REPORT

Hydrogeologic Investigation Report Phase VI Landfill Expansion

McGill Road Landfill, Jackson County, Michigan

Submitted to:

Waste Management of Michigan Inc.

3895 McGill Road, Jackson, MI 49201

Submitted by:

WSP USA Inc.

Novi, Michigan

US0022880.1075

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Certification

WSP USA Inc.



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1.0 INTRODUCTION

This report presents an update to the previous *Hydrogeologic Investigation Report* (HIR) completed by NTH Consultants, Ltd. (NTH) completed in 2005, for the proposed Phase VI Development at the McGill Road Landfill (MRL). This report is submitted on behalf of MRL as part of a Construction Permit Application for the Phase VI expansion. This document has been prepared in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994, P.A. 451, Part 115, Solid Waste Management (Part 115), and applicable parts of Administrative Rules 299.4902 and 299.4904. Specifically, Rule 299.4902(1)(d) requires that a construction permit application shall include a hydrogeologic report that contains the information listed in Rule 299.4904.

The Phase VI development is a vertical expansion and valley fill to overlay the existing Phase I, Phase II, Phase III, Phase IV and Phase V landfills. Updates to the 2005 HIR include a summary of the groundwater elevations recorded through 2024, as well as a summary of the current groundwater quality as reported in routine groundwater monitoring reports and an update to the local water well survey. Subsurface geologic and hydrogeologic information presented in the 2005 HIR is relevant to the current Phase VI expansion.

1.1 Location and Proposed Development

The Site Location Map, included as Figure 1 in Appendix A, depicts the location of the MRL facility referenced to major roadways and topographic features. The existing MRL facility is located within Section 24, Township 2 South, Range 1 West, Blackman Township, and Section 19, Township 2 South, Range 1 East, Leoni Township, Jackson County, Michigan. The Phase VI expansion area will not include a horizontal expansion of the current solid waste boundary but rather a valley fill between existing units and a vertical expansion within the current landfill footprint.

As designed, the proposed Phase VI development encompasses 4.08 acres and will include Cell 6 West (6W), between Phase I and II (0.71 acres) and Cell 6 East (6E) between Phase III/IV and Phase V (1.43 acres). The MRL is bordered to the west by McGill Road, to the south and east by private property that is primarily used for agricultural and residential purposes, and to the north by the former Jackson County Landfill No. 1.

Figure 1 shows the location of adjacent property lines, roads, and the solid waste boundaries for the existing site and proposed Phase VI Cell 6W/Cell 6E areas.

1.2 Facility Description

MRL facility is a Type II and Type III solid waste landfill located at 3895 McGill Road, Jackson, Michigan. The facility occupies a total area of approximately 134 acres, which includes closed disposal areas, active fill areas, and isolation and ancillary areas. MRL consists of two closed Type III units identified as Phase I (Cells 1-8, approximately 8.79 acres), and Phase II (Cell 1, approximately 4.11 acres); six closed Type II units identified as Phase III (Cells 1, 1A, 2 and 4, approximately 4.48, 1.54, 1.75 and 4.56 acres, respectively), and Phase IV (Cells 1 and 1A, approximately 2.21 and 0.52 acres, respectively); and the active Type II unit identified as the Phase V area, located east of Phases II and III, consisting of a single 15.2-acre cell.

2.0 PREVIOUS HYDROGEOLOGIC STUDIES

Hydrogeologic studies have previously been completed for existing landfill cells, the most recent being the 2005 Hydrogeologic investigation for the Phase V landfill expansion. The reports from these studies describing the

regional geologic and hydrologic conditions were submitted to the Michigan Department of Environmental Quality MDEQ, now Michigan Department of Environment, Great Lakes, and Energy (EGLE), and accepted in support of the MRL Construction Permits and Operating Licenses. The studies listed below present the hydrogeology of landfill facilities adjoining the proposed landfill expansion area:

1) Report of Phase I Hydrogeologic Investigation, Hunter/Keck, 1989.
2) Hydrogeologic Characterization of a Proposed 20-Acre Expansion of the McGill Road Type II Solid Waste Disposal Facility, Envirologic Technologies, Inc., May 1991.
3) Report of Environmental Testing/Hydrogeologic Investigations at the State Prison of Southern Michigan, Jackson, Michigan, Snell Environmental Group, Inc., July 1993.
4) Jackson County Landfill No. 1 Remedial Investigation Report, Metcalf and Eddy, August 13, 1993.
5) Response Action Plan for Phase I Landfill Unit, Philip McGill Road Landfill, Jackson, Michigan, NTH Consultants, Ltd., May 2, 1997.
6) Alternate Source Demonstration for Sulfate, Philip McGill Road Landfill, Jackson, Michigan, NTH Consultants, Ltd, February 2, 1998.
7) Report on Trammeled Soil Investigation, Philip McGill Road Landfill, Jackson, Michigan, NTH Consultants, Ltd., July 1, 1999.
8) Off-Site Investigation Report for Inorganic Parameters, Philip McGill Road Landfill, Jackson, Michigan, NTH Consultants, Ltd., August 31, 1999.
9) Addendum to Response Action Plan, NTH Consultants, Ltd., November 1, 1999.
10) Hydrogeologic Monitoring Plan, Philip McGill Road Landfill, Jackson, Michigan, NTH Consultants, Ltd., November 15, 1999.
11) Trommeled Soil Response Action Plan, NTH Consultants, Ltd., January 18, 2000.
12) Alternate Source Demonstration, McGill Road Landfill, NTH Consultants, Ltd., May 15, 2000.
13) Supplemental Alternate Source Demonstration -Landfill Gas Investigation, McGill Road Landfill, NTH Consultants, Ltd., March 11, 2002.
14) Construction Certification -McGill Road Landfill Trammeled Soil Removal, NTH Consultants, Ltd., December 2002.
15) Remedial Action Plan -McGill Road Landfill, NTH Consultants, Ltd., February 3, 2005.
16) Hydrogeologic Investigation Phase V Expansion Area McGill Road Landfill, NTH Consultants Ltd., March 2005.

2.1 Background Information

MRL consists of two closed Type III units identified as Phase I (Cells 1-8) and Phase II (Cell 1); two closed Type II units identified as Phase III (Cells 1, 1A, 2 and 4) and Phase IV (Cells 1 and 1A); and one active Type II unit identified as Phase V (Cell 1).

The closed Jackson County Landfill No. 1 (JCL) is located immediately north (i.e., downgradient) of the MRL site. Investigations conducted by MDEQ, (now EGLE), indicate that JCL has impacted groundwater quality. Impacts from volatile organic compounds (VOCs) and other organic contaminants have been noted. Limited information is available regarding impact from inorganic constituents at the JCL site.

The Phase I (Type III waste) area of MRL was reportedly overfilled by previous owners above approved final grades. To reduce the total waste volume during closure activities, the previous owners excavated the overfill material (which consisted primarily of construction and demolition waste and interim cover soils) and fed this material through a large rotary trommel-screening device, located within Cell 1 of the Phase II area. The oversized material was trapped inside the trommeling device's rotating drum and discharged into Cell 1 of Phase II. The segregated fine-grained soil and Type III waste was stockpiled. In late 1994, approximately 6,500 cubic yards of this trommeled waste was placed outside the Phase II boundary, primarily along the northern slope and northeastern comer of the cell. The balance was used for daily cover within the Phase II landfill.

2.2 Known Groundwater Quality Impacts & Response Activities

MRL has conducted routine groundwater monitoring on a quarterly basis for the active and closed phases of the existing landfill and data is available going back to 1992. The most recent *Hydrogeologic Monitoring & Statistical Evaluation Report McGill Road Landfill – Third Quarter 2024*, (WSP, 2024) has been attached as Appendix B for reference. The third quarter 2024 monitoring and reporting for MRL were performed in accordance with the approved Hydrogeologic Monitoring Plan (HMP) for MRL, dated March 2005, revised March 16, 2011. The HMP incorporates the groundwater monitoring program from the Remedial Action Plan (RAP), dated April 23, 2004 (revised February 3, 2005), that complies with the requirements of Part 201 (P.A. 451 of 1994) and associated Administrative Rules.

A summary of the groundwater quality at MRL is included in the attached monitoring report. As of second quarter 2023 RAP constituents are below the Part 201 Groundwater Residential Drinking Water criteria (GRDWC) and MRL intends to petition EGLE for closure of the RAP. Once EGLE approves closure of RAP, MRL will submit an addendum to the HMP.

3.0 FIELD INVESTIGATION

No new subsurface soil investigations (stratigraphic analysis, geochemical, and/or physical soil tests) were performed for this expansion permit. Data collected for the previous hydrogeologic investigation are relevant to this expansion area. A copy of the *Hydrogeologic Investigation Report* (NTH, 2005) is attached as Appendix A for reference. A summary of the 2005 and prior hydrogeologic investigations is included herein.

4.0 REGIONAL GEOLOGY

The regional geology in the vicinity of MRL consists of unconsolidated granular deposits overlying sedimentary bedrock. Glacial deposits in Blackman and Leoni Townships are composed of glacial outwash and outwash channel deposits consisting of interbedded fine sand, sand, and gravel with varying silt content. These outwash

deposits may also contain discontinuous seams of silt and silty clay soils. Glacial drift thickness in the area north of Jackson ranges from approximately 40 to 100 feet (Passero, et. al., 1983).

Underlying the glacial soils is the Parma Sandstone, a member of the Pennsylvanian Saginaw Formation. The Saginaw formation consists of alternating and inter-stratified stream and river channel sands, river floodplain silts and clays, shallow water marine or tidal swamp shales and limestones, as well as swamp-laid coals (Dorr and Eschman, 1970). The sandstone is the predominant bedrock type in the study area, with some significant limestone deposits present to the east. Research published in “Geohydrology of Carboniferous Aquifers of the Michigan Basin,” indicates that the Paima Sandstone may be contemporaneous with the Mississippian Bayport Limestone and that the two units are time-stratigraphic equivalents. Generally, bedrock is encountered at an elevation of 900 feet msl, as shown in Appendix A.

Groundwater occurs regionally within both the granular glacial soils and the sedimentary bedrock units. The regional groundwater flow pattern, based on surface topography and visible expressions of the water table (such as lakes, streams and wetlands), is presented on the U.S. Geological Survey (USGS) Quadrangle maps and the Regional Groundwater Elevation Contour Map in Appendix A. As shown, regional groundwater flow is to the northwest, and likely discharges to the Portage and Grand Rivers north and west of the site. Recharge to the bedrock likely occurs as surface infiltration through unconsolidated glacial deposits.

