9
Arsenic	0.025 [IMAC]												0.0037	0.0021							
Barium	1.0 [MAC]												0.104	0.149					0.067	0.041	0.083
Beryllium	-												<0.0002	<0.0002					<0.005		
Bismuth	-																		<0.05		
Boron	5.0 [IMAC]												0.69	1.06					0.39	0.15	0.5
Cadmium	0.005 [MAC]												<0.002	<0.002					<0.003		0.004
Calcium	-											133	242	190	217	256	210	210	209	146	204
Chloride	250 [AO]	153.4	135.8	39.9	171	65	8.5	35.8	204	47.8	49.1	48.2	355	146	140	77.9	110	110	42.9	206	88.2
Chromium	0.05 [MAC]												0.004	<0.002					<0.005		
Cobalt	-												0.0087	<0.0050					<0.005		
Conductivity (µmho/cm)	-	1590	1590	878	1910	904	817	936	2520	1320	1670	1570	2520	2740	2110	2080	1700	1710	1640	1490	1510
Copper	1.0 [AO]												0.008	0.005					<0.003		
DOC	5.0 [AO]											5.9	21.5	>20	10.2	10.3	5.6		6.4	2.7	5.9
Hardness (as $CaCO_3$)	80-100 [OG]	556	533	461	599	441	436	464	965	659	713	708	1220	1151	1012	1146	918	921	870	572	818
Hydrogen Sulphide	0.05 (AO)																0.12		<0.02		0.04
Iron	0.3 [AO]		0.69	2.9	1.14	0.18	1.76	0.61	0.03	0.03	0.02	0.05	3.99	0.733	0.58	0.7	0.093	0.093	0.14	0.05	0.054
Lead	0.01 [MAC,c]												<0.030	<0.030					<0.025		
Magnesium	-											91.1	149	163	113	123	96	96.2	84.5	51	75
Manganese	0.05 [AO]												2.51	1.13	1.74	1.27	1.98	1.97	1.14	1.21	1
Molybdenum	-												<0.0030	<0.0030					<0.01		
Nickel	-												0.042	0.023					0.01		
Nitrate	10 [MAC,d]											5.7	0.5	0.1	1	0.4	0.92	0.92	0.09	2.47	0.06
Nitrite	1 [MAC,d]											0.02	0.09	0.02	0.04	0.02	<0.03		<0.03		
pH	6.5-8.5 [OG]											7.14	7.05	7.06	7.52	6.82	7.16	7.18	6.8	7.17	7.02
Phenols	-	0.001	0.001	0.001	0.0035	0.001	0.001	0.001	0.001	0.002		0.0035	0.0502	0.0125	0.0063	0.0085	0.001		0.002		0.001
Phosphorus, Total	-											0.01	0.025	0.032	0.04	0.03	0.004		0.74		0.04
Potassium	-												29.8	71.1	15.9	15.8	9.3	8.2	17.6	7.2	26.4
Selenium	0.01 [MAC]												<0.0002	<0.0002							
Silver	-												<0.010	<0.010					<0.003		
Sodium	200 [AO]												107	126	76.4	71	56.8	56.9	49.6	94.1	70.3
Strontium													0.4188	0.5474						-	0.633
Sulphate	500 [AO]												34	340	286	248	127	127	118	59.6	47.2
Tin	-												0.21	0.17					<0.05		
Titanium	-												0.0017	0.004					<0.05		
Total Kjeldahl Nitrogen	-											1.47	5.4	18.7	5.32	4.03	2.5		6.32	1.57	7.6
Vanadium	-												0.019	0.016					<0.01		
Zinc	5.0 [AO]												0.005	0.008					0.025		

Notes are included in first page of this Appendix

MONITORING WELL TW-2
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

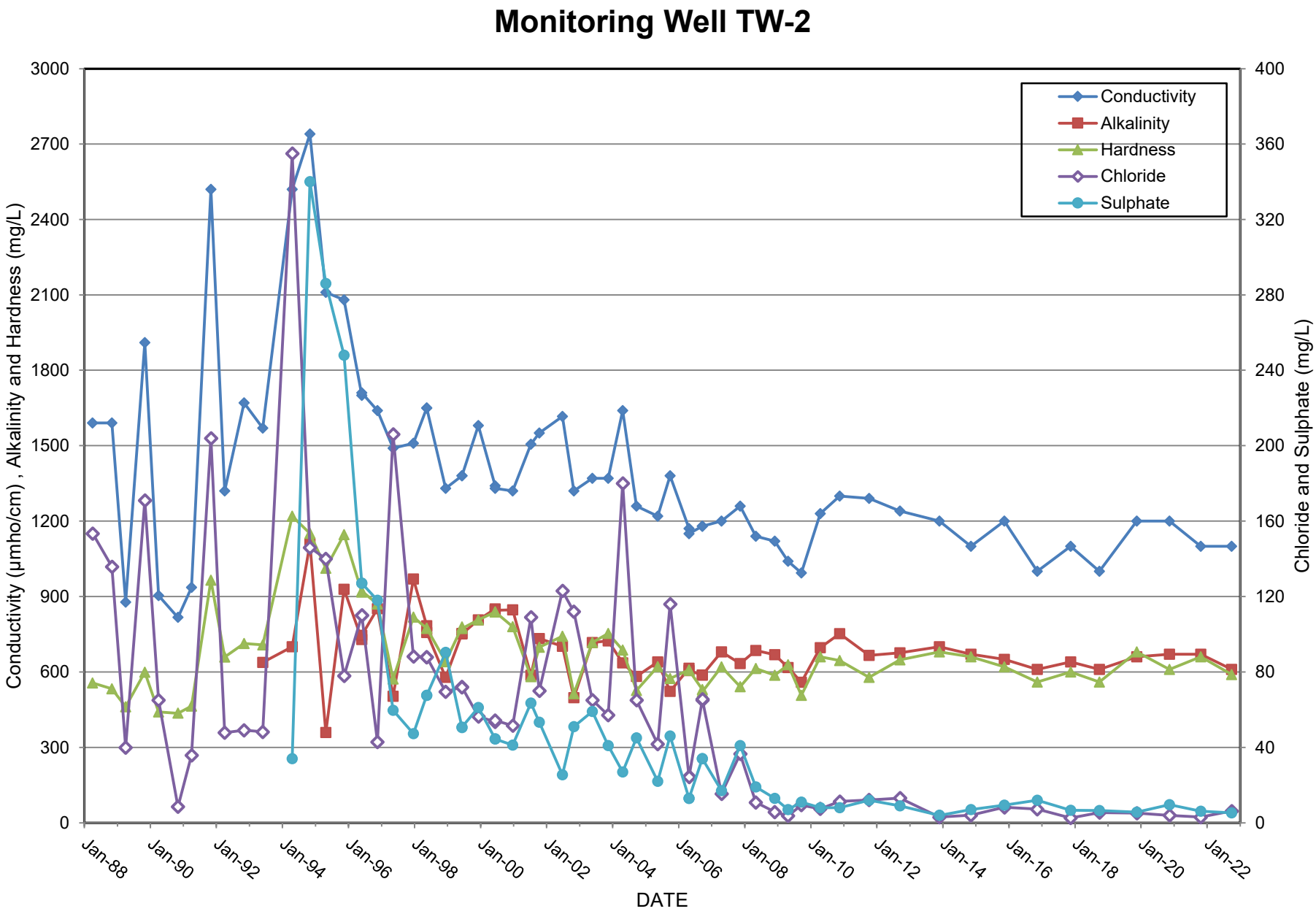
Monitoring Location		TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2
	Sample Date	14-May-98	14-May-98	10-Dec-98	8-Jun-99	8-Jun-99	Dec. 8/99	9-Jun-00	9-Jun-00	21-Dec-00	11-Jul-01	12-Oct-01	25-Jun-02	28-Oct-02	21-May-03	11-Nov-03	21-Apr-04	21-Sep-04	12-May-05	27-Sep-05
Parameter (mg/L)	ODWS		Replicate			Replicate			Replicate											
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	784	757	578	753	751	807	851	845	847	587	733	702	498	717	723	636	582	640	523
Aluminum	0.1 [OG]	0.083	0.095	ND	ND	ND	0.05				0.06	<0.05	<0.05	<0.01	<0.03	<0.005	<0.005	<0.005	<0.01	<0.01
Ammonia	-	4.1	4.2	5.9	4.84	4.87	3.1	2.58	2.58	6.49	6.16	4.6	4.96	6.68	0.88	2.61	0.88	7.65	0.89	6.97
Arsenic	0.025 [IMAC]																			
Barium	1.0 [MAC]	0.063	0.063	0.062	0.056	0.55	0.058				0.07	0.06	0.05	0.055	0.049	0.05	0.056	0.064	0.049	0.071
Beryllium	-	ND	ND	ND	ND	ND	ND				<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.002
Bismuth	-	ND	ND	ND	ND	ND	ND				<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	0.29	0.29	0.31	0.29	0.28	0.33				0.35	0.36	0.35	0.39	0.21	0.221	0.181	0.403	0.147	0.362
Cadmium	0.005 [MAC]	ND	ND	ND	ND	ND	ND				<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.0001	<0.0001
Calcium	-	202	202	169	202	200	210	217	217	206	163	183	196	144	197.0	211	201	140	172	161
Chloride	250 [AO]	87.9	87.9	69.5	72.1	71.9	56.4	53.5	54.3	51.5	109	70	123	112	65.1	57.1	180	65	41.7	116
Chromium	0.05 [MAC]	ND	ND	ND	ND	ND	ND				<0.01	<0.01	<0.01	<0.01	<0.01					
Cobalt	-	0.005	0.005	ND	ND	ND	0.009				<0.02	<0.02	<0.02	<0.01	<0.01	0.005	0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	1650	1650	1330	1380	1380	1580	1340	1330	1320	1506	1550	1616	1320	1370	1370	1640	1260	1220	1380
Copper	1.0 [AO]	ND	ND	ND	ND	ND	ND				<0.01	<0.01	<0.01	<0.01	<0.01	0.006	0.005	0.005	0.003	0.004
DOC	5.0 [AO]	6.8	6.7	3.2	5.4	5.4	6.5	6.1	6	8.9	13	11	6.6	7	3.5	33	5.1	4.4	3.5	17.2
Hardness (as $CaCO_3$)	80-100 [OG]	774	774	641	779	773	807	839	839	780	581	698	742	513	717	753	687	526	621	574
Hydrogen Sulphide	0.05 (AO)	ND		1.73	0.45	na	0.05	ND	ND	0.01			<0.01	0.01	0.04	0.5	0.3	<0.5	0.1	0.3
Iron	0.3 [AO]	0.119	0.129	0.02	0.05	0.04	0.1	0.04	0.04	0.05	0.1	0.05	<0.01	0.04	0.31	<0.005	0.006	0.015	0.006	0.087
Lead	0.01 [MAC,c]	ND	ND	ND	ND	ND	ND				<0.1	<0.1	<0.001	0.0006	0.0005	<0.0002		0.0006	0.0002	0.0002
Magnesium	-	65.6	65.8	53.3	66.6	66.4	68.4	71.7	71.9	64.4	42.2	58.4	61.3	37.3	54.6	55	44.9	42.6	46.7	41.9
Manganese	0.05 [AO]	1.27	1.27	0.83	1.02	1	1.34	1.61	1.61	1.39	1.75	1.65	1.61	1.09	2.06	2.35	1.91	1.42	1.87	1.45
Molybdenum	-	ND	ND	ND	ND	ND	ND				<0.04	<0.04	<0.04	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	-	ND	ND	ND			ND				<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]	0.96	0.96	1.2	0.9	0.9	ND	0.3	0.3	ND	<0.1	0.9	<0.1	0.2	2.1	0.2	1.5	<0.1	1.8	<0.1
Nitrite	1 [MAC,d]	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	6.99	7.01	7.76	7.04	7.04	6.91	7.05	7.06	7.21	6.99	6.77	6.83	7.25	7.24	7.11	7.67	7.23	7.07	7.26
Phenols	-	ND	ND	ND	0.001	0.001	0.007	0.002	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-	0.02	0.03	0.01	0.96	0.96	1.44													
Potassium	-	15.5	15.9	24.6	14.3	13.4	13	7	7	14	13.5	16.1	13	21.7	9.3	8.6	8.6	21.6	8.1	20.6
Selenium	0.01 [MAC]																			
Silver	-	ND	ND	ND	ND	ND	ND				<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	200 [AO]	63.3	63.1	53.2	51.5	50.7	36.6	47.2	47.2	37.2	73.8	42.1	99.6	88	45.9	33.3	98.7	54.6	49.5	58.4
Strontium		0.439	0.437	0.581	0.434	0.427	0.503			0.545	0.45	0.53	0.39	0.445	0.047	0.478	0.451	0.424	0.426	0.505
Sulphate	500 [AO]	67.6	67.6	90.4	50.5	50.7	61.1	44.5	44.4	41.2	63.5	53.3	25.4	51	59	41	27	45	22	46
Tin	-	ND	ND	ND	ND	ND	ND													
Titanium	-	ND	ND	ND	ND	ND	ND													
Total Kjeldahl Nitrogen	-	6.2	6.3	6.1	5.12	5.2	3.78	3	2.78	8										
Vanadium	-	ND	ND	ND	ND	ND	ND				<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	ND	ND	ND	0.03	0.03	ND				<0.02	0.02	<0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005

MONITORING WELL TW-2
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2	TW-2
	Sample Date	25-Apr-06	25-Apr-06	19-Sep-06	19-Sep-06	19-Apr-07	11-Oct-07	1-May-08	27-Nov-08	23-Apr-09	17-Sep-09	14-Apr-10	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19	Nov-20	Oct-21
Parameter (mg/L)	ODWS		Replicate		Replicate																			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	615	605	588	588	680	633	685	669	617	559	696	752	666	676	700	670	650	610	640	610	660	670	670
Aluminum	0.1 [OG]	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	0.03	0.05	0.08									
Ammonia	-	0.54	0.54	<0.01	1.81	0.54	6.14	1.25	0.99	0.6	2.02	1.66	3.07	7.48	7.08	1.2	4.2	7.4	6.4	1.3	5	4.1	3.7	3
Arsenic	0.025 [IMAC]																							
Barium	1.0 [MAC]	0.044	0.044	0.061	0.06	0.046	0.065	0.047	0.044	0.035	0.041	0.055	0.065	0.065	0.083									
Beryllium	-	<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									
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02									
Boron	5.0 [IMAC]	0.139	0.138	0.301	0.296	0.128	0.379	0.105	0.136	0.08	0.169	0.151	0.264	0.282	0.357									
Cadmium	0.005 [MAC]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00005	0.00002	0.00019	0.00008									
Calcium	-	165	165	147	144	171	149	171	165	164	137	182	176	159	182	190	190	170	160	170	160	190	180	200
Chloride	250 [AO]	24.5	24.3	65.1	65.5	15.4	36.5	10.8	5.7	3.7	9.4	7.4	11.3	12.1	13.1	3	4	8.2	7.2	2.6	5.4	5.1	3.9	3
Chromium	0.05 [MAC]																							
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005									
Conductivity (µmho/cm)	-	1170	1150	1180	1180	1200	1260	1140	1120	1040	994	1230	1300	1290	1240	1200	1100	1200	1000	1100	1000	1200	1200	1100
Copper	1.0 [AO]	0.003	0.003	0.005	0.004	0.004	0.005	<0.002	<0.002	<0.002	0.004	0.003	0.003	0.003	<0.002									
DOC	5.0 [AO]	2.2	3.2	13.4	12.8	2.7	13.5	4.2	2.9	2.3	3.8	5.1	5.4	5.7	6.2	3.6	5.3	4.9	4.4	2.6	3.2	4.1	4.2	3.5
Hardness (as $CaCO_3$)	80-100 [OG]	608	606	530	521	620	541	614	587	629	507	660	645	578	648	680	660	620	560	600	560	680	610	660
Hydrogen Sulphide	0.05 (AO)	0.2	0.3	0.09	0.07	0.08	0.04	0.14	0.08	<10	0.05	0.3	0.1	0.09	0.05	<0.02	<0.02	<0.02	<0.020					
Iron	0.3 [AO]	<0.005	<0.005	0.1	0.101	0.011	0.015	0.02	0.047	0.047	0.023	0.188	0.09	0.025	0.040	<0.1	<0.1	<0.1	<0.1	<0.1	0.95	<0.1	<0.1	<0.1
Lead	0.01 [MAC,c]	<0.0005	<0.0005	0.0002	0.0002	<0.0001	0.00012	<0.00002	<0.00002	<0.00002	<0.00002	0.00013	0.00011	0.00011	<0.00002	<0.00002	<0.00002							
Magnesium	-	47.3	47.1	39.4	38.9	46.9	40.7	45.2	42.2	53.2	40.1	49.5	50.1	44.3	46.6	49	45	44	39	43	38	48	39	39
Manganese	0.05 [AO]	1.55	1.54	1.33	1.31	1.61	1.17	1.6	1.39	1.02	1.1	1.62	1.5	1.46	1.46	1.7	2.2	1.5	1.4	1.1	1.3	1.8	1.5	1.9
Molybdenum	-	<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									
Nickel	-	<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									
Nitrate	10 [MAC,d]	2.2	2.2	<0.1	<0.1	2	<0.1	1.1	0.2	0.9	<0.1	0.2	<0.1	<0.1	0.4	0.14	0.34	0.14	0.34	0.52	<0.10	0.4	0.74	0.34
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.024	0.073	0.052	0.011	<0.010	0.046	0.033	0.028	0.012
pH	6.5-8.5 [OG]	6.98	6.97	6.69	6.67	7.09	6.8	7.55	6.79	6.53	6.93	7.32	6.57	7.3	7.34	7.40	7.65	7.43	7.75	7.45	7.64	7.68	7.39	7.8
Phenols	-	<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	0.00091	<0.001	0.0019	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-															<0.1	0.2	0.1	0.41	0.043	0.04	0.066	0.13	0.075
Potassium	-	8.9	8.9	18.5	18.6	8.4	20.4	8.2	8.2	7.7	11.5	9.4	12.5	14.6	15.2	5.2	8.3	15	12	6.1	8.4	7.2	6.7	6.4
Selenium	0.01 [MAC]																							
Silver	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002									
Sodium	200 [AO]	32.7	32.7	52.3	53.1	27.3	44.5	25.5	19.4	7.1	17.3	23.3	24.4	21.6	23.3	4.5	8.5	14	8.9	3.2	6.7	7.6	5.9	4
Strontium		0.297	0.296	0.402	0.394	0.331	0.444	0.349	0.303	0.261	0.25	0.359	0.382	0.36	0.472									
Sulphate	500 [AO]	13	13	34	34	17	41	19	13	7	11	8	8	12	9	4	7	9.4	12	6.6	6.5	5.6	9.6	6.1
Tin	-																							
Titanium	-																							
Total Kjeldahl Nitrogen	-																							
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005									
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.015	<0.005									

MONITORING WELL TW-2
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

	Monitoring Location	TW-2
	Sample Date	Sep-22
Parameter (mg/L)	ODWS	
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	610
Aluminum	0.1 [OG]	-
Ammonia	-	8.7
Arsenic	0.025 [IMAC]	-
Barium	1.0 [MAC]	-
Beryllium	-	-
Bismuth	-	-
Boron	5.0 [IMAC]	-
Cadmium	0.005 [MAC]	-
Calcium	-	180
Chloride	250 [AO]	6.2
Chromium	0.05 [MAC]	-
Cobalt	-	-
Conductivity (µmho/cm)	-	1100
Copper	1.0 [AO]	-
DOC	5.0 [AO]	4.6
Hardness (as $CaCO_3$)	80-100 [OG]	590
Hydrogen Sulphide	0.05 (AO)	<0.020
Iron	0.3 [AO]	<0.10
Lead	0.01 [MAC,c]	-
Magnesium	-	37
Manganese	0.05 [AO]	1.4
Molybdenum	-	-
Nickel	-	-
Nitrate	10 [MAC,d]	<0.10
Nitrite	1 [MAC,d]	0.136
pH	6.5-8.5 [OG]	7.71
Phenols	-	0.0058
Phosphorus, Total	-	0.89
Potassium	-	9.6
Selenium	0.01 [MAC]	-
Silver	-	-
Sodium	200 [AO]	7.7
Strontium		-
Sulphate	500 [AO]	5.3
Tin	-	-
Titanium	-	-
Total Kjeldahl Nitrogen	-	-
Vanadium	-	-
Zinc	5.0 [AO]	-


Monitoring Well TW-2
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
400
360
320
280
240
200
160
120
80
40
0
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-3
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Spring /90	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95
Parameter (mg/L)	ODWS														
Alkalinity (as $CaCO_3$)	30 - 500 [OG]											291	297	300	179
Aluminum	0.1 [OG]												0.044	0.032	
Ammonia	-											0.023	0.026	<0.005	0.83
Arsenic	0.025 [IMAC]												0.0002	0.0002	
Barium	1.0 [MAC]												0.016	0.006	
Beryllium	-												<0.0002	<0.0002	
Bismuth	-														
Boron	5.0 [IMAC]												0.12	0.13	
Cadmium	0.005 [MAC]												<0.002	<0.002	
Calcium	-											55.2	69.4	67.6	59.9
Chloride	250 [AO]	5.05	38.17	40.2	36.9	44.8	27.5	18.8	24.2	17.4	11	11.9	13.7	9.5	12.2
Chromium	0.05 [MAC]												<0.002	<0.002	
Cobalt	-												<0.0050	<0.0050	
Conductivity (µmho/cm)	-	525	694	779	705	809	676	628	653	663	592	593	674	606	582
Copper	1.0 [AO]												0.01	<0.004	
DOC	5.0 [AO]											2.5	6.5		3
Hardness (as $CaCO_3$)	80-100 [OG]	236	376	730	377	405	401	325	308	379	322	269	332	307	283
Hydrogen Sulphide	0.05 (AO)												0.07	0.08	<0.02
Iron	0.3 [AO]		0.2	9.1	0.58	0.37	1.77	1.06	0.01	1.92	0.01	0.02	0.048	0.012	2.13
Lead	0.01 [MAC,c]												<0.030	<0.030	-
Magnesium	-											31.9	38.5	33.6	32.4
Manganese	0.05 [AO]												0.003	<0.002	0.108
Molybdenum	-												<0.0030	<0.0030	
Nickel	-												<0.010	<0.010	
Nitrate	10 [MAC,d]											0.7	1.1	0.9	0.9
Nitrite	1 [MAC,d]											<0.01	<0.01	0.01	0.02
pH	6.5-8.5 [OG]											7.9	7.78	7.66	8
Phenols	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0015	0.001	<0.001	0.0046	0.0029	0.0031
Phosphorus, Total	-											0.003	0.026	0.031	0.1
Potassium	-												0.8	0.9	1.59
Selenium	0.01 [MAC]												<0.0002	<0.0002	
Silver	-												<0.010	<0.010	
Sodium	200 [AO]												13.9	9.4	9.8
Strontium													0.087	0.0795	
Sulphate	500 [AO]												0.8	25.2	29.8
Tin	-												0.1	0.03	
Titanium	-												<0.0010	<0.0010	
Total Kjeldahl Nitrogen	-											0.43	0.53	0.61	1.01
Vanadium	-												0.007	0.002	
Zinc	5.0 [AO]												<0.005	<0.005	

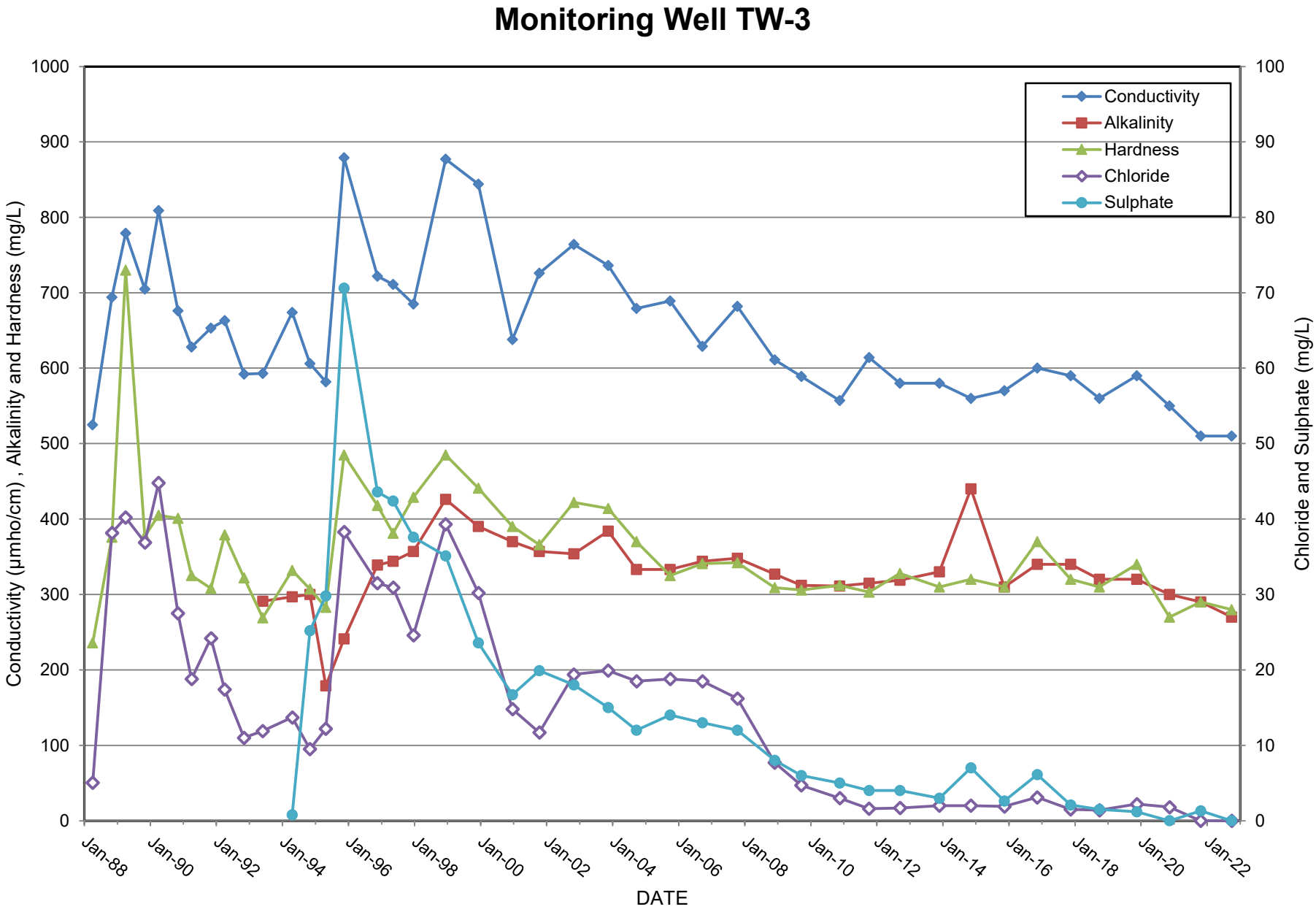
Notes are included in first page of this Appendix

MONITORING WELL TW-3
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3
	Sample Date	13-Nov-95	15-Nov-96	9-May-97	19-Dec-97	10-Dec-98	8-Dec-99	19-Dec-00	12-Oct-01	28-Oct-02	11-Nov-03	21-Sep-04	27-Sep-05	19-Sep-06
Parameter (mg/L)	ODWS													
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	241	339	344	357	426	390	370	357	354	384	333	333	344
Aluminum	0.1 [OG]		0.099	0.031	0.579	0.07	0.07		<0.05	0.03	<0.005	<0.005	<0.01	<0.01
Ammonia	-	0.17	0.1	0.12	0.03	ND	0.06	0.05	<0.01	0.02	<0.01	0.02	<0.01	<0.01
Arsenic	0.025 [IMAC]													
Barium	1.0 [MAC]		0.018	0.016	0.021	0.019	0.885		0.02	0.02	0.021	0.019	0.018	0.018
Beryllium	-		<0.005			ND	ND		<0.002	<0.005	<0.001	<0.001	<0.002	<0.002
Bismuth	-		<0.05			ND	ND		<0.05	<0.05	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]		0.06	0.06	0.04	0.1	0.18		0.09	0.08	0.084	0.055	0.06	0.059
Cadmium	0.005 [MAC]		<0.003			ND	ND		<0.005	<0.0001	<0.005	<0.005	<0.0001	<0.0001
Calcium	-	110	94.5	92.1	95.6	110	100	87.8	82.7	99.2	96.6	84	75.2	80
Chloride	250 [AO]	38.3	31.5	30.9	24.6	39.3	30.2	14.8	11.7	19.4	19.9	18.5	18.8	18.5
Chromium	0.05 [MAC]		<0.005			ND	ND		<0.01	<0.01				
Cobalt	-		<0.005			ND	ND		<0.02	<0.01	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	879	722	711	685	877	844	638	726	764	736	679	689	629
Copper	1.0 [AO]		<0.003			ND	ND		<0.01	<0.01	<0.002	<0.002	<0.002	<0.002
DOC	5.0 [AO]	3.4	1.2	1.4	2.3	1.4	2	5.1	<1	<1	11	0.8	5.8	8.2
Hardness (as $CaCO_3$)	80-100 [OG]	485	418	381	429	485	441	390	366	422	414	370	325	341
Hydrogen Sulphide	0.05 (AO)	0.02	<0.02		1.91	0.24	0.01	0.01		0.04	0.8	6	2	<0.01
Iron	0.3 [AO]	<0.01	0.069	0.038	0.265	0.05	0.04	0.02	<0.01	<0.02	<0.005	0.008	<0.005	<0.005
Lead	0.01 [MAC,c]		<0.025			ND	ND		<0.1	<0.0002	<0.0002	0.0003	<0.0002	<0.0001
Magnesium	-	50.7	44.1	40.1	43.3	51.2	46.3	41.5	38.7	42.4	42	38.9	33.4	34.4
Manganese	0.05 [AO]	0.003	ND		0.052	ND	0.009	ND	<0.005	<0.01	<0.001	<0.001	<0.001	<0.001
Molybdenum	-		<0.01		0.02	ND	ND		<0.04	<0.02	<0.01	<0.01	<0.01	<0.01
Nickel	-		<0.01			ND	ND		<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]	2.1	2.08	2.6	3.5	2.8	2.4	1.3	2.5	1.9	1.4	1.1	1.2	1.1
Nitrite	1 [MAC,d]	0.01	<0.03			ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.56	7.45	7.54	7.54	7.9	7.5	7.83	7.39	7.86	7.95	7.6	7.54	7.16
Phenols	-	0.0021	<0.001	0.002	0.002	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-	0.02	0.96		0.01	ND	2.87							
Potassium	-	0.99	<1			1.2	ND	1	1.9	<0.4	1.8	1.9	1.6	2
Selenium	0.01 [MAC]													
Silver	-		<0.003			ND	ND		<0.01	<0.01	<0.005	<0.005	<0.005	<0.005
Sodium	200 [AO]	20.4	14.9	14.6	14.4	21.8	23	11.5	10.9	14.5	13.7	9.7	10	13.1
Strontium					-	0.082	0.096	0.12	0.081	0.09	0.075	0.079	0.072	0.076	0.072
Sulphate	500 [AO]	70.6	43.6	42.4	37.6	35.1	23.6	16.7	19.9	18	15	12	14	13
Tin	-		<0.05			ND	ND							
Titanium	-		<0.05			ND	ND							
Total Kjeldahl Nitrogen	-	0.27	1.85	9.63	0.25	0.17	0.48	0.19						
Vanadium	-		<0.01			ND	ND		<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]		0.5			ND	0.146		<0.02	0.01	<0.005	<0.005	<0.005	<0.005

MONITORING WELL TW-3
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3	TW-3
	Sample Date	11-Oct-07	27-Nov-08	17-Sep-09	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19	Nov-20	Oct-21	Sep-22
Parameter (mg/L)	ODWS																
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	348	327	312	311	315	319	330	440	310	340	340	320	320	300	290	270
Aluminum	0.1 [OG]	<0.01	<0.01	<0.01	0.01	0.02	0.06										-
Ammonia	-	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.050	0.058	0.12	<0.050	<0.050	0.81	0.097	<0.050	<0.050	0.074
Arsenic	0.025 [IMAC]																-
Barium	1.0 [MAC]	0.016	0.014	0.012	0.013	0.014	0.016										-
Beryllium	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002										-
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02										-
Boron	5.0 [IMAC]	0.108	0.038	0.033	0.032	0.01	0.030										-
Cadmium	0.005 [MAC]	<0.00002	<0.00002	0.00004	<0.00002	0.00011	<0.00002										-
Calcium	-	79.3	72.9	70.8	72	68.2	77.0	72	75	73	86	76	71	77	65	70	67
Chloride	250 [AO]	16.2	7.7	4.7	3	1.6	1.7	2	2	1.9	3.1	1.5	1.4	2.2	1.8	<1.0	<1.0
Chromium	0.05 [MAC]																-
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005										-
Conductivity (µmho/cm)	-	682	611	589	557	614	580	580	560	570	600	590	560	590	550	510	510
Copper	1.0 [AO]	0.004	<0.002	<0.002	<0.002	<0.002	<0.002										-
DOC	5.0 [AO]	1.3	0.8	1.1	0.9	1.1	2.3	0.67	1.1	1	0.88	0.67	0.98	<0.50	0.8	0.62	0.75
Hardness (as $CaCO_3$)	80-100 [OG]	342	309	306	312	303	328	310	320	310	370	320	310	340	270	290	280
Hydrogen Sulphide	0.05 (AO)	0.65	4.9	5.7	7.57	6	0.55	<0.02	<0.02	<0.02	<0.020						<0.020
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	<0.1	<0.1	<0.1	<0.10
Lead	0.01 [MAC,c]	<0.00002	<0.00002	<0.00002	<0.00002	0.00002	<0.00002										-
Magnesium	-	34.9	30.8	31.3	32.2	32.1	33.0	31	32	31	38	31	32	35	27	28	27
Manganese	0.05 [AO]	0.26	<0.001	<0.001	<0.001	<0.001	0.011	<0.002	<0.002	0.018	<0.002	0.0073	0.032	0.026	0.007	0.02	<0.0020
Molybdenum	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01										-
Nickel	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01										-
Nitrate	10 [MAC,d]	0.9	0.8	1.5	0.7	0.4	0.3	0.30	0.35	0.48	0.45	0.29	0.27	0.36	0.17	0.31	<0.10
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.011	<0.010	0.024	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.04	7.35	7.44	7.17	7.71	7.76	7.80	8.02	7.86	8.01	7.87	8.02	8.02	7.75	8.1	8.04
Phenols	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0028
Phosphorus, Total	-							<0.1	2.4	3.5	2.9	2.4	4.4	0.6	3.3	7.4	0.52
Potassium	-	1.7	2	2	1.5	1.4	1.5	1.3	1.4	1.6	1.5	1.4	1.4	1.4	1.2	1.5	1.3
Selenium	0.01 [MAC]																-
Silver	-	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002										-
Sodium	200 [AO]	16.7	9.5	6	4.8	4.7	3.8	3.3	2.8	2.7	3.3	2.5	1.8	2.2	1.4	1.6	1.3
Strontium		0.08	0.065	0.062	0.068	0.06	0.067										-
Sulphate	500 [AO]	12	8	6	5	4	4	3	7	2.6	6.1	2.1	1.5	1.2	<1.0	1.3	<1.0
Tin	-																-
Titanium	-																-
Total Kjeldahl Nitrogen	-																-
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005										-
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005										-