Water supply for the area is serviced by water supply wells, either Type I, Type II, or Type III. The nearest documented Type I or Type II water supply wells are located approximately 1200 feet to the south of the solid waste boundary. The 800-foot minimum isolation distances required under Rule 299.4412(6) show none of the water supply Type III wells, for which records are available, are located within the isolation distance. The minimum isolation distance is show on Figure 2. The 2005 HIR, Appendix A, well record search, and field survey conducted by surveyors with McNeely located the residential wells for each of the properties adjacent to the Phase V expansion area. The exact location of the each of the wells nearest to the property line was also surveyed by McNeely for the 2005 expansion and was determined to be outside the 800-foot isolation distance.

Rule 299.4904(l)(e) requires that a hydrogeologic investigation define any aquifer that is utilized by Type I and Type IIa public water supplies, within 0.5 miles of the proposed solid waste boundary, and any aquifer that is utilized by Type IIb and Type III public water supplies, within 1,000 feet of the Solid waste boundary. Review of the regional well records show one active Type I well (Well ID: 38000000664) and three active Type II wells (Well IDs: 38000000956, 3000001486, and 38000014242) within 0.5 miles of the solid waste boundary, and nine Type III wells within 1,000 feet of the solid waste boundary. Review of the Type I and Type II well logs indicates that they are completed as open hole borings in the bedrock to depths ranging between 200 and 352 feet bgs. and are completed in the upper portion of the rock aquifer, which is described as sandstone or limestone. The Type III wells are screened in the glacial sand aquifer, sandstone, or limestone at depths ranging from approximately 69 to 220 feet bgs. Figure 2 shows the location of the 1,000 foot and 0.5-mile isolation boundaries and the applicable Type I, II, and III wells. Available Type I, II, and III well logs for the surrounding area are presented in Appendix C

5.0 SITE HYDROGEOLOGIC CONDITIONS

The following presents a description of site topography and hydrogeologic conditions based on the 2005 HIR and current conditions.

5.1 Topography

Topographically, the site may generally be considered an upland area with a gentle slope toward the north and east. The topography of the site ranges in elevation from approximately 940 feet above mean sea level (msl) in the northern portion of the site to over 1000 feet msl in the central and southern portion of the site. Detailed topographic information, and a detailed topographic survey is presented as Sheet X (CG-103), of the Engineering Drawings included with the current Construction Permit Application (CTI, 2024).

5.2 Site Geology

A series of subsurface cross-sections were developed during the 2005 HIR, identified as Generalized Geologic Profiles A-A' through H-H', which were based on the information obtained from the Phase V Expansion area as well as geologic data developed for the existing MRL facility from previous investigations. The Subsurface Profile Orientation Map depicting the location and direction of each of the subsurface profiles developed for this report, the geologic profiles, and the results and interpretations presented are summarized below and presented in detailed figures in Appendix A.

Generally, the geology of the investigation area consists of approximately 30 to 90 feet of unconsolidated granular deposits overlying sedimentary bedrock. The uppermost portion of this unconsolidated deposit is described as brown silty sand extending to a general depth of approximately 38 feet below grade. At the existing site, the uppermost portion is underlain by intermediate granular deposits comprised of dense gray silt, which ranges from 0.5 to 4 feet thick. This layer was not encountered in the Phase V area. The brown surficial sands encountered at the Phase V area are underlain by a gray silty sand and gravel unit, which is consistent across the entire site. Some isolated lenses of clay and silt also occur within the predominately sandy matrix but are localized and limited in extent. The finer materials are not correlative across the site, indicating that these finer-grained units are isolated, laterally discontinuous lenses.

Granular materials appear to become increasingly coarse with depth across the site. A sand and gravel mixture is generally encountered at approximately 920 ft msl at the northern part of the Site, and at approximately 940 ft msl in the eastern portion of the Site. Together, these granular units are the target-monitoring zone for the site. The underlying rock formation below the Site consists of the Parma Sandstone, a gray to grayish green sandstone that was generally encountered at approximately 900 ft msl.

5.3 Site Hydrogeology

Groundwater occurs in the unconsolidated glacial deposits under water table conditions down to bedrock. There are no laterally extensive confining zones within these glacial deposits as evidenced by only a few isolated, discontinuous lenses of clay and silt materials that exist at the site. The water table surface occurs at depths ranging from approximately 10 to 60 feet below ground surface, varying primarily due to the changes in topography. Based on the 2005 HIR, groundwater elevations range from approximately 925 to 955 feet msl across the entire site and the horizontal hydraulic gradient ranged from 0.012 ft/ft to 0.016 ft/ft. These findings are consistent with historic horizontal gradient data observed at the adjacent active landfill.

Site groundwater elevation contour maps from the first through third quarter 2024 monitoring reports are presented as Figures 3 through 5. As shown on these maps, the general direction of groundwater flow is to the north across the eastern portion (Phase V) of the site and to the north-northwest across the western portion of the Site (Phases I through IV). This flow pattern conforms to the regional groundwater flow direction are consistent

with historical data for the site dating back to at least 1995. Historical groundwater elevation data through fourth quarter 2024 data, are presented in Table 1.

5.3.1 Horizontal Gradient

Groundwater elevations during the first through third quarter 2024 sampling events ranged from 922.16 to 951.06 feet msl across the entire site. The horizontal hydraulic gradient observed at the Site during the three published quarterly 2024 field events ranged from 0.009 ft/ft to 0.015 ft/ft. These findings are consistent with historical horizontal gradient data observed at the Site.

5.3.2 Groundwater Flow Velocity

In accordance with Rule 907(5) of Part 115, the groundwater flow velocity at MRL was calculated using a derivation of Darcy's Law. Specifically,

$$V = \frac{K * i}{n_e}$$

where:

V = Groundwater flow velocity $\left(\frac{feet}{day}\right)$

K = Average Permeability of the aquifer $\left(\frac{feet}{day}\right)$

i = Horizontal hydraulic gradient $\left(\frac{feet}{feet}\right)$

n_e = Effective porosity

A representative value for the hydraulic conductivity of the water-bearing geologic materials at the site was derived from permeability data developed in the 2005 HIR. The average permeability for the closed portion of the Site (Phase I through IV) is 0.6 feet/day (ft/day) and 1.37 ft/day for the operating area (Phase V). Effective porosity of the glacial drift sand at the Site can be estimated as approximately 0.30, based on the grain size distributions and physical descriptions.

Groundwater flow velocities have been calculated for the site at the locations (flow paths) labeled "A" and "B" on Figures 3 through 5. As calculated during the 2024 quarterly events, the groundwater flow velocity across the closed portion of the site (Flow Path A) were estimated at approximately 0.03 ft/day (11.0 feet per year [ft/year]) for all three events. The groundwater flow velocity across the operating portion of the site (Flow Path B) were estimated between approximately 0.04 ft/day (14.6 ft/year) and 0.05 ft/day (18.3 ft/year). The calculated groundwater flow velocities are consistent with historic values for the respective areas of the site. Groundwater flow calculations are presented in Table 2.

5.3.3 Vertical Gradients

Three nested well pairs were used to calculate the vertical gradients to identify vertical gradients between the unconfined granular unit and the bedrock unit, as required by the Part 115 regulations, OW-212S/OW-212D, MW-61S/MW-61D, and MW-62S/MW/62D shown on Figure 3, first quarter 2024 Groundwater Elevation Map. Vertical gradients have been calculated by dividing the difference in piezometric head in the well pair (feet) by the distance between the mid-point of the respective well screens (feet). The vertical gradients for well pairs during the three published quarterly 2024 events are included in Table 3. Review of Table 3 indicates that the vertical gradients are variable across the site. During the 2024 monitoring period, well pair OW-212S/OW-212D varied between slight upward and downward gradients ranging between 0.001 ft/ft to 0.026 ft/ft, well pair MW-61S/MW-61D was primarily downward gradient ranging from 0.002 ft/ft to 0.011 ft/ft, and well pair MW-62S/MW/62D had an upward gradient ranging from 0.005 ft/ft to 0.045 ft/ft.

5.3.4 Groundwater Isolation

Rule 299.4411(2)(a) requires that a Type II landfill shall be designed to maintain a minimum 10-foot vertical isolation from the top of the primary liner to the natural groundwater level. A representative design groundwater elevation for the Phase V Expansion was developed for the 2005 HIR by evaluating the historic fluctuations in groundwater levels at the existing MRL facility. Groundwater elevation records from 1986 through 2003 were compiled and analyzed in the 2005 HIR and groundwater elevations from 2004 through 2024, in relation to the proposed minimum base elevations for Phase VI Cells 6E and 6W, graphically presented on Figure 6. Electronic groundwater elevation data is available dating back to 2004.

An evaluation of the Phase VI Cells 6E and 6W landfill liner design, compared to the 2024 approximate maximum groundwater elevations, in the area of the proposed Phase VI expansion shows the separation between the liner and the maximum groundwater elevation is greater than the required 10 feet in Rule 299.4411(2)(a). The table below compares the minimum base elevations of the proposed liner and the approximate maximum groundwater elevation during the three quarterly 2024 sampling events. The Phase VI Cell 6W has a separation of approximately 20 feet and the Phase VI Cell 6E has a separation of approximately 35 feet.

	Phase VI Minimum Base Elevation	
	Cell 6W – 968 ft asl	Cell 6E – 983 ft asl
	Approximate Max Water Elevation – 2024 Quarterly Sampling Events	
	West Area (Phase I to IV)	East Area (Phase V)
1st Quarter 2024	948 ft asl - ~20 ft separation	949 ft asl - ~34 ft separation
2nd Quarter 2024	948 ft asl - ~20 ft separation	948 ft asl - ~35 ft separation
3rd Quarter 2024	949 ft asl - ~20 ft separation	950 ft asl - ~33 ft separation

ft asl = feet above mean sea level

5.3.5 Mounding and Groundwater Level Controls

Rule 299.4904(4)(g) requires that a hydrogeologic investigation must evaluate potential groundwater mounding that may result from the diversion of infiltration and surface water run-off from the proposed landfill. No mounding in the uppermost aquifer is anticipated during filling and post-closure of the expansion area cells. Runoff will be diverted off the landfill as described in the stormwater management plan (CTI, 2024a).

As shown in the expansion area cross-sections (Engineering Drawing Sheets) and comparing to the 2024 first through third quarter potentiometric surface maps, Figures 3 through 5, the proposed liner grades will be a minimum of 20 feet for Phase VI Cell 6W and 30 feet for Phase VI Cell 6E above the potentiometric surface of the uppermost aquifer.

5.4 Existing Groundwater Quality

The most current MRL groundwater quality information is contained in the Third Quarter 2024 Hydrogeologic Monitoring and Statistical Evaluation report completed by WSP USA, which is summarized below and included as Appendix B.

Third quarter 2024 monitoring and reporting for MRL were performed in accordance with the approved Hydrogeologic Monitoring Plan (HMP; NTH, 2005) for MRL, dated March 2005, revised March 16, 2011. The HMP incorporates the groundwater monitoring program from the *Remedial Action Plan* (RAP; NTH 2005), dated April 23, 2004 (revised February 3, 2005), that complies with the requirements of Part 201 (P.A. 451 of1994) and associated Administrative Rules. The RAP was approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on April 19, 2005.