Monitoring Well TW-3
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
1000
900
800
700
600
500
400
300
200
100
0
100
90
80
70
60
50
40
30
20
10
0
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

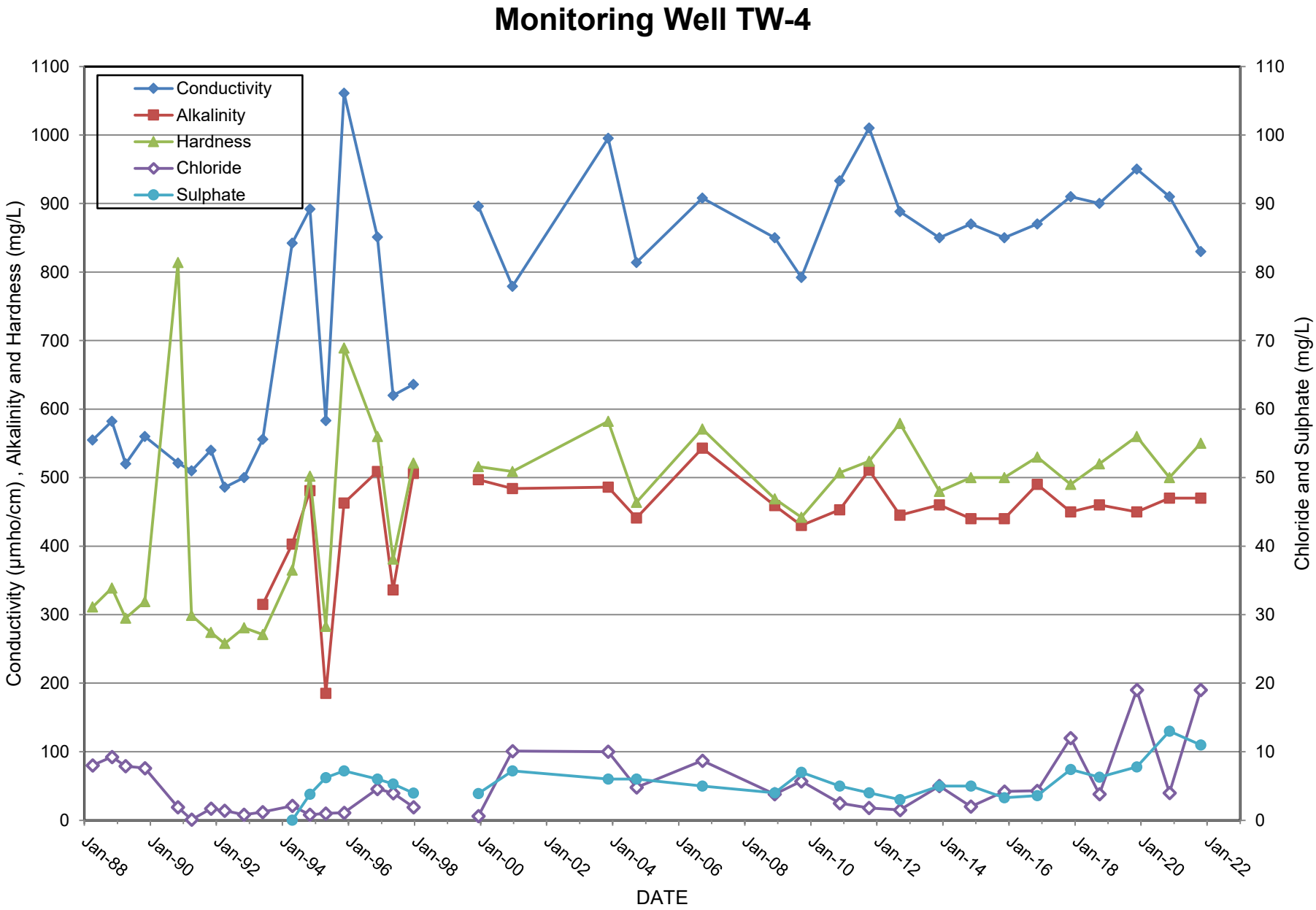
MONITORING WELL TW-4
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95	13-Nov-95	15-Nov-96	9-May-97
Parameter (mg/L)	ODWS																
Alkalinity (as $CaCO_3$)	30 - 500 [OG]										315	403	481	185	463	509	336
Aluminum	0.1 [OG]											0.051	<0.030			0.123	
Ammonia	-										0.02	0.085	0.094	+	<0.05	0.17	0.06
Arsenic	0.025 [IMAC]											0.0014	0.0001				
Barium	1.0 [MAC]											0.028	0.006			0.018	0.01
Beryllium	-											<0.0002	0.0004			<0.005	
Bismuth	-															<0.05	
Boron	5.0 [IMAC]											0.12	<0.10			0.01	
Cadmium	0.005 [MAC]											<0.002	<0.002			<0.003	
Calcium	-										61.5	68.8	122	63.5	181	145	98.6
Chloride	250 [AO]	8.01	9.24	7.9	7.6	1.9	0.1	1.7	1.4	0.8	1.2	2.1	0.8	1	1.1	4.57	3.96
Chromium	0.05 [MAC]											<0.002	<0.002			<0.005	
Cobalt	-											<0.0050	<0.0050			<0.005	
Conductivity (µmho/cm)	-	555	582	520	560	521	510	540	486	500	556	842	892	583	1061	851	620
Copper	1.0 [AO]											0.008	<0.004			<0.003	
DOC	5.0 [AO]										1.1	13.8	6	0.8	3.7	1.6	1.3
Hardness (as $CaCO_3$)	80-100 [OG]	311	339	295	319	814	299	274	258	281	271	365	502	283	689	560	381
Hydrogen Sulphide	0.05 (AO)											0.07	0.13	<0.02	0.03	<0.02	
Iron	0.3 [AO]		0.32	0.82	0.67	21	1.08	0.01	0.01	0.01	0.01	0.046	<0.010	0.51	0.16	0.072	
Lead	0.01 [MAC,c]											<0.030	<0.030			<0.025	
Magnesium	-										28.5	46.8	47.3	30.1	57.7	48.2	31.1
Manganese	0.05 [AO]											0.227	0.004	0.159	0.135	0.08	0.026
Molybdenum	-											<0.0030	<0.0030			<0.01	
Nickel	-											0.012	<0.010			<0.01	
Nitrate	10 [MAC,d]										0.2	0.3	0.2	0.2	0.4	1.27	2.14
Nitrite	1 [MAC,d]										<0.01	<0.01	0.01	0.01	0.02	<0.03	
pH	6.5-8.5 [OG]										7.71	7.53	7.03	7.86	6.94	6.97	7.47
Phenols	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.0025	0.004	0.002	0.0032	<0.0010	<0.0010	0.001
Phosphorus, Total	-										0.004	0.076	0.008	0.04	0.02	1.52	
Potassium	-											0.9	0.53	0.69	0.74	<1	
Selenium	0.01 [MAC]											<0.0002	<0.0002				
Silver	-											<0.010	<0.010			<0.003	
Sodium	200 [AO]											1.9	1.6	1.3	1.8	1.54	2.04
Strontium												0.1023	0.1063				
Sulphate	500 [AO]											<0.5	3.8	6.2	7.2	6.01	5.3
Tin	-											0.09	0.07			<0.05	
Titanium	-											0.0012	0.0012			<0.05	
Total Kjeldahl Nitrogen	-										0.41	1.06	0.15	0.58	0.29	2.38	1.82
Vanadium	-											0.01	0.004			<0.01	
Zinc	5.0 [AO]											<0.005	<0.005			1.87	

Notes are included in first page of this Appendix

MONITORING WELL TW-4
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4	TW-4
	Sample Date	19-Dec-97	10-Dec-98	8-Dec-99	19-Dec-00	11-Nov-03	21-Sep-04	19-Sep-06	27-Nov-08	17-Sep-09	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19	Nov-20	Oct-21
Parameter (mg/L)	ODWS																					
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	506		497	484	486	441	543	459	430	453	511	445	460	440	440	490	450	460	450	470	470
Aluminum	0.1 [OG]		ND	0.06		<0.005	<0.005	<0.01	<0.01	<0.01	0.03	0.04	0.08									
Ammonia	-	0.02		0.07	0.07	<0.01	0.01	<0.01	<0.01	0.08	<0.01	<0.01	<0.01	<0.050	<0.05	<0.05	0.26	<0.050	0.79	0.11	<0.050	0.55
Arsenic	0.025 [IMAC]																					
Barium	1.0 [MAC]		0.02	0.516		0.019	0.014	0.017	0.012	0.01	0.014	0.014	0.017									
Beryllium	-		ND	ND		<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002									
Bismuth	-		ND	ND		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02									
Boron	5.0 [IMAC]		ND	0.07		0.008	<0.005	0.007	<0.005	0.006	0.008	<0.005	0.007									
Cadmium	0.005 [MAC]		ND	ND		<0.005	<0.005	<0.0001	<0.00002	<0.00002	<0.00002	0.0002	0.00003									
Calcium	-		159	137	136	159	122	159	128	121	136	139	161	130	130	130	140	130	140	150	130	150
Chloride	250 [AO]	1.91		0.6	10.1	10	4.8	8.7	3.8	5.7	2.5	1.8	1.5	5	2	4.2	4.3	12	3.8	19	4	19
Chromium	0.05 [MAC]			ND																		
Cobalt	-		ND	ND		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005									
Conductivity (µmho/cm)	-	636		896	779	995	814	908	850	792	933	1010	888	850	870	850	870	910	900	950	910	830
Copper	1.0 [AO]		ND	ND		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002									
DOC	5.0 [AO]	2.3		2.4	4.6	19	0.5	8.9	0.8	1	0.9	1.1		0.70	2.6	0.54	0.79	0.69	1	0.63	0.88	1.4
Hardness (as $CaCO_3$)	80-100 [OG]	521		516	509	582	464	571	469	442	507	524	579	480	500	500	530	490	520	560	500	550
Hydrogen Sulphide	0.05 (AO)		0.02	ND	ND	<0.5	0.8	<0.01	0.9	0.9	0.77	1.43	0.10	<0.02	<0.02	<0.02	<0.020		0.05			
Iron	0.3 [AO]		0.03	0.02	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.010	<0.1	<0.1	<0.1
Lead	0.01 [MAC,c]		ND	ND		<0.0002	<0.0002	0.0002	<0.00002	<0.00002	<0.00002	0.00002	<0.00002						<0.030			
Magnesium	-		49.4	42	41.4	45	38.6	42	36.3	34	40.6	42.6	43.1	38	41	43	43	40	33.5	47	42	44
Manganese	0.05 [AO]		0.04	ND	ND	<0.001	0.001	<0.001	<0.001	0.032	<0.001	<0.001	0.001	0.0021	0.16	<0.002	0.0079	<0.002	0.017	0.015	0.008	0.11
Molybdenum	-		ND	ND		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01						<0.0030			
Nickel	-		ND	ND		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01						<0.010			
Nitrate	10 [MAC,d]	1.41		0.4	7.1	24.2	4	9	6.3	3.7	15	7.2	10.2	4.7	6.67	6.63	3.16	9.63	13.7	9.82	7.44	6.73
Nitrite	1 [MAC,d]			ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.013	<0.01	0.012	<0.010	0.193	0.018	<0.010	0.177
pH	6.5-8.5 [OG]	7.36		7.18	7.4	7.57	7.27	6.9	6.95	6.92	6.85	7.53	8.05	7.60	7.75	7.57	7.82	7.63	7.82	7.88	7.59	7.72
Phenols	-	0.004		ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0037	<0.0010	0.001	0.004
Phosphorus, Total	-	0.08		0.814										<0.1	1.5	0.16	0.17	1.5	0.54	0.33	0.5	0.31
Potassium	-		ND	ND	ND	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.44	1	0.41	0.47	0.4	1.2	0.52	0.42	0.49
Selenium	0.01 [MAC]																		<0.0002			
Silver	-		ND	ND		<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002						<0.010			
Sodium	200 [AO]		1.7	6.2	1.6	1.6	1.3	1.4	1.4	1	1.1	1.5	1.1	1.2	1.8	1.2	1.3	1.1	5.5	1.1	0.87	1.2
Strontium			0.131	0.108	0.1	0.115	0.092	0.123	0.095	0.096	0.112	0.107	0.126						0.0937			
Sulphate	500 [AO]	3.98		3.9	7.2	6	6	5	4	7	5	4	3	5	5	3.3	3.6	7.4	6.3	7.8	13	11
Tin	-		ND	ND																		
Titanium	-		ND	ND																		
Total Kjeldahl Nitrogen	-	0.43		0.23	0.18																	
Vanadium	-		ND	ND		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005									
Zinc	5.0 [AO]		0.04	0.126		<0.005	<0.005	<0.005	<0.005	0.014	<0.005	0.013	<0.005									


Monitoring Well TW-4
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
1100
1000
900
800
700
600
500
400
300
200
100
0
110
100
90
80
70
60
50
40
30
20
10
0
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-5
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Spring /90	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95	13-Nov-95	27-May-96	15-Nov-96
Parameter (mg/L)	ODWS																	
Alkalinity (as $CaCO_3$)	30 - 500 [OG]											260	257	275	193	247	236	256
Aluminum	0.1 [OG]												0.72	0.046				<0.025
Ammonia	-											0.014	0.062	0.096	0.18	<0.05	<0.05	0.05
Arsenic	0.025 [IMAC]												<0.001	0.002				
Barium	1.0 [MAC]												0.009	0.003				0.005
Beryllium	-												<0.002	<0.002				<0.005
Bismuth	-																	<0.05
Boron	5.0 [IMAC]												0.11	<0.10				<0.01
Cadmium	0.005 [MAC]												<0.002	<0.002				<0.003
Calcium	-											55.2	54.2	66.6	54.8	70	60.8	71
Chloride	250 [AO]	2.03	2.79	3.2	2.5	2.7	2.5	0.7	3.6	3	2.3	2.3	3.2	2.9	3.2	4.3	3.74	3.19
Chromium	0.05 [MAC]												0.003	<0.002				<0.005
Cobalt	-												<0.0050	<0.0050				<0.005
Conductivity (µmho/cm)	-	485	526	465	505	444	482	446	531	451	472	478	499	517	485	507	443	463
Copper	1.0 [AO]												<0.004	0.004				<0.003
DOC	5.0 [AO]											1.7	8.1	8.2	1.5	3.1	1.2	1.4
Hardness (as $CaCO_3$)	80-100 [OG]	276	297	271	278	248	513	257	273	239	267	246	262	291	254	303	267	277
Hydrogen Sulphide	0.05 (AO)												0.07	0.03	0.02	<0.02	<0.02	<0.02
Iron	0.3 [AO]		0.13	26	0.48	0.67	6.94	0.89	0.01	0.01	0.02	<0.01	0.038	0.029	0.71	1.26	0.122	<0.005
Lead	0.01 [MAC,c]												<0.030	<0.030				<0.025
Magnesium	-											26.3	30.6	30.2	28.5	31	28	30.9
Manganese	0.05 [AO]												<0.002	<0.002	0.019	0.018	0.012	<0.005
Molybdenum	-												<0.0030	<0.0030				<0.01
Nickel	-												<0.010	<0.010				<0.01
Nitrate	10 [MAC,d]											1.1	1.4	1.2	1.2	1.5	1.58	1.49
Nitrite	1 [MAC,d]											<0.01	<0.01	0.01	0.01	0.01	<0.03	<0.03
pH	6.5-8.5 [OG]											7.84	7.83	7.58	7.98	7.6	7.71	7.45
Phenols	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.004	0.0064	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-											0.004	0.042	0.015	0.03	0.02	0.004	0.71
Potassium	-												0.7	0.39	0.54	0.86	0.6	<1
Selenium	0.01 [MAC]												<0.0002	<0.0002				
Silver	-												<0.010	<0.010				<0.003
Sodium	200 [AO]												1.3	1.1	1	1.4	1.26	1.52
Strontium													0.0349	0.0382				
Sulphate	500 [AO]												<0.5	6.7	9.2	8.1	6.5	5.93
Tin	-												0.07	0.04				<0.05
Titanium	-												0.001	<0.0010				<0.05
Total Kjeldahl Nitrogen	-											0.41	0.97	0.26	0.25	0.4	1.04	0.64
Vanadium	-												0.007	<0.002				<0.01
Zinc	5.0 [AO]												0.005	<0.005				<0.005

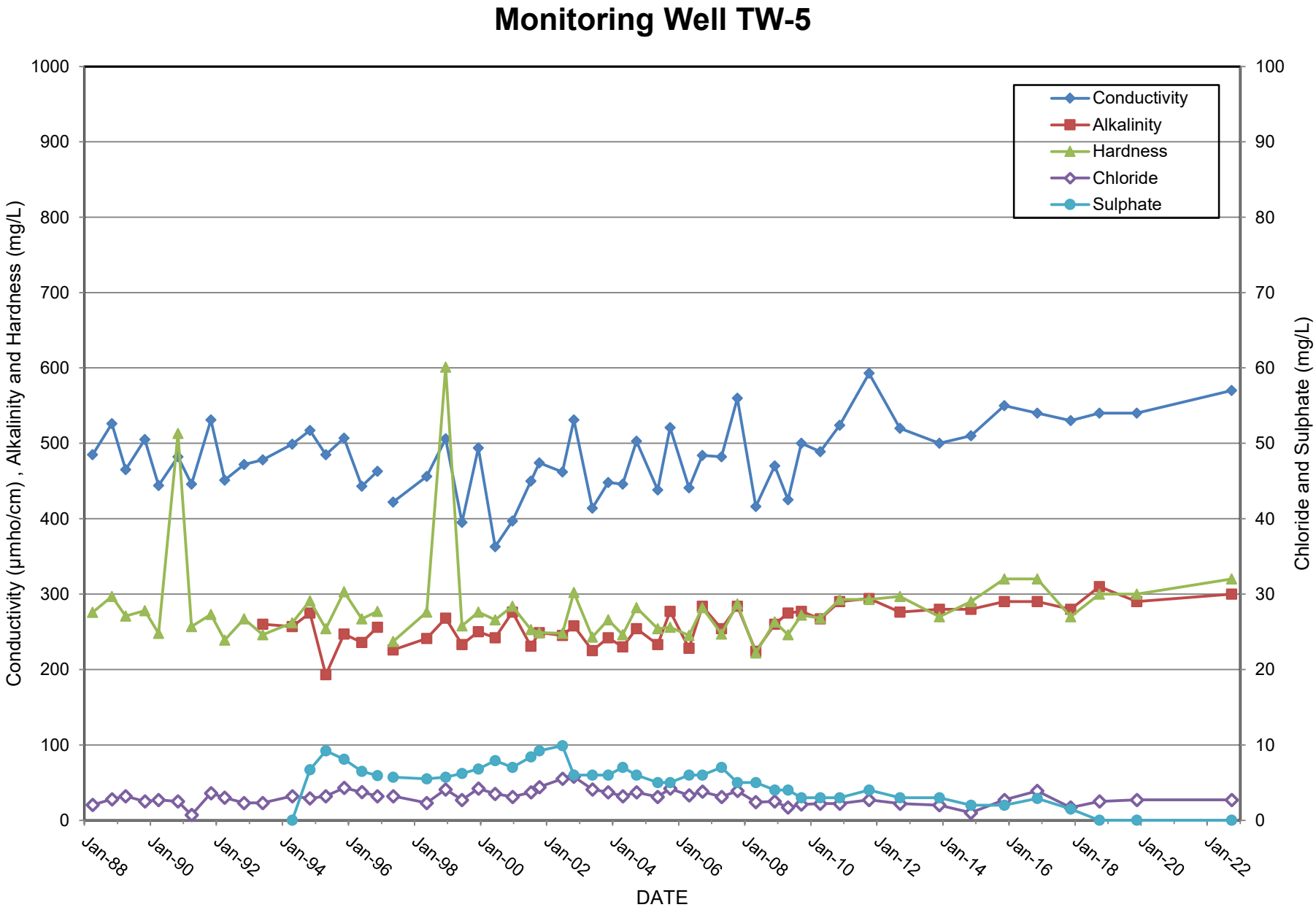
Notes are included in first page of this Appendix

MONITORING WELL TW-5
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5
	Sample Date	15-Nov-96	9-May-97	14-May-98	10-Dec-98	8-Jun-99	8-Dec-99	9-Jun-00	19-Dec-00	11-Jul-01	12-Oct-01	25-Jun-02	28-Oct-02	21-May-03	11-Nov-03	21-Apr-04	21-Sep-04	12-May-05
Parameter (mg/L)	ODWS	Replicate																
Alkalinity (as $CaCO_3$)	30 - 500 [OG]		226	241	268	233	250	242	276	231	249	245	258	225	242	230	254	233
Aluminum	0.1 [OG]	<0.025	0.052	2.4	0.07	ND	0.1			0.1	<0.05	<0.05	0.04	<0.03	<0.005	<0.005	<0.005	<0.01
Ammonia	-		0.06	0.05	ND	0.18	0.05	0.04	0.04	0.03	<0.01	<0.01	0.03	<0.01	0.02	0.04	0.05	<0.01
Arsenic	0.025 [IMAC]																	
Barium	1.0 [MAC]	0.004		0.016	ND	ND	0.682			<0.01	<0.01	0.01	<0.005	<0.005	0.004	0.003	0.006	0.003
Beryllium	-	<0.005		ND	ND	ND	ND			<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002
Bismuth	-	<0.05		ND	ND	ND	ND			<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	<0.01		0.01	ND	0.01	0.12			0.01	0.01	<0.01	<0.01	<0.01	0.008	0.006	<0.005	<0.005
Cadmium	0.005 [MAC]	<0.003		ND	ND	ND	ND			<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.0001
Calcium	-	68.8	56.6	64	67.9	60.1	65.7	61.9	65.5	56.7	57.5	56.3	72	56.7	62.8	57.7	63.4	57.5
Chloride	250 [AO]		3.19	2.3	4.1	2.7	4.2	3.5	3.1	3.7	4.4	5.5	5.8	4.1	3.7	3.2	3.7	3.1
Chromium	0.05 [MAC]	<0.005		ND	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01				
Cobalt	-	<0.005		0.01	ND	ND	ND			<0.02	<0.02	<0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-		422	456	506	395	494	363	397	450	474	462	531	414	448	446	503	438
Copper	1.0 [AO]	<0.003		ND	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	0.002	<0.002
DOC	5.0 [AO]		1.2	1.5	0.9	2.1	4.1	2.9	2.7	2	2	<0.5	7	0.5	9	0.8	1	0.9
Hardness (as $CaCO_3$)	80-100 [OG]		237	276	601	258	276	266	284	253	249	248	302	243	266	246	282	254
Hydrogen Sulphide	0.05 (AO)			ND	0.19	0.02	ND	0.01	ND			<0.01	0.01	0.09	<10	1	2	0.06
Iron	0.3 [AO]	<0.005	0.048	1.86	0.06	0.02	0.06	0.05	ND	0.07	0.01	<0.01	<0.02	0.15	0.006	0.006	<0.005	<0.005
Lead	0.01 [MAC,c]	<0.025	-	ND	ND	ND	ND			<0.1	<0.1	<0.001	0.0007	<0.0002	<0.0002		<0.0002	<0.0002
Magnesium	-	30	23.6	28.2	29.9	26	27.1	27.2	29.2	27	25.7	26.2	29.6	24.6	26.6	24.8	30	26.8
Manganese	0.05 [AO]	<0.005	0.005	0.062	ND	ND	0.007	0.006	ND	0.009	<0.005	<0.005	<0.01	<0.01	<0.001	0.001	<0.001	<0.001
Molybdenum	-	<0.01		ND	ND	ND	ND			<0.04	<0.04	<0.04	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Nickel	-	<0.01		ND	ND	ND	ND			<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]		1.39	1.4	1.4	1.7	1.8	1.3	1.5	1.1	1.3	1.4	1.2	1.3	1.1	1.1	1	0.7
Nitrite	1 [MAC,d]			ND	ND	ND	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
pH	6.5-8.5 [OG]		7.71	7.59	8.12	7.62	7.72	7.72	7.93	7.71	7.6	7.33	7.81	7.85	7.81	8	7.74	7.94
Phenols	-			ND	ND	ND	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-			0.07	0.01	0.11	0.447											
Potassium	-	<1		1.1	ND	ND	ND	ND	ND	<1.0	<1.0	<1.0	<0.4	<0.4	0.3	0.1	0.4	0.2
Selenium	0.01 [MAC]																	
Silver	-	<0.003		ND	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005
Sodium	200 [AO]	1.46	1.19	1.13	2.1	1.5	9.5	10.4	2	1.5	1.6	<1.0	2.9	1.9	2.1	1.8	1.9	1.7
Strontium				0.036	0.039	0.033	0.053		0.036	0.04	0.04	0.02	0.035	0.029	0.035	0.031	0.037	0.034
Sulphate	500 [AO]		5.7	5.5	5.7	6.2	6.8	7.9	7	8.4	9.2	9.9	6	6	6	7	6	5
Tin	-	<0.05		ND	ND	ND	ND											
Titanium	-	<0.05		0.09	ND	ND	ND											
Total Kjeldahl Nitrogen	-			0.26	0.12	0.15	0.41	0.4	0.2									
Vanadium	-	<0.01		ND	ND	ND	ND			0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	<0.005		0.012	ND	0.02	0.069			<0.02	<0.02	<0.02	<0.01	<0.01	0.006	<0.005	<0.005	<0.005

MONITORING WELL TW-5
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5	TW-5
	Sample Date	27-Sep-05	25-Apr-06	19-Sep-06	19-Apr-07	11-Oct-07	1-May-08	27-Nov-08	23-Apr-09	17-Sep-09	14-Apr-10	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19	Nov-20	Oct-21	Sep-22
Parameter (mg/L)	ODWS																							
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	277	228	284	254	284	224	260	275	277	267	290	294	276	280	280	290	290	280	310	290	280	300	300
Aluminum	0.1 [OG]	<0.01	<0.01	<0.01	0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01	0.01	0.03	0.03										-
Ammonia	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.16	<0.01	0.072	<0.05	<0.05	<0.050	<0.050	<0.050	0.15	<0.050	<0.050	<0.050
Arsenic	0.025 [IMAC]																							-
Barium	1.0 [MAC]	0.004	0.003	0.005	0.003	0.004	0.002	0.003	0.002	0.002	0.004	0.004	0.006	0.005										-
Beryllium	-	<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										-
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02										-
Boron	5.0 [IMAC]	0.018	0.006	<0.005	0.007	0.042	0.006	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005										-
Cadmium	0.005 [MAC]	<0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002										-
Calcium	-	59.3	56	65.4	56.4	66.1	50.9	61.4	55.8	61.5	61.8	66.9	64.8	68.6	63	66	74	71	62	69	67	63	71	73
Chloride	250 [AO]	4.2	3.3	3.8	3.1	3.9	2.4	2.5	1.7	2.1	2.2	2.2	2.7	2.2	2	1	2.7	3.9	1.7	2.5	2.7	2.3	2.2	2.7
Chromium	0.05 [MAC]																							-
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005										-
Conductivity (µmho/cm)	-	521	441	484	482	560	416	470	425	500	489	524	593	520	500	510	550	540	530	540	540	510	530	570
Copper	1.0 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002										-
DOC	5.0 [AO]	2.1	1.1	4.6	1.4	3.2	1.4	1	1.1	1.1	1.3	1.7	3.1	1.2	1.3	1.3	1.7	0.99	0.99	0.89	1.6	0.95	0.77	1
Hardness (as $CaCO_3$)	80-100 [OG]	256	245	282	247	287	222	263	246	272	268	293	293	297	270	290	320	320	270	300	300	270	300	320
Hydrogen Sulphide	0.05 (AO)	0.6	1.5	0.19	0.64	0.38	0.79	0.5	<10	1	1	0.13	0.85	0.05	<0.02	<0.02	<0.02	<0.020		0.22				<0.020
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	0.059	<0.1	<0.1	<0.1	<0.10
Lead	0.01 [MAC,c]	<0.0002	<0.0005	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00007	<0.00002										-
Magnesium	-	26.3	25.6	28.7	25.8	29.7	23	26.6	26	28.7	27.6	30.5	31.9	30.6	28	29	32	34	28	33.5	33	27	31	33
Manganese	0.05 [AO]	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.02	0.03	<0.001	0.0025	<0.002	<0.002	0.066	0.061	0.047	0.0093	<0.002	<0.002	0.0041
Molybdenum	-	<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										-
Nickel	-	<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										-
Nitrate	10 [MAC,d]	0.6	0.6	0.6	0.4	0.4	0.4	0.3	0.4	0.2	0.2	0.3	0.9	0.6	0.40	0.42	0.81	1.38	1.04	0.45	0.43	0.26	0.22	1.17
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.01	<0.01	0.056	<0.010	<0.010	0.021	<0.010	<0.010	0.052
pH	6.5-8.5 [OG]	7.71	7.67	7.12	7.62	7.27	7.95	7.19	6.59	7.42	7.79	7.06	7.71	7.85	7.87	8.06	7.96	8.05	7.95	8.09	8.03	8.08	8.17	8.15
Phenols	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.019	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-														<0.1	0.61	0.69	0.22	0.45	0.13	0.15	0.25	0.25	0.18
Potassium	-	0.2	0.2	0.2	0.2	0.3	0.6	0.3	0.1	0.2	0.2	0.4	0.5	0.2	0.25	0.25	0.55	0.36	0.3	<0.2	0.32	0.2	0.2	0.4
Selenium	0.01 [MAC]																							-
Silver	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002										-
Sodium	200 [AO]	1.7	2.2	1.7	1.9	2.8	2	1.5	1.1	1.2	1.3	1.3	1.8	1.4	1.2	0.98	1.5	1.5	1.1	1.3	1.4	0.99	1.1	1.3
Strontium		0.039	0.03	0.038	0.032	0.04	0.028	0.036	0.032	0.035	0.035	0.042	0.037	0.042						0.084				-
Sulphate	500 [AO]	5	6	6	7	5	5	4	4	3	3	3	4	3	3	2	2	2.9	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
Tin	-																							-
Titanium	-																							-
Total Kjeldahl Nitrogen	-																							-
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005										-
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	0.024	<0.005										-


Monitoring Well TW-5
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
1000
900
800
700
600
500
400
300
200
100
0
100
90
80
70
60
50
40
30
20
10
0
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-6
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6
	Sample Date	Spring /88	Fall /88	Spring /89	Fall /89	Spring /90	Fall /90	Spring /91	Fall /91	Spring /92	Fall /92	27-May-93	18-Apr-94	31-Oct-94	24-Apr-95	13-Nov-95
Parameter (mg/L)	ODWS															
Alkalinity (as $CaCO_3$)	30 - 500 [OG]											309	431	347	197	294
Aluminum	0.1 [OG]												0.057	<0.030		
Ammonia	-											0.034	0.045	0.204	0.13	0.17
Arsenic	0.025 [IMAC]												<0.0001	0.0001		
Barium	1.0 [MAC]												0.014	0.012		
Beryllium	-												<0.0002	<0.0002		
Bismuth	-												-	-		
Boron	5.0 [IMAC]												0.12	0.12		
Cadmium	0.005 [MAC]												0.004	<0.002		
Calcium	-											68	118	86.6	78.3	100
Chloride	250 [AO]	8.65	8.5	17.3	11	16.6	10.5	10	7.5	11.8	8.1	12.8	38.3	16.9	24.5	36.8
Chromium	0.05 [MAC]												0.004	<0.002		
Cobalt	-												<0.0050	<0.0050		
Conductivity (µmho/cm)	-	660	644	664	654	628	692	611	651	624	857	630	962	696	702	770
Copper	1.0 [AO]												<0.004	0.005		
DOC	5.0 [AO]											1.1	8	8.6	1.7	3.2
Hardness (as $CaCO_3$)	80-100 [OG]	367	366		371	340	417	316	328	330	503	287	470	355	333	382
Hydrogen Sulphide	0.05 (AO)												0.08	0.06	0.02	<0.02
Iron	0.3 [AO]		0.18	14	0.6	0.47	6.94	0.31	0.01	0.01	0.01	0.01	0.029	<0.010	0.46	0.04
Lead	0.01 [MAC,c]												<0.030	<0.030		
Magnesium	-											28.4	42.3	33.5	33.3	32.1
Manganese	0.05 [AO]												<0.002	<0.002	0.024	<0.003
Molybdenum	-												<0.0030	<0.0030		
Nickel	-												<0.010	<0.010		
Nitrate	10 [MAC,d]											3.3	4.4	2.3	2	1
Nitrite	1 [MAC,d]											<0.001	<0.01	0.01	0.01	<0.01
pH	6.5-8.5 [OG]											7.66	7.17	7.42	7.81	7.37
Phenols	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0025	<0.0010	0.0123	0.0022	<0.0010
Phosphorus, Total	-											0.004	0.007	0.009	0.02	0.02
Potassium	-												1.4	0.75	1.01	0.93
Selenium	0.01 [MAC]												<0.0002	<0.0002		
Silver	-												<0.010	<0.010		
Sodium	200 [AO]												20.3	7.2	9.6	34.6
Strontium													0.0968	0.0748		
Sulphate	500 [AO]												<0.5	6	9.7	14
Tin	-												0.09	0.05		
Titanium	-												<0.0010	<0.0010		
Total Kjeldahl Nitrogen	-											0.6	0.49	0.26	0.65	0.2
Vanadium	-												0.009	<0.002		
Zinc	5.0 [AO]												<0.005	<0.005		