Statistical evaluation of the groundwater monitoring data for the monitorable portion of the site (Phase V) indicated seven control limit exceedances of groundwater monitoring parameters both upgradient and downgradient of the landfill. An Alternate Source Demonstration concludes the Statistically Significant Increases of monitoring parameter concentrations are the result of natural variability in groundwater chemistry and not the result of a release from the landfill.

RAP parameters have remained below the applicable cleanup criteria in each of the RAP monitoring wells for five consecutive monitoring events. As such, MRL is in the process of petitioning EGLE for closure of the RAP.

5.5 Surface Water

Generally, surface runoff from the Phase I through Phase IV areas are directed to sedimentation Basin C while Phase V area flows to a low-lying area along the north boundary of the property and sedimentation Basin D. The proposed Phase VI western portion surface runoff will be directed to sedimentation Basin C, while proposed Phase VI eastern portion will be directed to sedimentation Basin D. Storm water generated from the site will be managed using engineered controls including overall site grading, ditches and detention basins.

The detention basins provide sedimentation control and discharge the storm water at a controlled rate to the State Lateral Drain west of the landfill or to a wetland area north of the landfill. Refer to the accompanying *Engineering Drawings* and the *Engineering R*eport (CTI, 2024b) for more information regarding the proposed storm water management system for the existing MRL facility.

The discharges are permitted under the site's existing NPDES industrial storm water permit number MIS320086, which is valid through April 2028. To ensure compliance with Rule 299.4436, MRL will conduct a surface water monitoring program to evaluate the quality of the surface water discharges. This surface water monitoring program is included as part of the *Hydrogeologic Monitoring Plan* (WSP, 2024) that is included in the current Construction Permit Application.

5.6 Site Monitoring Approach and Monitorability

Details pertaining to site monitoring are presented in the Hydrogeologic Monitoring Plan (HMP) for the site that is included with the Construction Permit Application.

The current monitoring well network established for the existing permitted facility will remain in place with the exception of a single monitoring well (MW-21) which is in the footprint of the proposed Phase VI expansion. Monitoring of the Phase VI expansion can be accomplished with the current well network.

Leachate and secondary collection system (SCS) monitoring, which is generally considered part of an environmental monitoring "system", is discussed in detail in the HMP.

Currently, the site includes both "monitorable" and "unmonitorable" units. Throughout RAP monitoring, monitoring of the Phase I-IV landfill units has been accomplished through trend analyses and comparison to Part 201 criteria.

Though identified as unmonitorable due to prior impact outside the waste boundary, the Phase I-IV landfill units can be considered monitorable. The Phase I-IV closed areas of the site is currently under a Remedial Action Plan for inorganics (specifically, sulfate and boron) stemming from the placement of trommeled waste at the north end of the closed site. Because the RAP constituents' sulfate and boron have been below the Part 201 criteria since for greater than four consecutive events, MRL will petition EGLE to close the RAP. Once closed, the site can be considered monitorable and conventional statistical analyses with selection of appropriate inorganic indicator parameters can be performed to monitor for early detection of a release from the units.

Specifics regarding the proposed monitoring approach is included in the *Hydrogeologic Monitoring* Plan (HMP; WSP, 2024) for the site.

6.0 SUMMARY AND CONCLUSIONS

This report represents an update to the 2005 HIR for the proposed Phase VI Expansion area at the McGill Road Landfill. The McGill Road Landfill is located in Blackman and Leoni Townships, Jackson County, Michigan. The results of this report update have determined the following:

- The site is hydrogeologically suitable for the development of a Type II sanitary landfill expansion pursuant to Part 115 rules.
- There are two basic hydrogeologic units at the Phase VI Expansion area:

  [1] Upper water-bearing granular unit - This zone consists of brown surficial sands and a gray silty sand and gravel unit, which together comprise the upper water-bearing unit.

  [2] Bedrock unit - The underlying rock formation at the Phase VI Expansion area consists of the Parma Sandstone, a gray to grayish green sandstone generally encountered at approximately 900 feet msl.

- Groundwater occurs under unconfined conditions across the Phase VI Expansion area. Groundwater flow in the uppermost unit is to the north at the Phase VI Expansion area, and to the north-northwest at the active site.
- Groundwater flow within the uppermost granular unit at the site is essentially horizontal and exhibits very little vertical flow.
- No groundwater quality impacts are anticipated as a result of operations of the landfill. Similarly, no effect on the groundwater from the existing site has been noted within the Phase VI Expansion area. The proposed design meets or exceeds minimum Part 115 standards currently in effect.

Based on the hydrogeologic requirements for a Construction Permit Application, as set forth in Part 115 of P.A. 45 1, as amended, the site is suitable and has been adequately characterized for construction of a Type II sanitary landfill expansion under the promulgated rules.

7.0 REFERENCES

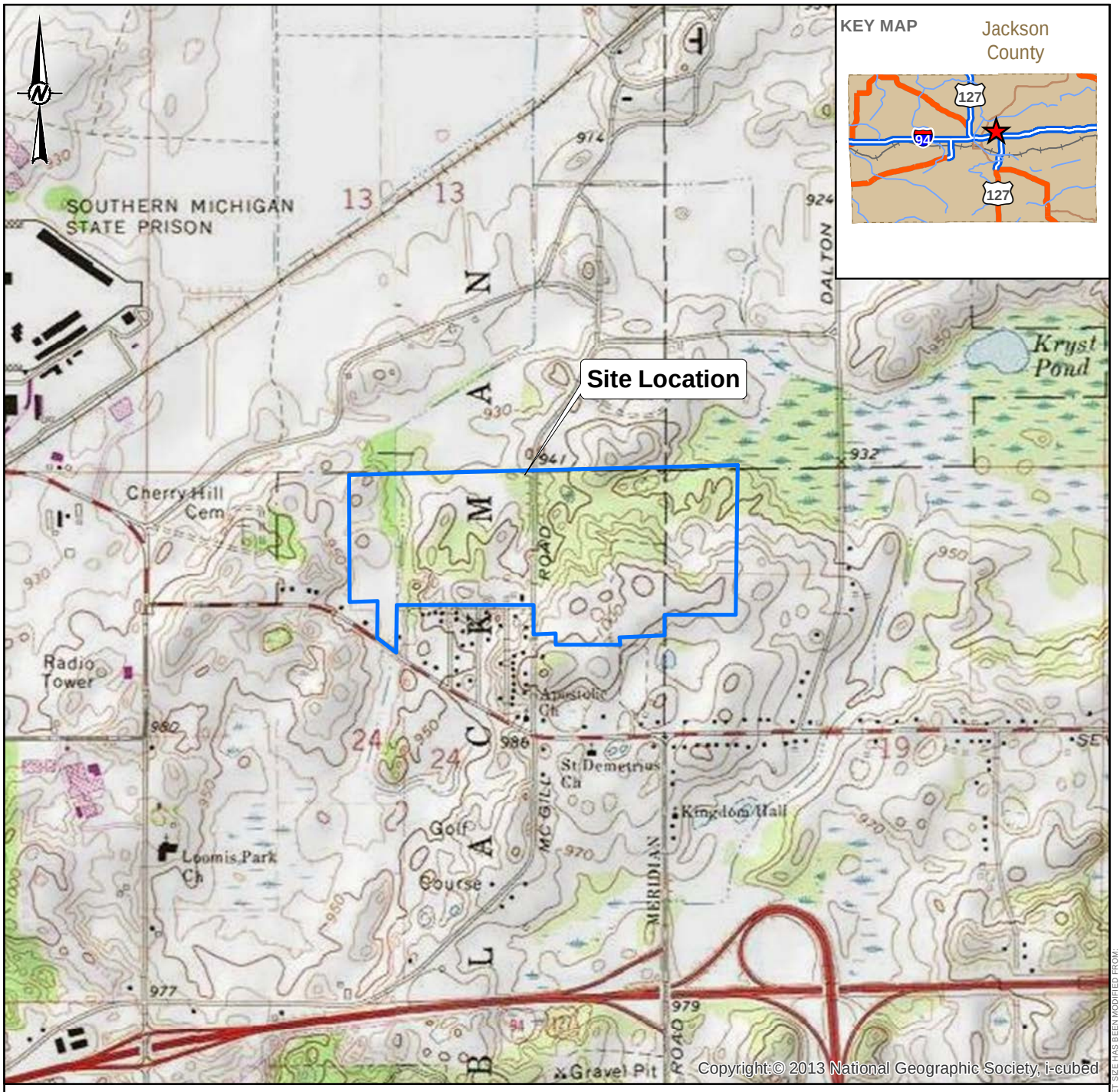
NTH 2005. Hydrogeologic Investigation Phase V Expansion Area, McGill Road Landfill, Jackson, Michigan. Prepared by NTH Consultants, Ltd., March 2004, Revised March 2005. (Attached as Appendix A)

WSP 2024. Hydrogeologic Monitoring Plan, McGill Road Landfill Facility ID No. 444391, WSP USA, Inc., December 2024.

CTI 2024a. Stormwater Management System Design, McGill Road Landfill, Phase VI, CTI and Associates, Inc., December 2024.

CTI 2024b. Engineering Report, Phase VI Expansion Permit Application, McGill Road Landfill, CTI and Associates, Inc., December 2024.