Notes are included in first page of this Appendix

MONITORING WELL TW-6
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6
	Sample Date	27-May-96	15-Nov-96	9-May-97	19-Dec-97	14-May-98	10-Dec-98	8-Jun-99	8-Dec-99	9-Jun-00	11-Jul-01	11-Jul-01	12-Oct-01	12-Oct-01	25-Jun-02
Parameter (mg/L)	ODWS											Duplicate		Duplicate	
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	307	442	303	352	324	370	385	315	340	324	325	375	374	297
Aluminum	0.1 [OG]		0.062	0.133	0.124	0.136	ND	ND	0.06		0.08	0.09	<0.05	<0.05	<0.05
Ammonia	-	<0.05	0.06	0.31	0.03	ND	ND	0.06	0.05	0.04	0.01	0.02	<0.01	<0.01	0.01
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]		0.017	0.009	0.011	0.01	0.015	0.017	0.73		0.2	0.07	0.02	0.02	<0.01
Beryllium	-		<0.005			ND	ND	ND	ND		<0.002	<0.002	<0.002	<0.002	<0.002
Bismuth	-		<0.05			ND	ND	ND	ND		<0.05	<0.05	<0.05	<0.05	<0.05
Boron	5.0 [IMAC]		0.12			ND	0.08	0.07	0.23		0.03	0.02	0.18	0.18	0.02
Cadmium	0.005 [MAC]		<0.003		0.004	ND	ND	ND	ND		<0.005	<0.005	<0.005	<0.005	<0.005
Calcium	-	87.4	131	81.6	89.9	93.6	110	115	84.3	98.1	87	88.1	111	114	84.1
Chloride	250 [AO]	21.1	37.5	16.8	9.11	16.9	82	86	43.4	22	11.7	11.5	34.7	34.8	11.9
Chromium	0.05 [MAC]		<0.005			ND	ND	ND	ND		<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	-		<0.005			0.007	ND	ND	ND		<0.02	<0.02	<0.02	<0.02	0.01
Conductivity (µmho/cm)	-	574	845	569	549	637	906	907	731	652	642	640	897	904	628
Copper	1.0 [AO]		<0.003			ND	ND	ND	ND		<0.01	<0.01	<0.01	<0.01	<0.01
DOC	5.0 [AO]	1.4	1.7	0.7	1.8	0.9	1.2	2.7	1.7	2.9	<1	<1	2	<1	<0.5
Hardness (as $CaCO_3$)	80-100 [OG]	346	483	310	352	366	292	413	293	364	344	353	416	416	330
Hydrogen Sulphide	0.05 (AO)	<0.02	<0.02			ND	0.05	0.02	ND	ND					<0.01
Iron	0.3 [AO]	0.119	0.098	0.114	0.112	0.177	0.03	ND	0.03	ND	0.02	<0.01	<0.01	<0.01	<0.01
Lead	0.01 [MAC,c]		<0.025			ND	ND	ND	ND		<0.1	<0.1	<0.1	<0.1	<0.001
Magnesium	-	31.1	37.3	26.2	31	32.1	32.1	30.8	19.9	28.8	30.7	32.2	31.3	31.8	29.2
Manganese	0.05 [AO]	0.013	<0.005			0.039	ND	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	-		<0.01			ND	ND	ND	ND		<0.04	<0.04	<0.04	<0.04	<0.04
Nickel	-		<0.01			ND	ND	ND	ND		<0.02	<0.02	<0.02	<0.02	<0.02
Nitrate	10 [MAC,d]	1.39	0.83	1.11	1.11	0.98	0.72	0.9	0.4	0.9	1.7	1.9	1.2	1.3	3.8
Nitrite	1 [MAC,d]	<0.03	<0.03			ND	ND	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.64	6.98	7.58	7.32	7.38	7.73	7.2	7.49	7.5	7.26	7.24	7.07	7.05	7.31
Phenols	-	0.003	<0.0010			ND	ND	0.001	ND	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-	0.007	1.45		0.01	0.01	ND	0.08	0.706						
Potassium	-	0.7	<1	1.4		ND	ND	ND	1	ND	1.1	0.9	1.1	1.4	<1.0
Selenium	0.01 [MAC]														
Silver	-		<0.003			ND	ND	ND	ND		<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	200 [AO]	10	25.1	8.17	5.08	10.6	54.3	54.1	42.8	24.8	7.7	7.8	27.5	27.2	6.4
Strontium					0.07	0.068	0.094	0.096	0.082		0.08	0.07	0.11	0.11	0.05
Sulphate	500 [AO]	6.69	15.8	5.86	5.82	5.4	24.9	19.2	20.4	9.2	8.7	8	62.7	64.6	8.8
Tin	-		1			ND	ND	ND	ND						
Titanium	-		<0.05			ND	ND	ND	ND						
Total Kjeldahl Nitrogen	-	3.95	1.32		0.16	0.09	0.12	0.17	0.21	0.31					
Vanadium	-		<0.01			ND	ND	ND	ND		0.01	0.01	<0.01	<0.01	<0.01
Zinc	5.0 [AO]		0.055			ND	ND	0.03	0.143		0.08	<0.02	<0.02	<0.02	<0.02

MONITORING WELL TW-6
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

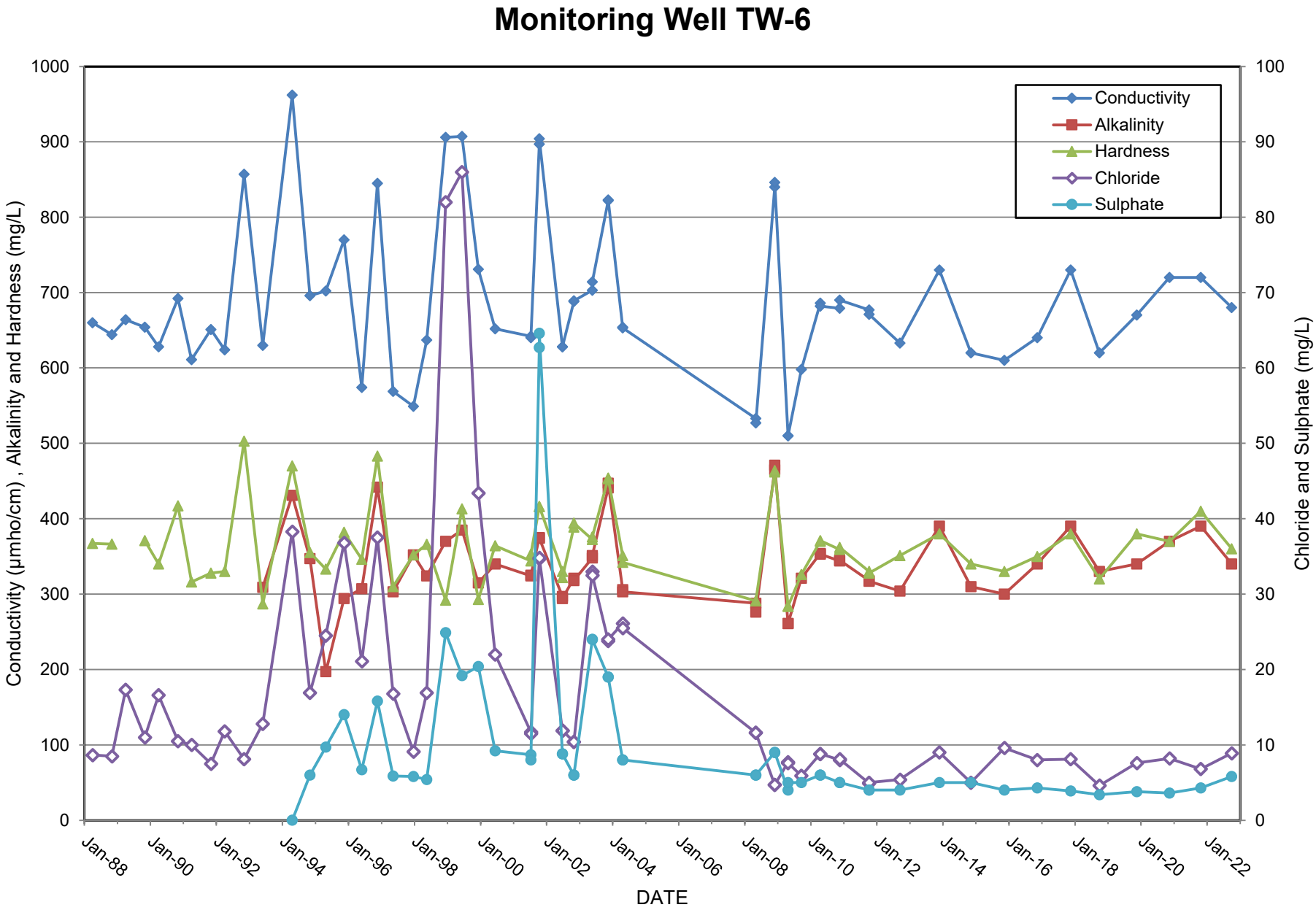
Monitoring Location		TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6
	Sample Date	25-Jun-02	28-Oct-02	28-Oct-02	21-May-03	21-May-03	11-Nov-03	11-Nov-03	21-Apr-04	21-Apr-04	1-May-08	1-May-08	27-Nov-08	27-Nov-08	23-Apr-09
Parameter (mg/L)	ODWS	Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate	
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	294	321	318	348	351	441	447	306	303	288	276	465	471	261
Aluminum	0.1 [OG]	<0.05	<0.01	<0.01	<0.03	<0.03	<0.005	<0.005	<0.005	<0.005	0.03	0.03	<0.01	<0.01	<0.01
Ammonia	-	<0.01	0.03	0.02	<0.01	<0.01	<0.01	0.03	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]	<0.01	0.01	0.005	0.011	0.011	0.017	0.017	0.009	0.009	0.008	0.008	0.014	0.014	0.006
Beryllium	-	<0.002	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
Bismuth	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	0.01	<0.01	<0.01	0.03	0.03	0.2	0.203	0.016	0.015	0.015	0.013	0.022	0.022	0.007
Cadmium	0.005 [MAC]	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Calcium	-	81.7	103	105	104	105	129	129	94.9	92.2	79.7	79.6	128	129	76.4
Chloride	250 [AO]	11.9	10.4	10.4	33	32.5	23.8	24	26.1	25.5	11.6	11.6	4.7	4.7	7.7
Chromium	0.05 [MAC]	<0.01	<0.01	<0.01	<0.01	<0.01									
Cobalt	-	<0.02	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	628	688	689	703	714	822	823	654	653	533	527	840	846	510
Copper	1.0 [AO]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
DOC	5.0 [AO]	<0.5	2	3	<0.5	0.5	20	16	0.7	0.9	1.2	1.1	1.1	1.1	0.9
Hardness (as $CaCO_3$)	80-100 [OG]	322	389	394	373	376	454	453	351	342	291	291	462	464	284
Hydrogen Sulphide	0.05 (AO)	<0.01	0.01	0.01	0.11	0.08	<5	<5	4	3	2.8	2.9	0.3	0.3	<10
Iron	0.3 [AO]	<0.01	<0.02	<0.02	0.17	0.17	<0.005	0.008	0.011	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	0.01 [MAC,c]	<0.001	<0.0002	0.0002	0.0003	0.0003	<0.0002	<0.0002			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Magnesium	-	28.7	31.9	32	27.4	27.6	31.6	31.5	27.6	27	22.4	22.3	34.5	34.6	22.7
Manganese	0.05 [AO]	<0.005	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.004	<0.001
Molybdenum	-	<0.04	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]	3.8	4.5	4.5	3.1	3	1.2	1.2	5.3	5.2	3.9	3.8	2	2	2
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.27	7.68	7.62	7.67	7.65	7.35	7.36	7.99	7.99	7.86	7.88	6.94	6.92	6.95
Phenols	-	<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
Phosphorus, Total	-														
Potassium	-	<1.0	<0.4	<0.4	0.7	0.7	1.4	1.5	0.6	0.5	0.9	0.9	1.2	1.2	0.6
Selenium	0.01 [MAC]														
Silver	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.005	<0.005	<0.005
Sodium	200 [AO]	6.1	6.7	6.9	21.0	21.1	23.3	23.4	11.9	11.7	8.1	8	4.7	4.8	5.9
Strontium		0.05	0.07	0.07	0.076	0.077	0.106	0.106	0.068	0.066	0.062	0.062	0.102	0.103	0.061
Sulphate	500 [AO]	8.8	6	6	24	24	19	19	8	8	6	6	9	9	4
Tin	-														
Titanium	-														
Total Kjeldahl Nitrogen	-														
Vanadium	-	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	<0.02	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

MONITORING WELL TW-6
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6	TW-6
	Sample Date	23-Apr-09	17-Sep-09	14-Apr-10	14-Apr-10	16-Nov-10	16-Nov-10	6-Oct-11	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19
Parameter (mg/L)	ODWS	Duplicate			Duplicate		Duplicate		Duplicate								
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	261	321	354	353	344	345	318	317	304	390	310	300	340	390	330	340
Aluminum	0.1 [OG]	<0.01	<0.01	0.01	<0.01	0.02	0.02	0.03	0.03	0.03							
Ammonia	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	0.06	<0.01	<0.050	0.31	<0.05	<0.050	<0.050	<0.050	0.082
Arsenic	0.025 [IMAC]																
Barium	1.0 [MAC]	0.006	0.006	0.012	0.011	0.01	0.009	0.008	0.008	0.009							
Beryllium	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002							
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02							
Boron	5.0 [IMAC]	0.007	<0.005	0.014	0.014	0.005	<0.005	<0.005	<0.005	<0.005							
Cadmium	0.005 [MAC]	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002							
Calcium	-	76.3	83.7	104	104	91.4	92.2	82.9	82.5	91.7	110	90	88	92	98	83	98
Chloride	250 [AO]	7.6	5.9	8.8	8.8	8	8.1	4.9	5	5.4	9	5	9.6	8	8.1	4.6	7.6
Chromium	0.05 [MAC]																
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Conductivity (µmho/cm)	-	510	598	686	682	679	690	677	671	633	730	620	610	640	730	620	670
Copper	1.0 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002							
DOC	5.0 [AO]	0.9	0.8	1.1	1.2	1	0.9	0.9	1.2	0.7	1.0	1.3	1.5	0.72	0.89	0.82	0.97
Hardness (as $CaCO_3$)	80-100 [OG]	284	326	370	371	359	362	330	328	351	380	340	330	350	380	320	380
Hydrogen Sulphide	0.05 (AO)	<10	0.2	0.4	0.5	0.13	0.13	0.06	0.08	0.02	<0.02	<0.02	<0.02	<0.020			
Iron	0.3 [AO]	<0.005	<0.005	0.01	0.013	<0.005	<0.005	0.012	0.011	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	0.01 [MAC,c]	<0.00002	<0.00002	<0.00002	0.00003	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002							
Magnesium	-	22.8	28.4	26.9	27	31.8	32	29.8	29.6	29.6	29	27	28	30	32	33.5	33
Manganese	0.05 [AO]	<0.001	<0.001	0.002	0.002	<0.001	<0.001	0.003	0.003	<0.001	0.0084	<0.002	<0.002	<0.002	<0.002	0.04	<0.002
Molybdenum	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							
Nickel	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							
Nitrate	10 [MAC,d]	1.9	1	2	2.1	2.8	2.8	4.8	4.8	5.7	2.9	2.28	3.18	2.97	1.53	2.52	3.84
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.067	<0.01	0.012	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.16	7.27	7.51	7.55	7.01	7.04	7.67	7.67	7.80	7.57	7.78	7.7	7.85	7.71	7.98	7.93
Phenols	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-										<0.1	0.28	0.2	0.16	0.099	0.12	0.22
Potassium	-	0.6	0.6	0.9	0.9	0.8	0.8	0.7	0.6	0.5	1.1	0.95	1.1	0.55	0.72	1.7	0.74
Selenium	0.01 [MAC]																
Silver	-	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002							
Sodium	200 [AO]	5.9	4.7	5.9	5.9	5.8	5.8	4.8	4.8	4.7	5.3	3.9	5.1	3.8	4.8	4.6	4.2
Strontium		0.061	0.062	0.084	0.085	0.077	0.078	0.062	0.062	0.071						0.088	
Sulphate	500 [AO]	5	5	6	6	5	5	4	4	4	5	5	4	4.3	3.9	3.4	3.8
Tin	-																
Titanium	-																
Total Kjeldahl Nitrogen	-																
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005							