Figures



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Miles



Michigan

CLIENT
WASTE MANAGEMENT
MCGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
HYDROGEOLOGIC INVESTIGATION REPORT

TITLE
SITE LOCATION MAP

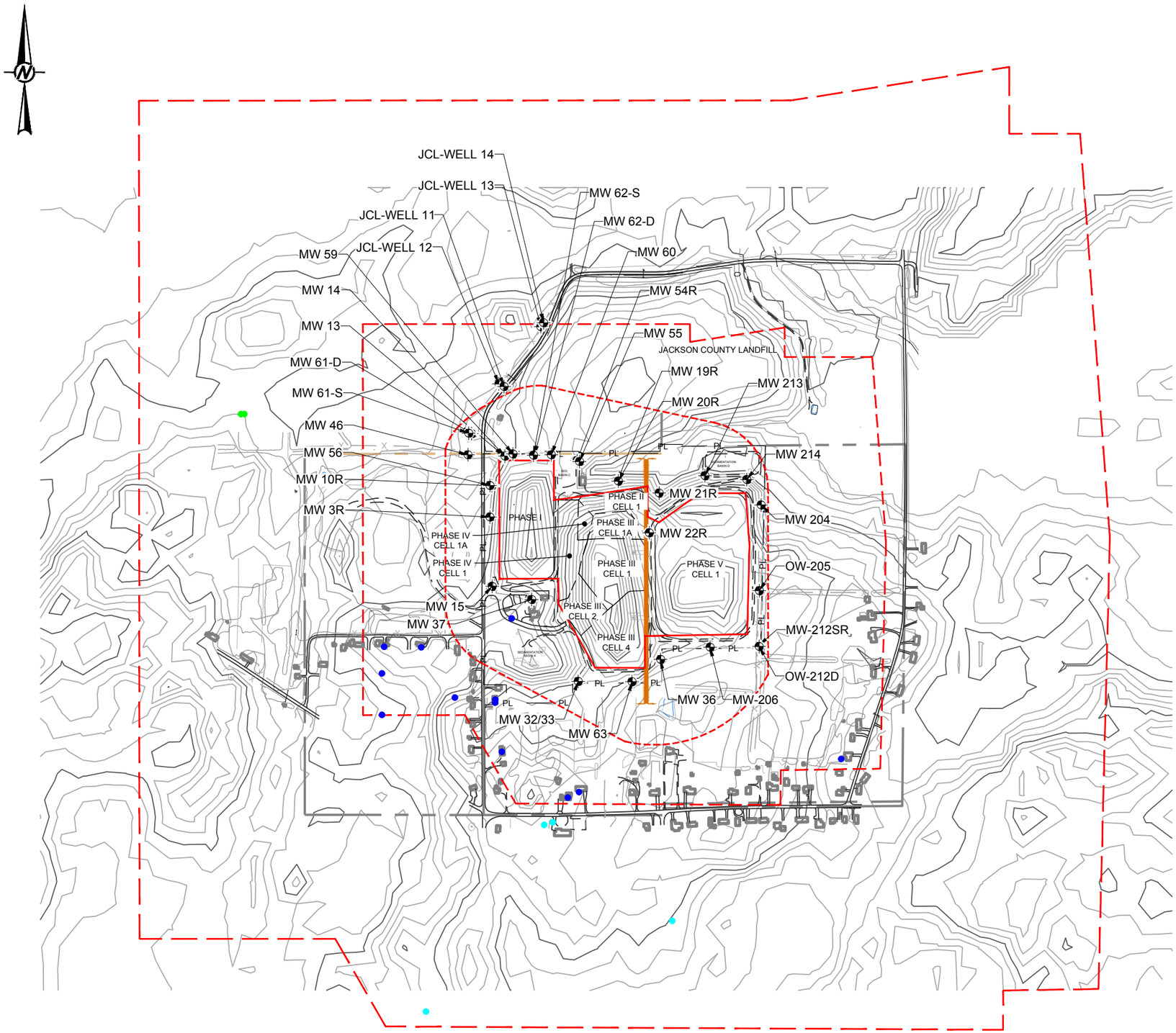
CONSULTANT

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DESIGN	RBR
REVIEW	RBR
APPROVED	dlp

PROJECT	CONTROL	Rev.	FIGURE
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LEGEND

- PL — PROPERTY BOUNDARY
- SOLID WASTE BOUNDARY
- OVERALL SOLID WASTE BOUNDARY
- OVERALL SOLID WASTE BOUNDARY (800FT ISOLATION DISTANCE)
- OVERALL SOLID WASTE BOUNDARY (1000FT PROJECTION)
- OVERALL SOLID WASTE BOUNDARY (2640FT PROJECTION)
- CELL BOUNDARY
- MW XXX — MONITORING WELL LOCATION
- TYPE I WELLS
- TYPE II WELLS
- TYPE III WELLS

REFERENCE

BASE MAP FEATURES AND WELL LOCATIONS PROVIDED BY CTI; DATED JANUARY, 2014.

CLIENT
WASTE MANAGEMENT
McGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
HYDROGEOLOGIC INVESTIGATION REPORT

TITLE
WATER SUPPLY WELL LOCATION MAP

CONSULTANT

YYYY-MM-DD	2024-12-10
PREPARED	CAG
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APPROVED	

PROJECT No.	CONTROL	Rev.	FIGURE
31404861B	31404861BB009.dwg	A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\corp.pbwan.net\US\Central\Data\USDET100\CAD\Projects\31x-Projects\31404861A-McGill Road LF\PRODUCTION\C-2024 GW MONITORING\ | File Name: 31404861BB009.dwg

MW 61-D
928.00
MW 61-S
928.04
MW 46
928.01
MW 13
928.45
MW 14
928.46
MW 59
928.66
MW 62-S
928.70
MW 62-D
929.30*
MW 60
928.45
MW 54R
930.28
MW 55
929.08*
MW 19R
939.20
MW 20R
939.10
MW 10R
929.06
MW 56
929.40
MW 3R
931.30
MW 15
939.40
MW 37
947.71
MW 21R
939.60
MW 22R
940.80
MW 213
935.01
MW 214
932.92
MW 204
930.17
MW 212SR
949.20
OW-212D
948.02
OW-205
948.20
MW-206
947.62
MW 36
950.00
MW 32/33
949.90
MW 63
950.01

SED. BASIN C
SEDIMENTATION BASIN D
SEDIMENTATION BASIN A
SUMP # 2
SUMP #1
SUMP #3
SUMP #4

PHASE I
PHASE II CELL 1
PHASE III CELL 1A
PHASE IV CELL 1A
PHASE IV CELL 1
PHASE III CELL 1
PHASE III CELL 2
PHASE III CELL 4
PHASE V CELL 1

UNMONITORABLE
MONITORABLE

A: 0.03 FT/DAY
B: 0.04 FT/DAY

931
933
935
937
939
941
943
945
947
949

LEGEND

PL	PROPERTY BOUNDARY
	SOLID WASTE BOUNDARY
	CELL BOUNDARY
MW XXX XXX.XX	MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
XXX	GROUNDWATER ELEVATION CONTOUR
MW 214	GROUNDWATER MONITORING WELLS SCREENED IN GROUNDWATER AQUIFER
MW 63	GROUNDWATER MONITORING WELLS SCREENED IN PERCHED ZONE
MW 55	ASSESSMENT MONITORING WELL

FLOW RATE: A: 0.03 FT/DAY
B: 0.04 FT/DAY

NOTES

1. MW-55 NOT USED TO GENERATE GROUNDWATER CONTOURS DUE TO ANOMALOUS ELEVATION DATA.
2. MW-62-D IS A DEEP WATER WELL NOT USED TO GENERATE GROUNDWATER CONTOURS.

REFERENCE

BASE MAP FEATURES AND WELL LOCATIONS PROVIDED BY CTI; DATED JANUARY, 2014.

0 100 200
SCALE FEET

CLIENT
WASTE MANAGEMENT
McGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
HYDROGEOLOGIC INVESTIGATION
REPORT

TITLE
GROUNDWATER ELEVATIONS CONTOUR MAP
1ST QUARTER 2024

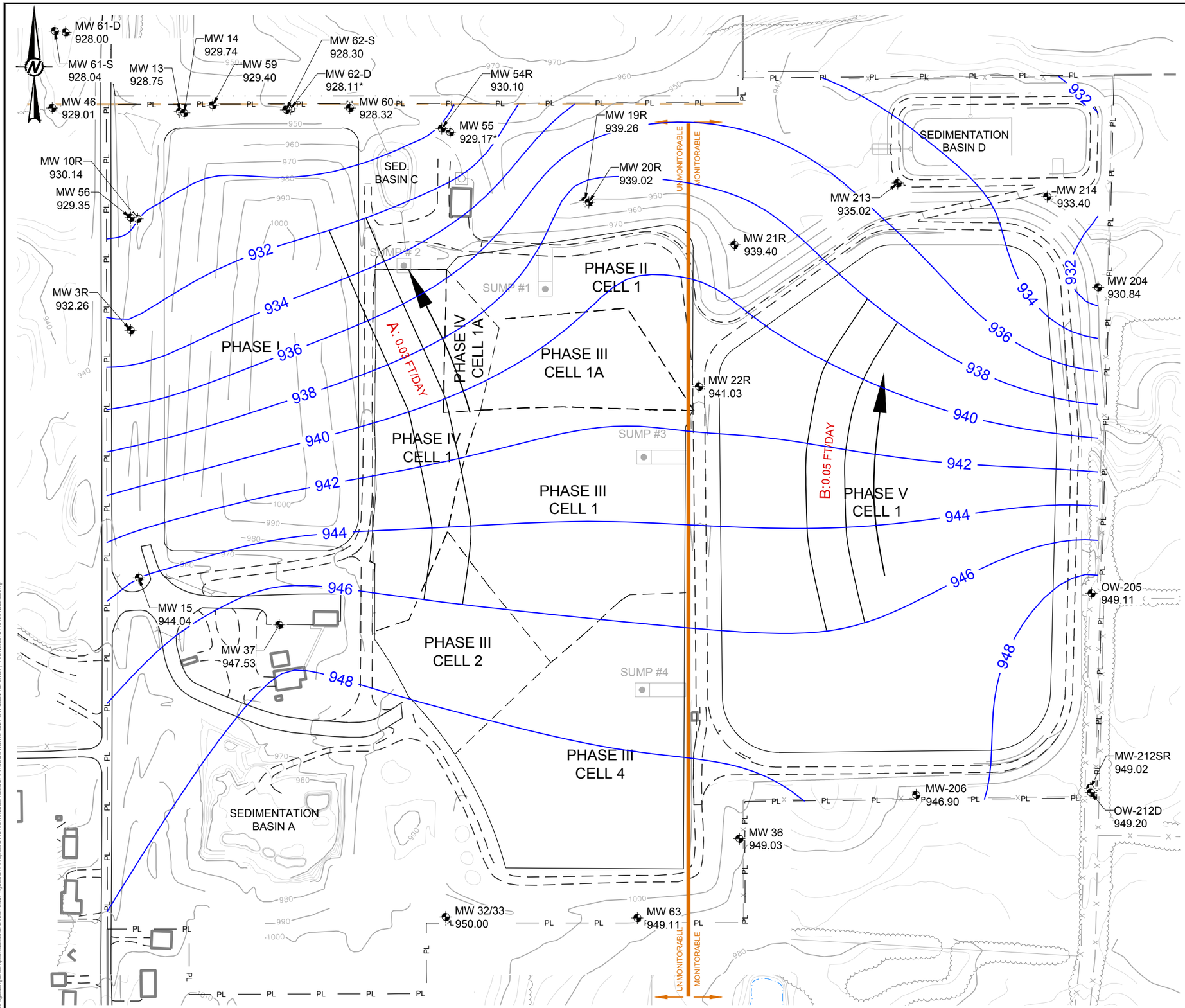
CONSULTANT
wsp

YYYY-MM-DD	2024-03-20
PREPARED	CAG
DESIGN	RR
REVIEW	RR
APPROVED	MLS

PROJECT No.	CONTROL	Rev.	FIGURE
31404861B	31404861BB004.dwg	A	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\golder.gds\complexdata\office\Detroit\Cad\Projects\31x-Projects\31404861A-McGill Road LF\PRODUCT\ONIC-2024 GW MONITORING\ | File Name: 31404861BB004.dwg



LEGEND

PL	PROPERTY BOUNDARY
	SOLID WASTE BOUNDARY
	CELL BOUNDARY
MW XXX XXX.XX	MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
XXX	GROUNDWATER ELEVATION CONTOUR
MW 214	GROUNDWATER MONITORING WELLS SCREENED IN GROUNDWATER AQUIFER
MW 63	GROUNDWATER MONITORING WELLS SCREENED IN PERCHED ZONE
MW 55	ASSESSMENT MONITORING WELL

FLOW RATE: A: 0.03 FT/DAY
B: 0.05 FT/DAY

NOTES

1. MW-55 NOT USED TO GENERATE GROUNDWATER CONTOURS DUE TO ANOMALOUS ELEVATION DATA.
2. MW-62-D IS A DEEP WATER WELL NOT USED TO GENERATE GROUNDWATER CONTOURS.