MONITORING WELL TW-6
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-6	TW-6	TW-6
	Sample Date	Nov-20	Oct-21	Sep-22
Parameter (mg/L)	ODWS			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	370	390	340
Aluminum	0.1 [OG]			-
Ammonia	-	0.28	0.14	<0.050
Arsenic	0.025 [IMAC]			-
Barium	1.0 [MAC]			-
Beryllium	-			-
Bismuth	-			-
Boron	5.0 [IMAC]			-
Cadmium	0.005 [MAC]			-
Calcium	-	99	110	95
Chloride	250 [AO]	8.2	6.8	8.9
Chromium	0.05 [MAC]			-
Cobalt	-			-
Conductivity (µmho/cm)	-	720	720	680
Copper	1.0 [AO]			-
DOC	5.0 [AO]	1.1	1.3	1
Hardness (as $CaCO_3$)	80-100 [OG]	370	410	360
Hydrogen Sulphide	0.05 (AO)			<0.020
Iron	0.3 [AO]	<0.1	<0.1	<0.10
Lead	0.01 [MAC,c]			-
Magnesium	-	31	32	29
Manganese	0.05 [AO]	0.045	<0.002	0.017
Molybdenum	-			-
Nickel	-			-
Nitrate	10 [MAC,d]	2.94	2.02	2.45
Nitrite	1 [MAC,d]	0.042	<0.010	0.104
pH	6.5-8.5 [OG]	7.58	8.03	7.91
Phenols	-	0.0042	<0.0010	0.0051
Phosphorus, Total	-	0.12	0.16	0.33
Potassium	-	0.78	0.97	0.86
Selenium	0.01 [MAC]			-
Silver	-			-
Sodium	200 [AO]	3.8	4.9	4.6
Strontium				-
Sulphate	500 [AO]	3.6	4.3	5.8
Tin	-			-
Titanium	-			-
Total Kjeldahl Nitrogen	-			-
Vanadium	-			-
Zinc	5.0 [AO]			-


Monitoring Well TW-6
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
1000
900
800
700
600
500
400
300
200
100
0
100
90
80
70
60
50
40
30
20
10
0
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-7A
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A
	Sample Date	10-Dec-98	8-Jun-99	9-Jun-00	19-Dec-00	11-Jul-01	12-Oct-01	25-Jun-02	28-Oct-02	21-May-03	11-Nov-03	21-Apr-04	21-Sep-04	12-May-05	27-Sep-05	25-Apr-06	19-Sep-06
Parameter (mg/L)	ODWS																
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	379	442	387	500	293	339	363	318	336	354	384	372	366	358	390	386
Aluminum	0.1 [OG]	0.06	ND			0.07	<0.05	<0.05	<0.01	0.04	<0.005	0.162	<0.005	<0.01	<0.01	<0.01	<0.01
Ammonia	-	ND	0.07	0.06	0.07	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.04	0.02	<0.01	<0.01	<0.01	<0.01
Arsenic	0.025 [IMAC]																
Barium	1.0 [MAC]	0.045	0.026			0.02	0.02	0.01	0.015	0.017	0.019	0.021	0.017	0.018	0.017	0.019	0.016
Beryllium	-	ND	ND			<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
Bismuth	-	ND	ND			<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	ND	ND			0.02	0.02	<0.01	<0.01	<0.01	0.008	0.007	<0.005	<0.005	<0.005	0.007	<0.005
Cadmium	0.005 [MAC]	ND	ND			<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
Calcium	-	92	130	113	126	94.5	93.7	95.3	102	82.2	91.3	101	93.4	90.6	87.6	103	95
Chloride	250 [AO]	37.6	8.3	9.7	14.9	9.8	11	14.2	14.8	15.4	15.5	17.5	14.9	14.2	14.3	16.4	14.2
Chromium	0.05 [MAC]	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01							
Cobalt	-	ND	ND			<0.02	<0.02	<0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	784	762	680	802	681	711	736	641	611	675	745	748	734	739	781	713
Copper	1.0 [AO]		ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	0.007	<0.002	<0.002	<0.002
DOC	5.0 [AO]	1.1	1.5	1.5	3.7	<1	13	<0.5	1	<0.5	8	1	0.5	0.6	4.5	1	2.8
Hardness (as $CaCO_3$)	80-100 [OG]	405	468	420	482	364	383	393	414	364	398	428	413	403	382	447	410
Hydrogen Sulphide	0.05 (AO)	0.04	0.05	ND	0.02			<0.01	0.01	0.03	<5	2	<3	0.05	0.8	0.3	0.05
Iron	0.3 [AO]	0.05	0.06	ND	0.02	0.01	<0.01	<0.01	<0.02	0.26	<0.005	0.155	0.006	<0.005	<0.005	<0.005	<0.005
Lead	0.01 [MAC,c]	ND	ND			<0.1	<0.1	<0.001	0.0003	<0.0002	<0.0002		0.0002	0.0002	<0.0002	<0.0005	<0.0001
Magnesium	-	53.1	35	33.2	40.2	31	36.2	37.7	38.8	38.5	41.3	42.7	43.8	42.9	39.6	46.4	41.9
Manganese	0.05 [AO]	0.06	0.13	0.077	0.07	0.083	0.036	0.03	<0.01	0.02	0.01	0.05	0.038	0.006	0.032	0.033	0.01
Molybdenum	-	ND	ND			<0.04	<0.04	<0.04	<0.02	<0.02	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	-	ND	ND			<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]	0.98	0.7	0.6	1.3	9	8.8	3.2	3	2.6	3.1	5.3	5	4.8	4.8	4.9	5.2
Nitrite	1 [MAC,d]	ND	ND	ND	ND	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.9	7.2	7.49	7.5	7.41	7.4	7.18	7.46	7.83	7.72	8.02	7.44	7.69	7.49	7.35	7.07
Phenols	-	0.001	0.001	0.003	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-	ND	0.3														
Potassium	-	4	1.8	ND	ND	1.9	1.4	1	<0.4	1.0	1	1.1	0.9	0.9	0.7	1	0.9
Selenium	0.01 [MAC]																
Silver	-	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium	200 [AO]	7.6	4.7	13.4	5.4	2.1	3.1	4.2	6	5.3	5.5	5.2	4.7	4.6	3.8	6.5	5.1
Strontium		0.193	0.116	-	0.122	0.09	0.12	0.09	0.09	0.091	0.097	0.097	0.091	0.095	0.096	0.093	0.092
Sulphate	500 [AO]	18	8.6	7.2	14.5	11.5	12.1	12.5	17	12	11	12	12	12	11	11	11
Tin	-	ND	ND														
Titanium	-	0.006	ND														
Total Kjeldahl Nitrogen	-	0.08	0.12	0.25	0.23												
Vanadium	-	ND	0.005			0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	ND	0.02			<0.02	<0.02	<0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

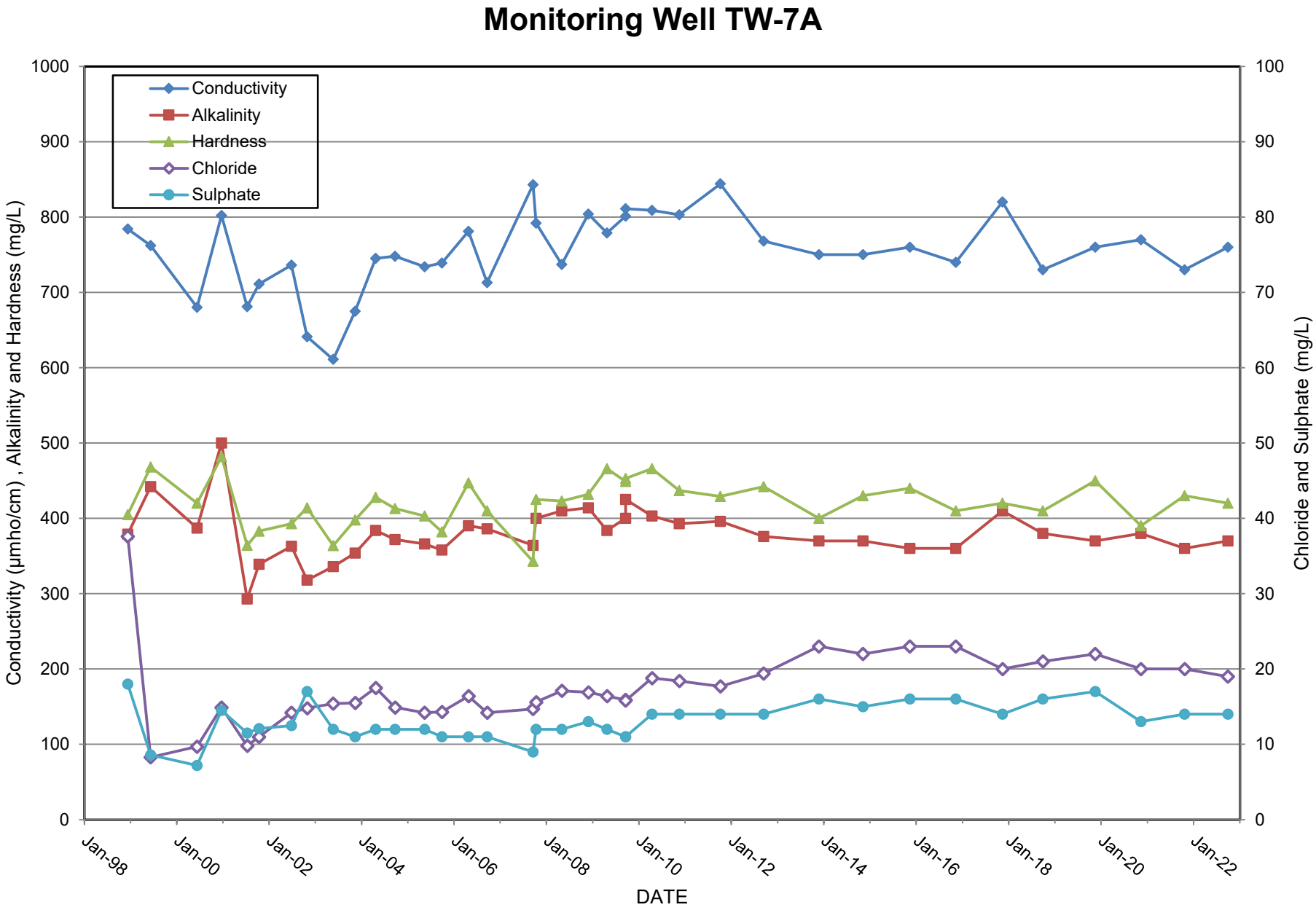
Notes are included in first page of this Appendix

MONITORING WELL TW-7A
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A	TW-7A
	Sample Date	16-Sep-07	11-Oct-07	1-May-08	27-Nov-08	23-Apr-09	17-Sep-09	17-Sep-09	14-Apr-10	16-Nov-10	6-Oct-11	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19
Parameter (mg/L)	ODWS							Duplicate											
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	364	400	410	414	384	400	425	403	393	396	376	370	370	360	360	410	380	370
Aluminum	0.1 [OG]	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	1.02	0.02	0.03	0.04							
Ammonia	-	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.050	0.051	<0.05	<0.050	<0.050	0.086	0.097
Arsenic	0.025 [IMAC]																		
Barium	1.0 [MAC]	0.009	0.017	0.015	0.015	0.012	0.012	0.012	0.024	0.015	0.016	0.017							
Beryllium	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002							
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02							
Boron	5.0 [IMAC]	0.006	0.047	0.007	<0.005	0.006	<0.005	<0.005	0.01	<0.005	<0.005	<0.005							
Cadmium	0.005 [MAC]	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002							
Calcium	-	71.8	95.5	92.1	93.9	99.1	97.2	98.3	100	90.3	85.6	92.6	84	89	88	84	85	79	90
Chloride	250 [AO]	14.7	15.6	17.1	16.9	16.4	15.9	15.8	18.8	18.4	17.7	19.4	23	22	23	23	20	21	22
Chromium	0.05 [MAC]																		
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005							
Conductivity (µmho/cm)	-	843	792	737	804	779	801	811	809	803	844	768	750	750	760	740	820	730	760
Copper	1.0 [AO]	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.002							
DOC	5.0 [AO]	0.9	2.5	2.1	0.7	0.8	0.8	0.7	1.2	0.8	9.7	0.6	0.68	1	0.49	0.59	0.63	0.67	<0.50
Hardness (as $CaCO_3$)	80-100 [OG]	343	425	423	432	466	449	453	466	437	429	442	400	430	440	410	420	410	450
Hydrogen Sulphide	0.05 (AO)	<0.01	0.49	0.85	9	<10	3	3	12	12.1	14	0.05	<0.02	<0.02	<0.02	<0.020			
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.83	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	0.06	<0.1
Lead	0.01 [MAC,c]	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00166	<0.00002	<0.00002	<0.00002							
Magnesium	-	39.8	45.4	47	47.9	53.2	50	50.5	52.4	51.4	52.3	51.3	47	50	52	49	51	33.4	55
Manganese	0.05 [AO]	0.004	0.027	0.029	0.032	0.027	0.004	0.004	0.061	0.011	0.046	0.006	0.018	0.0054	0.0049	<0.002	0.032	0.024	<0.002
Molybdenum	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							
Nickel	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							
Nitrate	10 [MAC,d]	5.1	3.3	3.5	3.2	4	4.3	4.3	2.5	2	2.4	1.6	1.3	2.06	1.91	2	2.77	2.42	1.91
Nitrite	1 [MAC,d]	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.011	<0.01	<0.01	<0.010	0.024	0.049	<0.010
pH	6.5-8.5 [OG]	7.44	6.96	7.83	7.15	6.97	7.19	7.19	7.68	6.97	7.7	7.75	7.81	7.91	7.95	7.94	7.83	7.98	8
Phenols	-	<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	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-												<0.1	0.23	0.15	0.14	2.7	17	0.37
Potassium	-	0.9	1.1	1	1	0.9	0.9	0.9	1.7	1.1	1.2	1.0	1.1	1.1	1.3	1	1.1	1.1	1.1
Selenium	0.01 [MAC]																		
Silver	-	<0.005	<0.005	<0.00002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.00002	<0.00002							
Sodium	200 [AO]	5.5	6	5.5	5.3	5.3	4.9	4.9	8.8	4.8	5.3	5.2	5.4	5.9	6.2	5.8	6.2	4.3	6.4
Strontium		0.072	0.1	0.092	0.094	0.103	0.095	0.096	0.103	0.103	0.092	0.104						0.074	
Sulphate	500 [AO]	9	12	12	13	12	11	11	14	14	14	14	16	15	16	16	14	16	17
Tin	-																		
Titanium	-																		
Total Kjeldahl Nitrogen	-																		
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005						<0.020	
Zinc	5.0 [AO]	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.066	<0.005	0.013	<0.005							

MONITORING WELL TW-7A
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-7A	TW-7A	TW-7A
	Sample Date	Nov-20	Oct-21	Sep-22
Parameter (mg/L)	ODWS			
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	380	360	370
Aluminum	0.1 [OG]			-
Ammonia	-	<0.050	0.12	<0.050
Arsenic	0.025 [IMAC]			-
Barium	1.0 [MAC]			-
Beryllium	-			-
Bismuth	-			-
Boron	5.0 [IMAC]			-
Cadmium	0.005 [MAC]			-
Calcium	-	79	90	87
Chloride	250 [AO]	20	20	19
Chromium	0.05 [MAC]			-
Cobalt	-			-
Conductivity (µmho/cm)	-	770	730	760
Copper	1.0 [AO]			-
DOC	5.0 [AO]	0.6	<0.40	0.59
Hardness (as $CaCO_3$)	80-100 [OG]	390	430	420
Hydrogen Sulphide	0.05 (AO)			<0.020
Iron	0.3 [AO]	<0.1	<0.1	<0.10
Lead	0.01 [MAC,c]			-
Magnesium	-	46	50	50
Manganese	0.05 [AO]	0.007	0.017	0.068
Molybdenum	-			-
Nickel	-			-
Nitrate	10 [MAC,d]	3.51	2.75	2.99
Nitrite	1 [MAC,d]	0.013	0.035	0.111
pH	6.5-8.5 [OG]	7.81	7.98	7.96
Phenols	-	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-	0.46	0.37	0.12
Potassium	-	1	1.2	1.1
Selenium	0.01 [MAC]			-
Silver	-			-
Sodium	200 [AO]	5.7	6	6
Strontium				-
Sulphate	500 [AO]	13	14	14
Tin	-			-
Titanium	-			-
Total Kjeldahl Nitrogen	-			-
Vanadium	-			-
Zinc	5.0 [AO]			-


Monitoring Well TW-7A
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
0
100
200
300
400
500
600
700
800
900
1000
0
10
20
30
40
50
60
70
80
90
100
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

MONITORING WELL TW-8
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8
	Sample Date	10-Dec-98	8-Jun-99	8-Dec-99	9-Jun-00	19-Dec-00	11-Jul-01	12-Oct-01	25-Jun-02	28-Oct-02	21-May-03	11-Nov-03	21-Apr-04	21-Sep-04	21-Sep-04
Parameter (mg/L)	ODWS														Duplicate
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	221	224	231	211	242	229	226	216	207	221	220	227	220	230
Aluminum	0.1 [OG]	ND	ND	0.06			<0.05	<0.05	<0.05	0.04	<0.03	<0.005	<0.005	<0.005	<0.005
Ammonia	-	0.1	0.12	0.05	0.04	0.09	0.03	<0.01	0.01	0.03	<0.01	<0.01	0.03	0.01	0.02
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]	0.016	0.017	0.412			0.01	0.01	<0.01	0.01	0.011	0.012	0.013	0.012	0.012
Beryllium	-	ND	ND	ND			<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001
Bismuth	-	ND	ND	ND			0.08	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	ND	0.01	0.07			0.01	<0.01	<0.01	0.01	<0.01	0.009	0.009	<0.005	<0.005
Cadmium	0.005 [MAC]	ND	ND	ND			<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005
Calcium	-	41.5	47.4	44.4	45.1	43.8	41.2	40.3	39.8	46	42.9	44.6	44.9	42.9	43.1
Chloride	250 [AO]	31.2	3.3	2.6	2.1	1.5	2.3	2.1	3	2.4	2.4	2.4	2.3	2.6	2.6
Chromium	0.05 [MAC]	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01				
Cobalt	-	ND	ND	ND			<0.02	<0.02	<0.02	0.01	<0.01	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	562	464	480	377	384	490	409	453	465	432	457	475	480	479
Copper	1.0 [AO]	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002
DOC	5.0 [AO]	2.8	1.6	1.5	1.8	2.6	1	4	0.5	2	<0.5	8	<0.5	0.5	<0.5
Hardness (as $CaCO_3$)	80-100 [OG]	448	268	249	252	247	252	232	234	248	235	245	242	248	248
Hydrogen Sulphide	0.05 (AO)	0.02	0.01	ND	ND	ND			<0.01	0.01	0.03	<0.5	0.2	<0.3	<0.3
Iron	0.3 [AO]	ND	0.03	0.04	0.02	0.05	<0.01	<0.01	<0.01	0.02	0.21	<0.005	0.005	<0.005	<0.005
Lead	0.01 [MAC,c]	ND	ND	ND			<0.1	<0.1	<0.001	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002
Magnesium	-	46.9	36.3	33.5	33.9	33.3	36.2	32	32.8	32.3	31.2	32.6	31.6	34.3	34.2
Manganese	0.05 [AO]	0.02	0.02	0.008	0.009	0.011	0.009	0.011	<0.005	0.01	<0.01	0.011	<0.001	0.006	0.005
Molybdenum	-	ND	ND	ND			<0.04	<0.04	<0.04	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Nickel	-	ND	ND	ND			<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Nitrate	10 [MAC,d]	ND	ND	ND	ND	ND	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	1 [MAC,d]	ND	ND	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	7.9	7.91	7.85	7.95	8.13	7.85	7.67	7.59	8.06	7.89	8.09	8.1	7.92	7.94
Phenols	-	0.001	ND	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total	-	0.01	0.42	0.3											
Potassium	-	3.4	1.3	ND	ND	ND	1.5	1.1	<1.0	<0.4	0.8	0.9	0.9	0.9	0.9
Selenium	0.01 [MAC]														
Silver	-	ND	ND	ND			<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005
Sodium	200 [AO]	10.5	6.4	9.8	17.5	10.9	12	7.9	6.6	9.3	9.0	9.6	10.6	8.7	8.7
Strontium		0.134	0.099	0.091	-	0.084	0.09	0.09	0.07	0.075	0.074	0.079	0.08	0.079	0.078
Sulphate	500 [AO]	39.6	28.1	32.1	35.9	36.3	35.6	32.8	29.7	33	36	36	40	38	38
Tin	-	ND	ND	ND											
Titanium	-	ND	ND	ND											
Total Kjeldahl Nitrogen	-	0.23	0.09	0.17	0.16	0.18									
Vanadium	-	ND	ND	ND			0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	ND	0.06	0.052			<0.02	<0.02	<0.02	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005

Notes are included in first page of this Appendix

MONITORING WELL TW-8
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

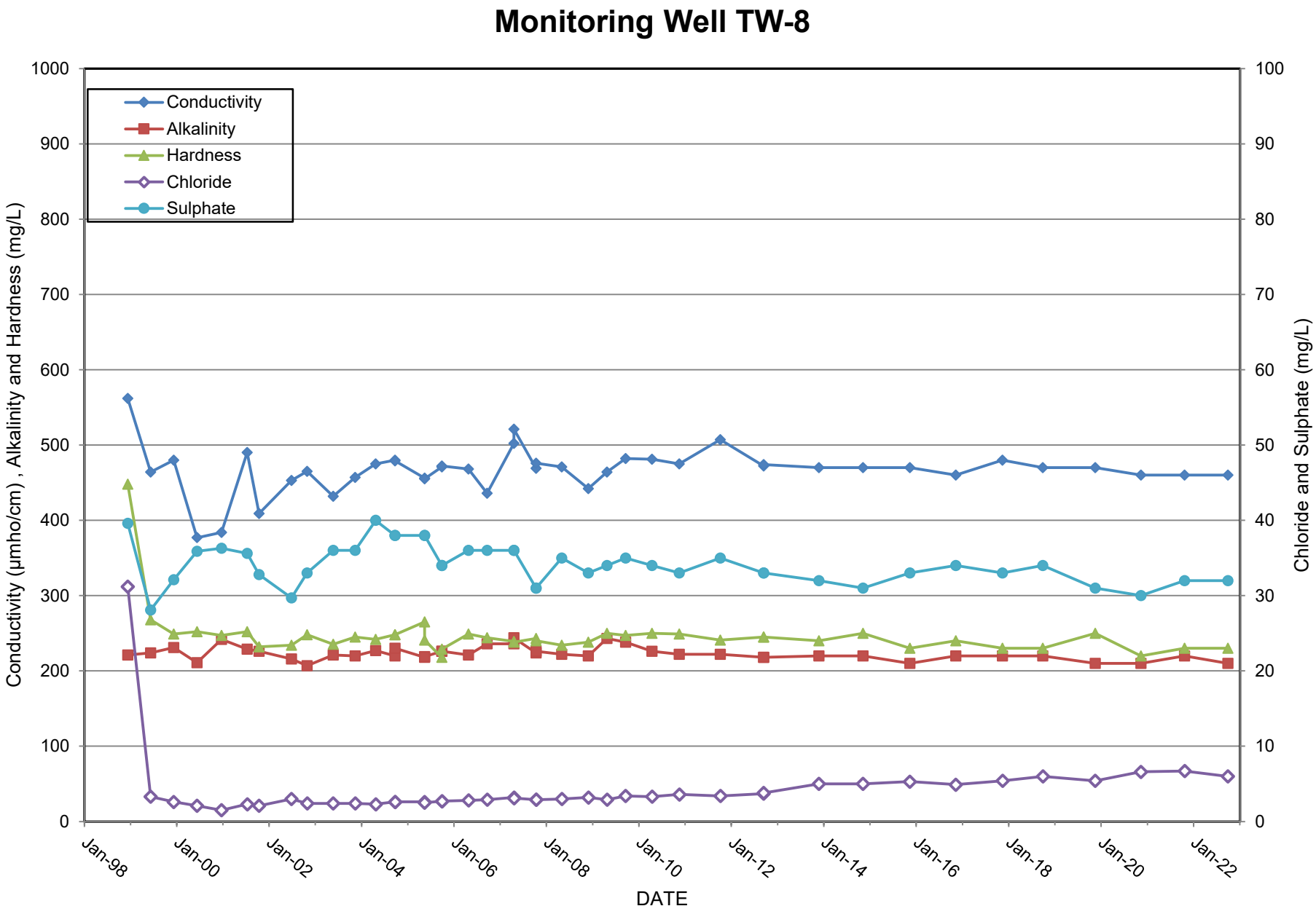
Monitoring Location		TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8
	Sample Date	12-May-05	12-May-05	27-Sep-05	27-Sep-05	25-Apr-06	19-Sep-06	19-Apr-07	19-Apr-07	11-Oct-07	11-Oct-07	1-May-08	27-Nov-08	23-Apr-09	17-Sep-09
Parameter (mg/L)	ODWS		Duplicate		Duplicate				Duplicate		Duplicate				
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	218	219	226	226	221	236	236	244	224	226	222	220	243	238
Aluminum	0.1 [OG]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Ammonia	-	<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
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]	0.013	0.011	0.012	0.012	0.011	0.011	0.01	0.01	0.01	0.01	0.009	0.009	0.008	0.008
Beryllium	-	<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
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Boron	5.0 [IMAC]	<0.005	<0.005	<0.005	<0.005	0.01	0.007	0.009	0.009	0.048	0.047	0.009	<0.005	0.007	<0.005
Cadmium	0.005 [MAC]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Calcium	-	47.3	42.7	38.8	40.9	44.7	44.1	43.1	43	44.1	43.5	42.7	43.5	44.8	43.7
Chloride	250 [AO]	2.6	2.5	2.7	2.7	2.8	2.9	3.2	3.1	2.9	2.9	3	3.2	2.9	3.4
Chromium	0.05 [MAC]														
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Conductivity (µmho/cm)	-	456	455	471	472	468	436	502	521	469	476	471	442	464	482
Copper	1.0 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.002
DOC	5.0 [AO]	<0.5	0.9	0.9	1.5	0.6	4	0.7	0.6	<0.5	1.5	0.6	0.4	0.5	0.4
Hardness (as $CaCO_3$)	80-100 [OG]	265	241	218	229	249	244	239	238	243	240	234	238	250	247
Hydrogen Sulphide	0.05 (AO)	0.06	0.06	0.3	0.3	0.1	<0.01	0.16	0.19	0.1	0.09	0.2	0.07	<10	0.4
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	0.01 [MAC,c]	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0001	<0.0001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Magnesium	-	35.7	32.8	29.4	30.8	33.3	32.6	31.9	31.7	32.2	32	30.9	31.5	33.6	33.5
Manganese	0.05 [AO]	<0.001	<0.001	0.003	0.003	<0.001	0.002	<0.001	<0.001	0.003	0.002	<0.001	0.001	<0.001	0.001
Molybdenum	-	<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
Nickel	-	<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
Nitrate	10 [MAC,d]	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	6.5-8.5 [OG]	8.12	8.07	7.86	7.86	7.89	7.45	7.75	7.74	7.22	7.34	7.85	7.52	7.2	7.65
Phenols	-	<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
Phosphorus, Total	-														
Potassium	-	0.9	0.8	0.7	0.7	1	0.8	0.8	0.8	0.9	0.9	0.8	0.9	0.8	0.9
Selenium	0.01 [MAC]														
Silver	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00002	<0.005	<0.005	<0.005
Sodium	200 [AO]	9.6	8.6	6.6	6.9	9	7.3	8	7.8	7.8	7.6	8.2	7.6	7.6	6.9
Strontium		0.091	0.081	0.084	0.088	0.076	0.082	0.078	0.077	0.082	0.081	0.074	0.077	0.083	0.079
Sulphate	500 [AO]	38	38	34	34	36	36	36	36	31	31	35	33	34	35
Tin	-														
Titanium	-														
Total Kjeldahl Nitrogen	-														
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	5.0 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

MONITORING WELL TW-8
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8	TW-8
	Sample Date	14-Apr-10	16-Nov-10	6-Oct-11	12-Sep-12	12-Sep-12	22-Nov-13	6-Nov-14	11-Nov-15	8-Nov-16	13-Nov-17	Sep-18	Nov-19	Nov-20	Oct-21
Parameter (mg/L)	ODWS					Duplicate									
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	226	222	222	218	218	220	220	210	220	220	220	210	210	220
Aluminum	0.1 [OG]	<0.01	<0.01	0.02	0.05	0.02									
Ammonia	-	<0.01	<0.01	0.04	<0.01	<0.01	<0.050	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	0.14	<0.050
Arsenic	0.025 [IMAC]														
Barium	1.0 [MAC]	0.011	0.010	0.010	0.011	0.011									
Beryllium	-	<0.002	<0.002	<0.002	<0.002	<0.002									
Bismuth	-	<0.02	<0.02	<0.02	<0.02	<0.02									
Boron	5.0 [IMAC]	0.009	<0.005	<0.005	<0.005	<0.005									
Cadmium	0.005 [MAC]	<0.00002	<0.00002	0.00014	<0.00002	<0.00002									
Calcium	-	45.3	43.7	41.4	43.6	43.6	43	45	42	42	40	40	42	39	43
Chloride	250 [AO]	3.3	3.6	3.4	3.7	3.8	5	5	5.3	4.9	5.4	6	5.4	6.6	6.7
Chromium	0.05 [MAC]														
Cobalt	-	<0.005	<0.005	<0.005	<0.005	<0.005									
Conductivity (µmho/cm)	-	481	475	507	472	474	470	470	470	460	480	470	470	460	460
Copper	1.0 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002									
DOC	5.0 [AO]	2.6	0.4	1.8	0.3	0.4	0.39	0.66	<0.2	0.46	<0.50	<0.50	<0.50	0.41	<0.40
Hardness (as $CaCO_3$)	80-100 [OG]	250	249	241	245	245	240	250	230	240	230	230	250	220	230
Hydrogen Sulphide	0.05 (AO)	<0.3	0.05	0.06	0.04	0.04	<0.02	0.02	<0.02	<0.020		0.01			
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	0.04	<0.1	<0.1	<0.1
Lead	0.01 [MAC,c]	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						<0.0002			
Magnesium	-	33.2	34.1	33.5	33.0	33.0	31	33	32	33	31	34.3	34	30	30
Manganese	0.05 [AO]	0.001	0.002	<0.001	<0.001	<0.001	0.0028	<0.002	<0.002	<0.002	0.0091	0.09	<0.002	<0.002	<0.002
Molybdenum	-	<0.01	<0.01	<0.01	<0.01	<0.01						<0.02			
Nickel	-	<0.01	<0.01	<0.01	<0.01	<0.01						<0.02			
Nitrate	10 [MAC,d]	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.10	0.16	<0.10	<0.10	<0.10	0.14
Nitrite	1 [MAC,d]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.001	<0.001	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.94	7.44	7.92	7.95	7.97	7.96	8.2	8.08	8.01	8.05	8.13	8.19	7.93	8.24
Phenols	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total	-						<0.1	0.042	0.047	0.026	0.052	0.029	<0.020	0.084	0.052
Potassium	-	0.9	0.9	1	0.8	0.8	0.83	0.82	0.81	0.78	0.83	<0.4	0.86	0.76	1
Selenium	0.01 [MAC]														
Silver	-	<0.005	<0.00002	<0.00002	<0.00002	<0.00002						<0.01			
Sodium	200 [AO]	7.1	6.5	7.4	7	7.1	8.3	7.6	8	7.4	7.7	4.9	8.7	8.3	8.6
Strontium		0.081	0.085	0.074	0.084	0.084						0.075			
Sulphate	500 [AO]	34	33	35	33	33	32	31	33	34	33	34	31	30	32
Tin	-														
Titanium	-														
Total Kjeldahl Nitrogen	-														
Vanadium	-	<0.005	<0.005	<0.005	<0.005	<0.005						<0.020			
Zinc	5.0 [AO]	0.009	<0.005	0.007	<0.005	<0.005									

MONITORING WELL TW-8
GLENELG WASTE DISPOSAL SITE
GROUNDWATER QUALITY RESULTS

Monitoring Location		TW-8
	Sample Date	Sep-22
Parameter (mg/L)	ODWS	
Alkalinity (as $CaCO_3$)	30 - 500 [OG]	210
Aluminum	0.1 [OG]	-
Ammonia	-	<0.050
Arsenic	0.025 [IMAC]	-
Barium	1.0 [MAC]	-
Beryllium	-	-
Bismuth	-	-
Boron	5.0 [IMAC]	-
Cadmium	0.005 [MAC]	-
Calcium	-	41
Chloride	250 [AO]	6
Chromium	0.05 [MAC]	-
Cobalt	-	-
Conductivity (µmho/cm)	-	460
Copper	1.0 [AO]	-
DOC	5.0 [AO]	0.42
Hardness (as $CaCO_3$)	80-100 [OG]	230
Hydrogen Sulphide	0.05 (AO)	<0.020
Iron	0.3 [AO]	<0.10
Lead	0.01 [MAC,c]	-
Magnesium	-	31
Manganese	0.05 [AO]	<0.0020
Molybdenum	-	-
Nickel	-	-
Nitrate	10 [MAC,d]	<0.10
Nitrite	1 [MAC,d]	<0.010
pH	6.5-8.5 [OG]	8.21
Phenols	-	<0.0010
Phosphorus, Total	-	0.034
Potassium	-	0.79
Selenium	0.01 [MAC]	-
Silver	-	-
Sodium	200 [AO]	9
Strontium		-
Sulphate	500 [AO]	32
Tin	-	-
Titanium	-	-
Total Kjeldahl Nitrogen	-	-
Vanadium	-	-
Zinc	5.0 [AO]	-


Monitoring Well TW-8
Conductivity
Alkalinity
Hardness
Chloride
Sulphate
Conductivity (µmho/cm) , Alkalinity and Hardness (mg/L)
Chloride and Sulphate (mg/L)
DATE
1000
900
800
700
600
500
400
300
200
100
0
100
90
80
70
60
50
40
30
20
10
0
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22

APPENDIX E:
LABORATORY CERTIFICATE OF ANALYSIS

Your Project #: 213088
Site Location: GLENELG
Your C.O.C. #: 895870-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2022/10/13
Report #: R7339227
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2S5568
Received: 2022/10/03, 09:06