REFERENCE

BASE MAP FEATURES AND WELL LOCATIONS PROVIDED BY CTI; DATED JANUARY, 2014.

0 100 200
SCALE FEET

CLIENT
WASTE MANAGEMENT
McGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
HYDROGEOLOGIC INVESTIGATION
REPORT

TITLE
GROUNDWATER ELEVATIONS CONTOUR MAP
2ND QUARTER 2024

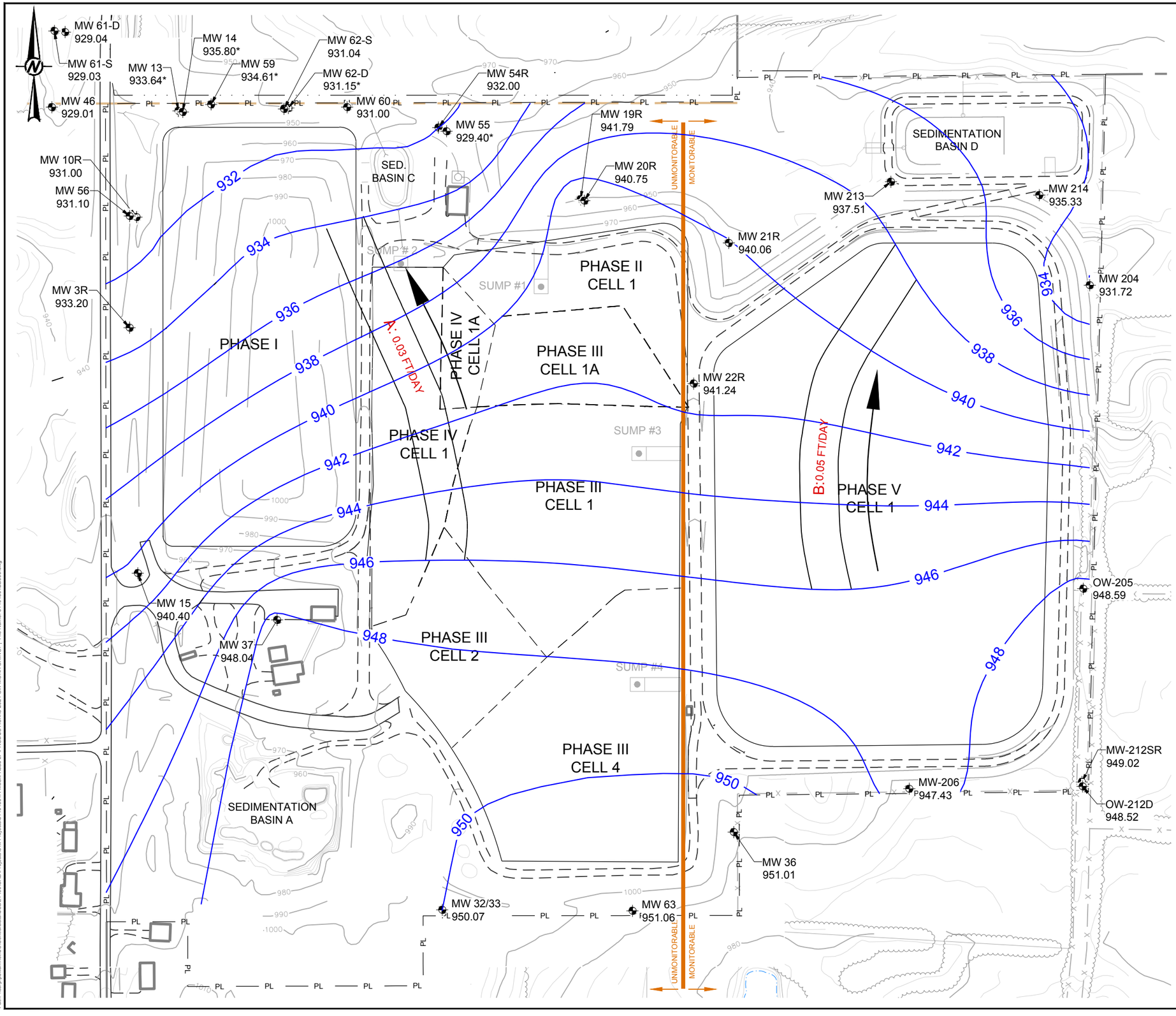
CONSULTANT

YYYY-MM-DD	2024-06-07
PREPARED	CAG
DESIGN	RR
REVIEW	
APPROVED	

PROJECT No.	CONTROL	Rev.	FIGURE
31404861B	31404861BB005.dwg	A	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\golder.gds\complexdata\office\Detroit\CadPrjojects\31x-Projects\31404861A-McGill Road LF\PRODUCTION\C-2024 GW MONITORING\ | File Name: 31404861BB005.dwg



LEGEND

PL	PROPERTY BOUNDARY
	SOLID WASTE BOUNDARY
	CELL BOUNDARY
MW XXX XXX.XX	MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
XXX	GROUNDWATER ELEVATION CONTOUR
MW 214	GROUNDWATER MONITORING WELLS SCREENED IN GROUNDWATER AQUIFER
MW 63	GROUNDWATER MONITORING WELLS SCREENED IN PERCHED ZONE
MW 55	ASSESSMENT MONITORING WELL

FLOW RATE: A: 0.03 FT/DAY
B: 0.05 FT/DAY

NOTES

1. MW-55, MW-13, MW-14, and MW-59 NOT USED TO GENERATE GROUNDWATER CONTOURS DUE TO ANOMALOUS ELEVATION DATA.

2. MW-62-D IS A DEEP WATER WELL NOT USED TO GENERATE GROUNDWATER CONTOURS.

REFERENCE

BASE MAP FEATURES AND WELL LOCATIONS PROVIDED BY CTI; DATED JANUARY, 2014.

0 100 200
SCALE FEET

CLIENT
WASTE MANAGEMENT
McGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
HYDROGEOLOGIC INVESTIGATION
REPORT

TITLE
GROUNDWATER ELEVATIONS CONTOUR MAP
3RD QUARTER 2024

CONSULTANT

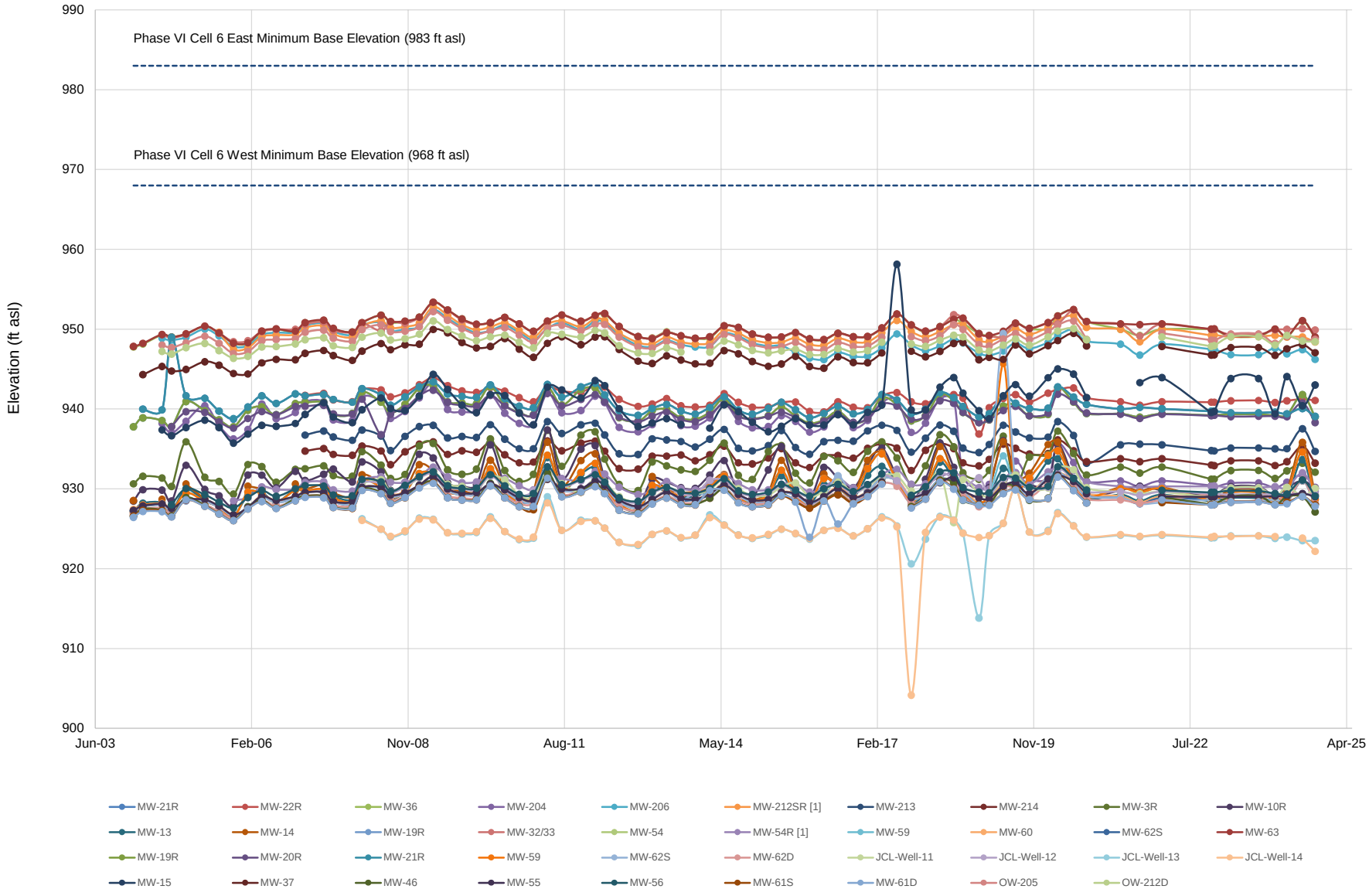
YYYY-MM-DD	2024-08-14
PREPARED	CAG
DESIGN	RR
REVIEW	
APPROVED	