Sample Matrix: Ground Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2022/10/07	CAM SOP-00448	SM 23 2320 B m
Alkalinity	3	N/A	2022/10/08	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	6	N/A	2022/10/11	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	1	N/A	2022/10/07	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	4	N/A	2022/10/07	CAM SOP-00414	SM 23 2510 m
Conductivity	3	N/A	2022/10/08	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	7	N/A	2022/10/06	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	7	N/A	2022/10/06	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	7	2022/10/04	2022/10/05	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	7	N/A	2022/10/12	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	5	N/A	2022/10/11	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	2	N/A	2022/10/07	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	4	2022/10/04	2022/10/07	CAM SOP-00413	SM 4500H+ B m
pH	3	2022/10/04	2022/10/08	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	7	N/A	2022/10/11	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	6	N/A	2022/10/11	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2022/10/06	CAM SOP-00464	EPA 375.4 m
Sulphide	7	N/A	2022/10/06	CAM SOP-00455	SM 23 4500-S G m
Total Phosphorus (Colourimetric)	7	2022/10/05	2022/10/05	CAM SOP-00407	SM 23 4500-P I

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Your Project #: 213088
Site Location: GLENELG
Your C.O.C. #: 895870-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2022/10/13
Report #: R7339227
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2S5568

Received: 2022/10/03, 09:06

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) 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.
Ashton Gibson, Project Manager
Email: Ashton.Gibson@bureauveritas.com
Phone# (905)817-5765

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

Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		TXB644		TXB645		TXB646		
Sampling Date		2022/09/29		2022/09/29		2022/09/29		
COC Number		895870-01-01		895870-01-01		895870-01-01		
	UNITS	TW-1	QC Batch	TW-2	QC Batch	TW-3	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	420	8262635	590	8262635	280	1.0	8262635
Inorganics								
Total Ammonia-N	mg/L	0.26	8269423	8.7	8269423	0.074	0.050	8269423
Conductivity	umho/cm	870	8264504	1100	8264573	510	1.0	8264573
Dissolved Organic Carbon	mg/L	0.90	8264812	4.6	8264812	0.75	0.40	8264812
pH	pH	7.79	8264556	7.71	8264574	8.04		8264574
Phenols-4AAP	mg/L	<0.0010	8275778	0.0058	8275778	0.0028	0.0010	8275778
Total Phosphorus	mg/L	0.23	8265686	0.89	8265686	0.52	0.020	8265686
Dissolved Sulphate (SO4)	mg/L	46	8264203	5.3	8264267	<1.0	1.0	8264203
Sulphide	mg/L	0.21	8267169	<0.020	8267169	<0.020	0.020	8267169
Alkalinity (Total as CaCO3)	mg/L	310	8264550	610	8264568	270	1.0	8264568
Dissolved Chloride (Cl-)	mg/L	72	8264205	6.2	8264268	<1.0	1.0	8264205
Nitrite (N)	mg/L	<0.010	8264761	0.136	8264761	<0.010	0.010	8264761
Nitrate (N)	mg/L	<0.10	8264761	<0.10	8264761	<0.10	0.10	8264761
Nitrate + Nitrite (N)	mg/L	<0.10	8264761	0.12	8264761	<0.10	0.10	8264761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		TXB646			TXB647		TXB648		
Sampling Date		2022/09/29			2022/09/29		2022/09/29		
COC Number		895870-01-01			895870-01-01		895870-01-01		
	UNITS	TW-3 Lab-Dup	RDL	QC Batch	TW-5	QC Batch	TW-6	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				320	8262635	360	1.0	8262635
Inorganics									
Total Ammonia-N	mg/L				<0.050	8269423	<0.050	0.050	8269423
Conductivity	umho/cm	500	1.0	8264573	570	8264504	680	1.0	8264504
Dissolved Organic Carbon	mg/L				1.0	8264812	1.0	0.40	8264812
pH	pH	8.05		8264574	8.15	8264556	7.91		8264556
Phenols-4AAP	mg/L				<0.0010	8275778	0.0051	0.0010	8275778
Total Phosphorus	mg/L				0.18	8265686	0.33	0.020	8265686
Dissolved Sulphate (SO4)	mg/L				<1.0	8264203	5.8	1.0	8264203
Sulphide	mg/L				<0.020	8267169	<0.020	0.020	8267169
Alkalinity (Total as CaCO3)	mg/L	270	1.0	8264568	300	8264550	340	1.0	8264550
Dissolved Chloride (Cl-)	mg/L				2.7	8264205	8.9	1.0	8264205
Nitrite (N)	mg/L				0.052	8264761	0.104	0.010	8264755
Nitrate (N)	mg/L				1.17	8264761	2.45	0.10	8264755
Nitrate + Nitrite (N)	mg/L				1.22	8264761	2.56	0.10	8264755

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		TXB649		TXB650		
Sampling Date		2022/09/29		2022/09/29		
COC Number		895870-01-01		895870-01-01		
	UNITS	TW-7A	QC Batch	TW-8	RDL	QC Batch
Calculated Parameters						
Hardness (CaCO3)	mg/L	420	8262635	230	1.0	8262635
Inorganics						
Total Ammonia-N	mg/L	<0.050	8269423	<0.050	0.050	8269423
Conductivity	umho/cm	760	8264573	460	1.0	8264504
Dissolved Organic Carbon	mg/L	0.59	8264812	0.42	0.40	8264812
pH	pH	7.96	8264574	8.21		8264556
Phenols-4AAP	mg/L	<0.0010	8275778	<0.0010	0.0010	8275778
Total Phosphorus	mg/L	0.12	8265686	0.034	0.020	8265686
Dissolved Sulphate (SO4)	mg/L	14	8264203	32	1.0	8264203
Sulphide	mg/L	<0.020	8267169	<0.020	0.020	8267169
Alkalinity (Total as CaCO3)	mg/L	370	8264568	210	1.0	8264550
Dissolved Chloride (Cl-)	mg/L	19	8264205	6.0	1.0	8264205
Nitrite (N)	mg/L	0.111	8264761	<0.010	0.010	8264755
Nitrate (N)	mg/L	2.99	8264761	<0.10	0.10	8264755
Nitrate + Nitrite (N)	mg/L	3.10	8264761	<0.10	0.10	8264755

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		TXB644	TXB645	TXB646	TXB647	TXB648	TXB649		
Sampling Date		2022/09/29	2022/09/29	2022/09/29	2022/09/29	2022/09/29	2022/09/29		
COC Number		895870-01-01	895870-01-01	895870-01-01	895870-01-01	895870-01-01	895870-01-01		
	UNITS	TW-1	TW-2	TW-3	TW-5	TW-6	TW-7A	RDL	QC Batch
Metals									
Dissolved Calcium (Ca)	ug/L	83000	180000	67000	73000	95000	87000	200	8264137
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	<100	<100	100	8264137
Dissolved Magnesium (Mg)	ug/L	52000	37000	27000	33000	29000	50000	50	8264137
Dissolved Manganese (Mn)	ug/L	88	1400	<2.0	4.1	17	68	2.0	8264137
Dissolved Phosphorus (P)	ug/L	<100	140	<100	120	<100	<100	100	8264137
Dissolved Potassium (K)	ug/L	1200	9600	1300	400	860	1100	200	8264137
Dissolved Sodium (Na)	ug/L	15000	7700	1300	1300	4600	6000	100	8264137

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		TXB650		
Sampling Date		2022/09/29		
COC Number		895870-01-01		
	UNITS	TW-8	RDL	QC Batch
Metals				
Dissolved Calcium (Ca)	ug/L	41000	200	8264137
Dissolved Iron (Fe)	ug/L	<100	100	8264137
Dissolved Magnesium (Mg)	ug/L	31000	50	8264137
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	8264137
Dissolved Phosphorus (P)	ug/L	<100	100	8264137
Dissolved Potassium (K)	ug/L	790	200	8264137
Dissolved Sodium (Na)	ug/L	9000	100	8264137

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

TEST SUMMARY

Bureau Veritas ID: TXB644
Sample ID: TW-1
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264550	N/A	2022/10/07	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264504	N/A	2022/10/07	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264761	N/A	2022/10/11	Chandra Nandlal
pH	AT	8264556	2022/10/04	2022/10/07	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB645
Sample ID: TW-2
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264568	N/A	2022/10/08	Kien Tran
Chloride by Automated Colourimetry	KONE	8264268	N/A	2022/10/07	Alina Dobreanu
Conductivity	AT	8264573	N/A	2022/10/08	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264761	N/A	2022/10/11	Chandra Nandlal
pH	AT	8264574	2022/10/04	2022/10/08	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264267	N/A	2022/10/06	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB646
Sample ID: TW-3
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264568	N/A	2022/10/08	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264573	N/A	2022/10/08	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

TEST SUMMARY

Bureau Veritas ID: TXB646
Sample ID: TW-3
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264761	N/A	2022/10/11	Chandra Nandlal
pH	AT	8264574	2022/10/04	2022/10/08	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB646 Dup
Sample ID: TW-3
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264568	N/A	2022/10/08	Kien Tran
Conductivity	AT	8264573	N/A	2022/10/08	Kien Tran
pH	AT	8264574	2022/10/04	2022/10/08	Kien Tran

Bureau Veritas ID: TXB647
Sample ID: TW-5
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264550	N/A	2022/10/07	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264504	N/A	2022/10/07	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264761	N/A	2022/10/11	Chandra Nandlal
pH	AT	8264556	2022/10/04	2022/10/07	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB648
Sample ID: TW-6
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264550	N/A	2022/10/07	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264504	N/A	2022/10/07	Kien Tran

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

TEST SUMMARY

Bureau Veritas ID: TXB648
Sample ID: TW-6
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264755	N/A	2022/10/07	Chandra Nandlal
pH	AT	8264556	2022/10/04	2022/10/07	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB649
Sample ID: TW-7A
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264568	N/A	2022/10/08	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264573	N/A	2022/10/08	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264761	N/A	2022/10/11	Chandra Nandlal
pH	AT	8264574	2022/10/04	2022/10/08	Kien Tran
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

Bureau Veritas ID: TXB650
Sample ID: TW-8
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8264550	N/A	2022/10/07	Kien Tran
Chloride by Automated Colourimetry	KONE	8264205	N/A	2022/10/11	Alina Dobreanu
Conductivity	AT	8264504	N/A	2022/10/07	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8264812	N/A	2022/10/06	Chandra Nandlal
Hardness (calculated as CaCO3)		8262635	N/A	2022/10/06	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8264137	2022/10/04	2022/10/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8269423	N/A	2022/10/12	Chandra Nandlal
Nitrate & Nitrite as Nitrogen in Water	LACH	8264755	N/A	2022/10/07	Chandra Nandlal
pH	AT	8264556	2022/10/04	2022/10/07	Kien Tran

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Bureau Veritas Job #: C2S5568
Report Date: 2022/10/13

GM BluePlan Engineering Limited
Client Project #: 213088
Site Location: GLENELG
Sampler Initials: JW

TEST SUMMARY

Bureau Veritas ID: TXB650
Sample ID: TW-8
Matrix: Ground Water

Collected: 2022/09/29
Shipped:
Received: 2022/10/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	8275778	N/A	2022/10/11	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8264203	N/A	2022/10/11	Samuel Law
Sulphide	ISE/S	8267169	N/A	2022/10/06	Taslima Aktar
Total Phosphorus (Colourimetric)	SKAL/P	8265686	2022/10/05	2022/10/05	Shivani Shivani

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GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8264137	Dissolved Calcium (Ca)	2022/10/05	NC	80 - 120	97	80 - 120	<200	ug/L	0.53	20		
8264137	Dissolved Iron (Fe)	2022/10/05	100	80 - 120	98	80 - 120	<100	ug/L	NC	20		
8264137	Dissolved Magnesium (Mg)	2022/10/05	100	80 - 120	99	80 - 120	<50	ug/L	0.93	20		
8264137	Dissolved Manganese (Mn)	2022/10/05	100	80 - 120	97	80 - 120	<2.0	ug/L	6.6	20		
8264137	Dissolved Phosphorus (P)	2022/10/05	104	80 - 120	109	80 - 120	<100	ug/L	NC	20		
8264137	Dissolved Potassium (K)	2022/10/05	100	80 - 120	99	80 - 120	<200	ug/L	1.3	20		
8264137	Dissolved Sodium (Na)	2022/10/05	100	80 - 120	98	80 - 120	<100	ug/L	0.48	20		
8264203	Dissolved Sulphate (SO4)	2022/10/11	NC	75 - 125	104	80 - 120	<1.0	mg/L	NC	20		
8264205	Dissolved Chloride (Cl-)	2022/10/11	NC	80 - 120	102	80 - 120	<1.0	mg/L	2.5	20		
8264267	Dissolved Sulphate (SO4)	2022/10/06	NC	75 - 125	101	80 - 120	<1.0	mg/L	0.72	20		
8264268	Dissolved Chloride (Cl-)	2022/10/07	NC	80 - 120	102	80 - 120	<1.0	mg/L	4.5	20		
8264504	Conductivity	2022/10/06			102	85 - 115	<1.0	umho/cm	0.22	25		
8264550	Alkalinity (Total as CaCO3)	2022/10/06			95	85 - 115	<1.0	mg/L	0.23	20		
8264556	pH	2022/10/06			102	98 - 103			0.59	N/A		
8264568	Alkalinity (Total as CaCO3)	2022/10/08			92	85 - 115	<1.0	mg/L	0.34	20		
8264573	Conductivity	2022/10/08			102	85 - 115	<1.0	umho/cm	1.2	25		
8264574	pH	2022/10/08			101	98 - 103			0.13	N/A		
8264755	Nitrate (N)	2022/10/07	95	80 - 120	99	80 - 120	<0.10	mg/L	NC	20		
8264755	Nitrite (N)	2022/10/07	107	80 - 120	109	80 - 120	<0.010	mg/L	NC	20		
8264761	Nitrate (N)	2022/10/12	NC	80 - 120	101	80 - 120	<0.10	mg/L	3.1	20		
8264761	Nitrite (N)	2022/10/12	103	80 - 120	109	80 - 120	<0.010	mg/L	2.0	20		
8264812	Dissolved Organic Carbon	2022/10/06	NC	80 - 120	96	80 - 120	<0.40	mg/L	0.60	20		
8265686	Total Phosphorus	2022/10/05	95	80 - 120	105	80 - 120	<0.020	mg/L	16	20	99	80 - 120
8267169	Sulphide	2022/10/06	103	80 - 120	99	80 - 120	<0.020	mg/L	NC	20		
8269423	Total Ammonia-N	2022/10/12	NC	75 - 125	98	80 - 120	<0.050	mg/L	0.49 (1)	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8275778	Phenols-4AAP	2022/10/11	98	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20		

N/A = Not Applicable

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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Bureau Veritas Job #: C2S5568
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GM BluePlan Engineering Limited
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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APPENDIX F:
CORRESPONDENCE

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Owen Sound District Office
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Ministère de l'Environnement
Direction régionale du Sud-Ouest
Bureau du district d'Owen Sound
101 rue 17th, 3ème étage
Owen Sound ON N4K 0A5
Télécopieur: (519)371-2905
Tél:(519) 371-6191

Ontario

November 19, 2010

Mr. Ken Gould
Municipality of West Grey
402813 Grey Rd. 4
RR 2
Durham, ON, N0G 1R0

Dear Mr. Gould,

RE: Glenelg Landfill 2009 Annual Monitoring Report

We have received a copy of the report titled "Annual Monitoring Report - 2009 Glenelg Landfill Site, Municipality of West Grey" prepared by Genivar Consultants and dated April 2010. Our Regional Hydrogeologist reviewed the report and comments are provided below.

The Glenelg Landfill site is 0.45 hectares (1 acre) in size and is located on Part Lot 20 Concession 2, North Durham Road (NDR) in the former Township of Glenelg. Landfilling of waste ceased in 2005 with formal closure of the site occurring in 2006. Subsequent capping of the site occurred in 2007. Shallow groundwater is located approximately 5 metres below the landfill mound. Geology in the vicinity is silty sand and gravels. The groundwater monitoring program for the site has over 20 years of water quality data from which to assess landfill related impacts.

The Report concludes the landfill is not having adverse impacts on the surrounding environment based on data from the groundwater monitoring network in place. In addition, by way of a property boundary impact assessment the site was determined to be compliant with the Ministry of the Environment Guideline (MOE) B-7 Reasonable Use Concept (RUC) for Groundwater Management at property boundaries.

Our Regional Hydrogeologist concurs with the groundwater findings of the Report, as supported by the extensive database. Being compliant with the Ministry's RUC means that all potential landfill related impacts migrating in groundwater from beneath the landfill mound towards the property boundary monitoring wells have been attenuated over that distance to meet Ministry drinking water standards. All groundwater flowing beyond the property boundary monitoring wells would, therefore, no longer reflect the impacts of the

landfill at adverse leachate concentrations. As the site is permanently closed and has not accepted waste in over 5 years, this groundwater status is expected to continue.

Our Regional Hydrogeologist also supports the balance of the conclusions and recommendations, as presented in the Report. Based on the results of the Report, the recommendation to reduce the groundwater monitoring program from twice a year to once a year in the Fall, is justifiable from a groundwater perspective.

If you have any questions concerning this letter, please contact the undersigned at (519) 371-6191.

Yours truly,

Ian Mitchell, P.Eng.
District Engineer
Owen Sound District Office

File Storage Number: SI GR WG C2 610

cc. Helmut Pfeiffer – MOE, Owen Sound
Bruce Harman - MOE, London