PROJECT No.	CONTROL	Rev.	FIGURE
31404861B	31404861BB006.dwg	A	5

Path: \\corp.pbwan.net\US\Central\Data\USDET\001CAD\Projects\31x-Projects\31404861A-McGill Road LF\PRODUCTION\C-2024 GW MONITORING\ | File Name: 31404861BB006.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

FIGURE 6
2004 to 2024 Groundwater Hydrograph
McGill Road Landfill, Jackson, Michigan



Tables

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	2/1/1997	6/1/1997	9/15/1997	12/8/1997	3/9/1998	6/23/1998	9/14/1998	12/14/1998	3/15/1999	6/7/1999	8/30/1999	12/6/1999	2/21/2000	5/8/2000	8/10/2000	10/25/2000	1/19/2001	4/1/2001
MW-21R	--	943.55	942.10	941.57	944.39	943.39	941.94	941.29	941.96	941.87	940.50	939.78	939.42	941.00	941.77	941.39	941.34	--
MW-22R	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-36	951.33	952.71	951.89	951.36	952.04	953.54	952.55	951.53	951.05	951.01	950.33	949.40	949.07	949.31	950.29	950.45	950.45	951.60
MW-204	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-206	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-212SR [1]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-213	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-214	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3R	--	933.52	931.28	931.40	935.32	--	--	930.42	932.58	932.24	930.62	929.66	929.71	931.97	--	931.50	931.45	--
MW-10R	931.62	931.99	930.88	930.58	936.14	932.00	930.43	929.66	930.97	930.93	929.45	928.45	928.47	930.88	931.40	930.34	931.31	933.65
MW-13	--	929.88	929.48	929.12	931.64	930.73	929.34	928.59	929.38		928.35	927.47	927.51	929.60	930.11	929.21	929.84	930.72
MW-14	--	930.20	929.84	929.42	931.90	931.06	929.61	928.84	929.66		928.58	928.44				929.58	930.11	930.59
MW-19R	942.12	942.15	936.38	940.88	943.02	941.81	940.87	940.27	940.90	940.51	939.41	938.97	938.55	940.21	940.34	939.79	940.04	941.82
MW-32/33	--	952.68	951.86	951.17	951.99	953.50	952.49	951.42	951.00	950.96	950.28	949.34	949.01	949.31	950.31	950.45	950.46	951.48
MW-54R [1]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-59	--	--	929.11	928.85	930.97	930.70	929.18	928.45	929.25	929.65	928.43	927.54	927.58	929.36	929.71	929.28	929.36	930.81
MW-60	--	--	929.34	929.12	930.82	930.94	929.56	928.76	929.48	929.91	928.78	925.84	927.84	929.03	929.74	929.30	929.59	930.69
MW-62S	--	--	--	--	--	--	--	--	--	--	--	927.74	927.66	928.91	929.62	929.09	929.62	930.52
MW-63	--	--	--	--	--	--	--	--	--	--	--	949.55	949.09	949.32	950.35	950.46	950.47	951.40
MW-19R	942.12	942.15	936.38	940.88	943.02	941.81	940.87	940.27	940.90	940.51	939.41	938.97	938.55	940.21	940.34	939.79	940.04	941.82
MW-20R	941.37	941.88	936.52	940.48	942.42	941.68	940.72	940.04	940.52	940.33	939.31	938.79	938.33	939.43	940.05	939.48	939.58	--
MW-21R		943.55	942.10	941.57	944.39	943.39	941.94	941.29	941.96	941.87	940.50	939.78	939.42	941.00	941.77	941.39	941.34	--
MW-59	--	--	929.11	928.85	930.97	930.70	929.18	928.45	929.25	929.65	928.43	927.54	927.58	929.36	929.71	929.28	929.36	930.81
MW-62S	--	--	--	--	--	--	--	--	--	--	--	927.74	927.66	928.91	929.62	929.09	929.62	930.52
MW-62D	--	--	--	--	--	--	--	--	--	--	--	927.39	927.44	928.62	929.21	928.82	929.18	928.41
JCL-Well-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15	--	941.47	939.93	938.85	940.77	942.73	940.84	938.79	938.84	939.85	938.86	936.72	936.28	937.11	939.76	--	939.01	--
MW-37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-46	--	929.96	928.43	928.36	930.57	929.88	928.40	927.97	928.82	929.04	927.65	927.10	927.08	928.64	929.00	928.54	928.94	930.58
MW-55	--	930.71	929.36	929.16	930.73	930.88	929.58	930.50	929.57	929.91	928.82	928.00	927.86	928.98	929.67	929.28	929.79	930.64
MW-56	--	--	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
MW-61S	--	--	--	--	--	--	--	--	--	--	927.66	927.04	927.01	928.43	928.92	928.44	928.79	930.39
MW-61D	--	--	--	--	--	--	--	--	--	--	927.66	927.04	927.02	928.43	928.91	928.43	928.81	930.38
OW-205	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OW-212D	951.27	952.74	951.90	951.37	952.05	953.55	952.72	951.48	951.04	951.01	950.33	949.39	949.09	949.34	949.33	949.24	950.49	--

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	7/1/2001	10/1/2001	1/1/2002	5/1/2002	8/1/2002	11/1/2002	3/1/2003	5/1/2003	9/1/2003	10/1/2003	2/1/2004	4/1/2004	8/1/2004	10/1/2004	1/1/2005	5/1/2005	8/1/2005
MW-21R	943.13	941.54	941.45	941.60	940.24	939.77	939.67	941.72	938.61	--	--	939.98	939.89	948.98	941.65	941.33	939.73
MW-22R	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-36	951.86	951.03	950.58	951.15	951.07	949.90	948.85	948.95	948.24	947.85	947.77	948.12	949.28	949.04	949.36	950.34	949.49
MW-204	--	--	--	--	--	--	--	--	936.75	--	--	--	938.20	937.02	938.45	940.42	937.91
MW-206	--	--	--	--	--	--	--	--	947.94	--	--	--	948.85	948.62	948.98	950.00	949.14
MW-212SR [1]	--	--	--	--	--	--	--	--	947.70	--	--	--	Note 4	Note 4	Note 4	Note 4	949.60
MW-213	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-214	--	--	--	--	--	--	--	--	947.70	--	--	--	--	--	--	--	--
MW-3R	929.46	928.42	927.24	926.54	925.88	924.44	923.60	927.18	928.62	927.72	930.62	931.56	931.35	930.30	935.89	931.44	930.92
MW-10R	933.03	933.30	931.54	933.72	929.78	926.48	927.44	930.83	927.76	927.84	928.47	929.87	929.83	928.49	932.94	929.91	929.12
MW-13	930.27	929.96		931.24	928.48	926.72	926.25	928.76	926.47	926.73	927.25	928.19	928.28	927.21	929.90	928.50	927.80
MW-14	929.76	930.70	931.07	930.62	928.98	Note 3	Note 4	929.50	Note 4	Note 4	928.52	Note 3	928.68	Note 3	930.60	928.72	Note 3
MW-19R	941.01	940.14	940.28	942.18	939.87	938.97	938.51	940.29	937.56	Note 3	937.76	938.89	938.55	937.81	940.93	939.78	938.63
MW-32/33	951.84	955.54	950.60	951.94	951.03	949.89	948.68	948.88	Note 3	Note 4	Note 3	Note 3	949.31	948.94	949.34	950.39	949.47
MW-54R [1]	--	--	--	--	--	--	--	--	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3
MW-59	928.99	928.71	929.81	931.11	928.44	926.75	926.18	928.48	926.41	926.61	927.05	927.96	928.05	927.21	929.47	928.43	927.71
MW-60	930.38	929.15	929.48	930.59	928.83	927.23	926.67	927.32	926.64	926.62	927.42	927.95	928.18	927.63	928.60	928.62	927.87
MW-62S	929.62	928.94	929.45	930.72	928.50	926.91	926.34	927.24	926.44	926.40	927.22	927.79	927.98	927.31	928.51	928.40	927.69
MW-63	951.86	951.02	950.49	952.19	951.09	949.91	948.84	948.94	948.28	947.91	947.83	948.22	949.33	949.00	949.42	950.37	949.53
MW-19R	941.01	940.14	940.28	942.18	939.87	938.97	938.51	940.29	937.56	Note 3	937.76	938.89	938.55	937.81	940.93	939.78	938.63
MW-20R	940.59	940.01	939.76	939.59	939.56	938.67	938.04	931.47	937.56	--	--	--	--	937.77	939.65	939.55	938.39
MW-21R	943.13	941.54	941.45	941.60	940.24	939.77	939.67	941.72	938.61	--	--	939.98	939.89	948.98	941.65	941.33	939.73
MW-59	928.99	928.71	929.81	931.11	928.44	926.75	926.18	928.48	926.41	926.61	927.05	927.96	928.05	927.21	929.47	928.43	927.71
MW-62S	929.62	928.94	929.45	930.72	928.50	926.91	926.34	927.24	926.44	926.40	927.22	927.79	927.98	927.31	928.51	928.40	927.69
MW-62D	929.58	928.60	928.96	930.04	927.75	926.49	926.02	927.09	926.12	926.21	926.86	927.49	927.57	926.86	928.56	928.03	927.14
JCL-Well-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
JCL-Well-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15	941.41	939.93	939.47	940.09	940.04	937.80	936.97	936.40	935.74	--	--	--	937.37	936.64	937.66	938.60	937.66
MW-37			946.93	946.59	945.60	946.08	944.67	944.93	--	--	--	944.30	945.33	944.75	944.94	945.92	945.48
MW-46	930.11	928.60	928.76	930.86	927.37	926.02	925.78	927.86	925.71	926.05	926.59	927.48	927.33	926.60	928.90	927.92	926.89
MW-55	930.23	929.16	929.29	930.94	928.68	927.26	926.70	927.99	926.74	926.66	927.29	927.86	928.10	927.53	928.58	928.64	927.84
MW-56	Note 1	Note 1	Note 1	--	--	--	--	--	--	--	--	--	--	928.00	930.03	929.27	928.32
MW-61S	929.96	928.19	928.61	930.70	927.31	925.94	925.64	927.63	925.64	925.89	926.58	927.31	927.26	926.50	928.60	927.82	926.85
MW-61D	929.83	928.48	928.77	930.30	927.28	925.91	925.65	927.60	925.63	925.88	926.43	927.16	927.14	926.47	928.62	927.79	926.83
OW-205	--	--	--	--	--	--	--	--	946.91	--	--	--	948.01	947.70	948.29	949.11	948.23
OW-212D	--	--	--	--	--	--	--	--	946.26	--	--	--	947.20	946.88	947.67	948.21	947.31

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	11/1/2005	2/1/2006	5/1/2006	8/1/2006	12/1/2006	2/1/2007	6/1/2007	8/1/2007	12/1/2007	2/1/2008	6/1/2008	8/1/2008	11/1/2008	2/1/2009	5/1/2009	8/1/2009	11/1/2009
MW-21R	938.71	940.24	941.64	940.69	941.88	941.66	941.83	941.19	940.85	942.54	941.77	940.47	941.51	942.80	943.40	941.86	941.59
MW-22R	--	--	--	--	--	941.70	941.96	941.13	940.90	942.45	942.40	941.52	942.03	943.05	943.91	942.93	942.27
MW-36	948.22	948.22	949.62	950.00	949.64	950.77	951.05	950.03	949.63	950.78	951.74	950.86	950.94	951.51	953.34	952.38	951.27
MW-204	936.24	937.41	940.64	938.76	939.55	940.92	940.90	938.63	938.53	941.52	940.94	938.81	939.69	941.40	943.17	939.92	939.64
MW-206	947.83	947.93	949.27	949.56	949.58	950.45	950.74	949.72	949.24	950.50	950.87	949.77	949.98	950.33	952.36	951.34	950.27
MW-212SR [1]	947.47	947.65	949.05	949.25	949.32	950.18	950.43	949.37	948.97	950.40	951.05	950.17	950.29	950.77	952.77	951.72	950.57
MW-213	--	--	--	--	--	936.73	937.23	936.49	936.08	937.35	936.61	934.78	936.57	937.78	937.95	936.37	936.56
MW-214	--	--	--	--	--	934.73	935.04	934.31	934.19	935.36	934.74	933.02	934.63	935.58	935.88	934.31	934.76
MW-3R	929.32	933.03	932.79	930.83	932.45	932.50	932.87	931.65	931.57	934.64	932.96	931.29	931.81	935.38	935.69	932.38	931.83
MW-10R	927.85	931.73	931.70	930.12	932.20	931.03	931.82	932.46	930.85	933.37	932.11	929.82	930.80	934.33	933.87	930.77	930.35
MW-13	926.69	929.15	929.52	928.37	929.90	929.67	930.00	929.09	928.65	931.07	930.36	928.78	929.59	931.88	931.80	929.69	929.34
MW-14	Note 3	930.33	930.00	Note 5	930.60	929.98	930.54	929.52	929.02	931.76	930.62	929.07	929.91	933.02	932.26	930.06	929.75
MW-19R	937.76	939.84	940.28	939.28	940.68	940.83	940.82	939.31	939.44	942.12	940.85	939.49	940.59	942.59	942.92	940.91	940.75
MW-32/33	948.43	948.54	949.69	949.97	949.98	950.61	950.89	949.86	949.62	950.74	949.78	950.93	950.73	951.47	953.37	952.36	951.14
MW-54R [1]	928.51	928.92	930.24	929.92	929.96	930.81	930.87	929.87	929.72	931.14	931.50	930.83	930.80	931.49	932.73	931.50	930.78
MW-59	926.42	929.58	929.36	928.31	929.84	929.76	929.97	928.87	928.45	931.08	930.20	928.88	929.59	931.91	931.82	929.68	929.33
MW-60	926.76	927.70	929.13	928.55	929.03	929.66	929.69	928.58	928.31	930.19	930.18	929.31	929.54	930.44	931.61	930.02	929.43
MW-62S	926.61	927.72	928.92	928.30	928.78	929.52	929.56	928.39	928.11	930.11	930.09	929.02	929.37	930.39	931.47	929.77	929.23
MW-63	948.24	948.29	949.75	950.03	949.73	950.82	951.12	950.09	949.63	950.82	951.74	950.95	951.01	951.51	953.37	952.40	951.26
MW-19R	937.76	939.84	940.28	939.28	940.68	940.83	940.82	939.31	939.44	942.12	940.85	939.49	940.59	942.59	942.92	940.91	940.75
MW-20R	937.59	938.81	939.67	939.26	940.29	940.34	940.45	939.37	939.35	941.22	936.77	939.33	940.07	941.64	942.35	940.82	940.47
MW-21R	938.79	940.24	941.64	940.69	941.88	941.66	941.83	941.19	940.85	942.54	941.77	940.47	941.51	942.80	943.40	941.86	941.59
MW-59	926.42	929.58	929.36	928.31	929.84	929.76	929.97	928.87	928.45	931.08	930.20	928.88	929.59	931.91	931.82	929.68	929.33
MW-62S	926.61	927.72	928.92	928.30	928.78	929.52	929.56	928.39	928.11	930.11	930.09	929.02	929.37	930.39	931.47	929.77	929.23
MW-62D	926.34	927.60	928.59	927.84	928.54	929.13	929.10	927.96	927.94	929.83	929.56	928.47	929.08	930.19	930.94	929.16	928.86
JCL-Well-11	--	--	--	--	--	--	--	--	--	930.69	931.14	929.73	930.22	931.34	932.12	930.59	930.29
JCL-Well-12	--	--	--	--	--	--	--	--	--	930.97	930.65	929.52	930.24	931.38	931.88	930.21	929.99
JCL-Well-13	--	--	--	--	--	--	--	--	--	926.22	924.93	923.97	924.61	926.32	926.17	924.48	924.32
JCL-Well-14	--	--	--	--	--	--	--	--	--	926.05	924.96	924.05	924.72	926.20	926.11	924.51	924.43
MW-15	935.73	936.85	937.95	937.82	938.18	939.31	940.78	938.99	938.27	939.90	941.38	940.07	939.78	941.61	944.35	942.44	940.48
MW-37	944.43	944.38	945.78	946.21	946.16	946.97	947.33	946.70	946.08	947.24	948.18	947.43	948.03	948.11	949.95	949.52	948.32
MW-46	926.09	927.75	928.61	927.59	928.75	929.09	929.06	927.74	927.71	930.01	929.53	928.19	929.01	930.39	930.90	928.90	928.64
MW-55	926.74	927.63	929.07	928.54	929.08	929.54	929.55	928.42	928.40	930.17	930.19	929.21	929.51	930.46	931.49	929.98	929.47
MW-56	927.58	928.90	929.80	929.06	929.99	930.40	930.33	929.24	929.13	931.17	930.86	929.68	930.43	931.51	932.12	930.38	930.06
MW-61S	926.02	927.48	928.43	927.57	928.50	928.97	928.93	927.67	927.54	929.81	929.40	928.21	928.88	930.16	930.76	928.90	928.58
MW-61D	926.01	927.48	928.40	927.55	928.51	928.92	928.88	927.67	927.59	929.79	929.38	928.17	928.90	930.10	930.69	928.87	928.58
OW-205	946.94	947.18	948.54	948.70	948.80	949.60	949.87	948.85	948.49	949.93	950.55	949.67	949.73	950.30	952.20	951.12	950.08
OW-212D	946.35	946.57	947.76	947.82	948.15	948.68	948.91	947.92	947.71	949.00	949.51	948.63	948.80	949.36	951.03	949.93	949.14

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	2/1/2010	5/1/2010	8/1/2010	11/1/2010	2/1/2011	5/1/2011	8/1/2011	12/1/2011	3/1/2012	5/1/2012	8/1/2012	12/1/2012	3/1/2013	6/1/2013	9/1/2019	12/1/2013	3/4/2014
MW-21R	941.46	943.01	941.27	940.34	940.14	943.07	941.47	942.75	943.21	941.76	939.79	939.19	940.06	940.58	939.74	939.36	940.20
MW-22R	942.09	942.68	942.22	941.42	940.89	942.73	942.24	942.12	942.94	942.74	941.21	940.31	940.61	941.30	940.39	940.24	940.47
MW-36	950.59	950.78	951.47	950.62	949.72	950.96	951.75	950.98	951.68	951.84	950.33	949.06	948.89	949.65	949.13	948.84	948.88
MW-204	939.79	941.70	939.48	938.19	938.03	941.96	939.54	939.81	941.60	940.80	937.68	937.13	938.05	939.84	937.90	937.85	938.89
MW-206	949.56	949.80	950.47	949.58	948.67	950.09	950.79	949.96	951.00	950.84	949.26	947.97	947.80	948.59	948.06	947.77	947.81
MW-212SR [1]	949.92	950.28	950.78	949.85	948.98	950.61	951.02	950.31	951.31	951.07	949.53	948.32	948.15	949.00	948.40	948.14	948.29
MW-213	936.44	938.02	936.22	935.02	935.02	938.42	936.92	938.01	938.21	936.74	934.40	934.30	936.26	936.11	935.93	935.24	936.22
MW-214	934.56	935.74	934.25	933.25	933.35	936.00	934.76	935.73	935.99	934.71	932.53	932.47	934.08	934.10	934.23	933.51	934.25
MW-3R	932.47	936.24	932.30	930.92	931.83	937.33	932.82	936.72	937.14	933.72	930.54	929.78	933.37	932.87	932.37	932.18	933.56
MW-10R	930.50	935.51	930.48	929.01	929.05	937.37	931.23	934.97	935.42	931.34	928.61	927.87	931.22	930.84	930.14	930.06	931.73
MW-13	929.41	932.27	929.59	928.34	928.92	933.92	929.89	931.86	932.67	930.12	927.92	927.30	930.16	929.56	929.01	929.04	929.93
MW-14	929.76	933.59	929.91	--	929.48	935.84	930.38	933.53	934.40	930.48	--	--	931.54	929.97	929.54	929.70	930.68
MW-19R	940.65	942.79	940.51	939.57	939.27	942.63	940.49	942.43	942.61	941.09	938.91	938.48	939.79	939.96	938.86	938.70	939.61
MW-32/33	950.58	950.82	951.47	950.65	949.69	950.99	951.76	950.96	951.72	951.94	950.34	949.06	948.88	949.60	949.15	948.84	949.02
MW-54R [1]	930.86	931.58	931.33	930.39	929.87	931.89	931.29	931.02	932.17	931.85	930.22	929.28	929.88	930.91	930.04	929.88	930.52
MW-59	929.48	932.50	929.66	928.38	929.40	934.21	929.94	932.04	933.19	930.24	928.07	927.40	930.42	929.67	929.17	929.46	930.19
MW-60	929.48	930.62	929.91	928.82	928.49	931.21	929.96	929.96	931.15	930.51	928.59	927.75	928.73	929.72	928.73	928.75	929.33
MW-62S	929.33	930.61	929.68	928.57	928.39	931.33	929.82	929.91	931.12	930.31	928.32	927.54	928.69	929.61	928.59	928.65	929.22
MW-63	950.63	950.81	951.47	950.65	949.73	950.99	951.78	951.01	951.72	951.96	950.33	949.09	948.82	949.55	949.16	948.85	949.06
MW-19R	940.65	942.79	940.51	939.57	939.27	942.63	940.49	942.43	942.61	941.09	938.91	938.48	939.79	939.96	938.86	938.70	939.61
MW-20R	940.36	941.73	940.38	939.47	939.22	941.92	940.37	941.18	941.80	940.89	938.98	938.41	939.10	939.62	938.68	938.42	939.27
MW-21R	941.46	943.01	941.27	940.34	940.14	943.07	941.47	942.75	943.21	941.76	939.79	939.19	940.06	940.58	939.74	939.36	940.20
MW-59	929.48	932.50	929.66	928.38	929.40	934.21	929.94	932.04	933.19	930.24	928.07	927.40	930.42	929.67	929.17	929.46	930.19
MW-62S	929.33	930.61	929.68	928.57	928.39	931.33	929.82	929.91	931.12	930.31	928.32	927.54	928.69	929.61	928.59	928.46	929.22
MW-62D	928.85	930.38	929.15	928.15	928.25	931.43	929.28	929.78	930.59	929.72	927.77	927.23	928.30	929.09	928.29	928.25	928.80
JCL-Well-11	929.93	931.55	931.12	929.22	928.97	932.12	930.64	929.57	931.39	930.89	929.03	928.32	929.40	930.19	929.50	929.37	929.88
JCL-Well-12	929.87	931.58	930.17	929.12	929.77	932.79	930.37	931.07	931.50	930.67	928.72	928.27	929.44	930.08	929.37	929.31	931.07
JCL-Well-13	924.52	926.48	924.63	923.62	923.82	929.02	924.79	926.07	925.99	925.07	923.28	922.92	924.27	924.72	923.83	924.18	926.73
JCL-Well-14	924.61	926.30	924.63	923.71	923.95	928.24	924.79	925.91	926.00	925.07	923.29	923.03	924.30	924.73	923.90	924.21	926.39
MW-15	939.53	941.80	941.68	939.50	938.00	942.73	942.40	941.38	943.55	942.93	940.04	937.79	938.23	938.79	938.04	--	937.60
MW-37	947.66	947.84	948.82	947.51	946.48	948.23	949.04	948.05	949.02	949.04	947.45	945.98	945.69	946.65	946.13	945.65	945.73
MW-46	928.71	930.68	928.91	927.80	927.79	931.97	929.07	929.76	930.69	929.51	927.33	926.97	928.21	928.87	928.09	928.07	928.81
MW-55	929.50	930.57	929.88	928.89	928.59	931.18	929.97	930.02	931.00	930.42	928.60	927.79	928.68	929.56	928.80	928.70	929.37
MW-56	930.08	931.76	930.37	929.31	929.40	932.75	930.51	931.16	931.77	930.84	928.88	928.44	929.58	930.19	929.58	929.45	930.05
MW-61S	928.61	930.36	928.86	927.74	927.36	931.32	929.04	929.58	930.32	929.43	927.35	926.90	928.13	928.84	928.02	927.97	929.75
MW-61D	928.60	930.34	928.85	927.73	927.78	931.33	929.00	929.60	930.28	929.39	927.33	926.88	928.10	928.83	928.01	927.99	929.78
OW-205	949.39	949.77	950.19	949.26	948.41	950.13	950.50	949.81	950.59	950.58	948.99	947.78	947.64	948.44	947.88	--	947.79
OW-212D	948.54	949.04	949.25	948.36	947.65	949.49	949.35	949.01	949.83	949.51	947.93	947.00	946.96	947.66	947.13	--	947.12

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	6/3/2014	9/3/2014	12/1/2014	3/13/2015	6/5/2015	9/3/2015	12/2/2015	3/2/2016	6/1/2016	9/7/2016	12/7/2016	3/8/2017	6/12/2017	9/12/2017	12/12/2017	3/15/2018	6/11/2018
MW-21R	941.51	939.88	939.34	940.09	940.83	939.90	938.91	939.46	940.34	939.39	939.98	941.79	941.12	939.42	939.99	942.03	941.42
MW-22R	941.90	940.82	940.22	940.26	940.80	940.86	939.70	939.63	940.90	940.22	940.16	941.62	942.04	940.89	940.66	941.66	941.79
MW-36	950.43	950.17	949.36	948.96	948.96	949.53	948.75	948.63	949.45	949.05	949.06	950.09	951.85	950.50	949.66	950.30	951.20
MW-204	940.78	938.45	937.63	937.79	939.17	938.43	937.10	937.74	939.57	937.65	938.55	940.82	941.06	937.06	938.21	941.30	941.11
MW-206	949.43	949.13	948.29	947.87	947.92	947.08	946.36	946.19	947.08	946.59	946.61	947.66	949.40	948.02	947.31	947.89	948.75
MW-212SR [1]	949.83	949.48	948.67	948.27	948.36	948.87	948.09	947.97	948.84	948.37	948.42	949.54	951.10	949.70	949.04	949.72	950.57
MW-213	937.44	935.06	934.74	935.42	937.30	935.18	934.34	935.90	936.07	935.96	937.26	937.96	937.32	934.58	936.33	937.99	937.19
MW-214	935.33	933.26	933.11	933.84	935.04	933.25	932.67	934.10	934.17	933.85	935.06	935.61	935.10	932.29	934.83	935.67	935.04
MW-3R	935.72	931.69	931.18	934.67	935.41	931.95	930.73	934.05	933.50	932.05	934.68	935.88	933.86	930.52	932.89	936.76	935.26
MW-10R	933.53	929.56	928.94	932.38	935.30	929.92	928.68	932.68	931.32	930.13	932.94	935.11	931.45	928.53	931.19	935.77	932.68
MW-13	931.25	928.85	928.33	929.16	931.63	929.00	928.04	930.50	930.08	928.97	931.69	932.83	930.82	928.16	929.72	933.31	931.08
MW-14	931.81	929.02	928.59	929.65	933.57	929.36	--	931.85	930.51	929.40	933.57	934.56	931.23	928.48	930.25	935.30	931.63
MW-19R	941.26	939.17	938.81	939.16	940.27	939.10	938.22	938.62	939.71	938.27	938.85	941.40	940.54	938.50	939.16	941.88	941.01
MW-32/33	950.43	950.14	949.34	948.95	949.01	949.53	948.73	948.70	949.45	949.03	949.09	950.12	951.87	950.51	949.76	950.29	951.79
MW-54R [1]	931.69	930.69	929.87	929.88	930.58	930.67	929.59	930.16	931.29	930.11	930.52	931.81	932.43	930.58	930.62	931.49	932.05
MW-59	931.65	928.94	928.49	929.28	932.34	929.14	928.32	931.29	930.23	929.12	932.53	934.40	930.96	928.59	929.90	933.79	931.58
MW-60	930.67	929.30	928.51	928.61	929.60	929.40	928.25	929.06	930.19	928.95	929.71	931.23	931.19	928.99	929.55	931.12	931.04
MW-62S	930.54	929.12	928.32	928.37	929.52	929.16	928.06	928.92	930.02	928.81	929.67	931.32	930.99	928.76	929.36	931.22	930.85
MW-63	950.40	950.23	949.38	948.98	949.04	949.59	948.79	948.68	949.49	949.06	949.08	950.14	951.89	950.53	949.72	950.31	951.22
MW-19R	941.26	939.17	938.81	939.16	940.27	939.10	938.22	938.62	939.71	938.27	938.85	941.40	940.54	938.50	939.16	941.88	941.01
MW-20R	940.57	939.07	938.71	939.08	939.60	938.93	938.02	938.48	939.37	938.31	938.79	940.63	940.35	938.70	939.08	941.03	940.70
MW-21R	941.51	939.88	939.34	940.09	940.83	939.90	938.91	939.46	940.34	939.39	939.93	941.79	941.12	939.42	939.99	942.03	941.42
MW-59	931.65	928.94	928.49	929.28	932.34	929.14	928.32	931.29	930.23	929.12	932.53	934.40	930.96	928.59	929.90	933.79	931.58
MW-62S	930.54	929.12	928.32	928.37	929.52	929.16	928.06	928.92	931.64	928.81	929.67	931.32	930.99	928.76	929.36	931.22	930.85
MW-62D	930.04	928.59	928.06	928.29	929.28	928.65	927.80	928.73	929.46	928.45	929.28	930.69	930.32	928.16	928.94	930.82	930.85
JCL-Well-11	931.20	930.01	929.12	929.23	930.22	930.72	929.03	929.64	930.84	929.58	930.27	931.59	931.63	929.71	930.05	931.99	925.75
JCL-Well-12	931.06	929.59	929.12	929.48	930.40	929.69	929.00	930.12	930.43	929.49	930.37	931.72	931.02	929.02	929.90	931.96	931.24
JCL-Well-13	925.48	924.23	923.77	924.19	924.94	924.39	923.69	924.79	925.11	924.08	924.99	926.48	925.35	920.60	923.70	926.56	926.10
JCL-Well-14	925.44	924.19	923.86	924.29	924.95	924.40	923.77	924.80	925.05	924.11	925.00	926.36	925.25	904.15	924.55	926.45	926.08
MW-15	940.51	939.68	938.33	937.14	937.85	938.79	937.99	937.98	939.28	938.00	939.58	940.49	958.11	939.89	939.89	942.73	943.92
MW-37	947.31	946.91	945.95	945.35	945.64	946.60	945.33	945.11	946.51	945.81	945.80	947.01	--	947.23	946.54	947.20	948.21
MW-46	929.98	928.26	927.78	928.06	929.37	928.38	927.65	928.57	929.31	928.21	929.18	930.86	--	927.79	928.79	931.12	930.72
MW-55	930.46	929.29	928.58	928.67	929.56	929.35	928.32	929.04	930.01	928.93	929.51	930.83	--	928.89	929.43	930.77	931.39
MW-56	931.25	929.74	929.29	929.61	930.55	929.81	929.09	930.01	930.56	929.67	930.53	931.88	--	929.19	930.27	932.13	932.02
MW-61S	929.85	928.26	927.76	927.96	929.10	928.39	927.56	928.46	929.24	928.16	929.06	930.64	--	927.64	928.73	930.93	930.04
MW-61D	929.81	928.23	927.73	928.01	929.16	928.33	923.94	928.48	925.60	928.14	929.03	930.59	--	927.58	928.71	930.85	929.96
OW-205	949.33	948.90	948.08	947.69	947.82	948.33	947.53	947.42	948.30	947.83	947.88	948.98	--	949.06	948.54	949.18	950.58
OW-212D	948.51	948.03	947.34	947.02	947.27	947.48	946.82	946.84	947.56	947.12	947.31	948.36	--	948.14	947.84	948.60	949.22

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	8/9/2018	11/19/2018	1/23/2019	4/23/2019	7/10/2019	10/7/2019	2/4/2020	4/6/2020	7/16/2020	10/7/2020	5/12/2021	9/13/2021	2/1/2022	12/13/2022	1/1/2023	4/17/2023
MW-21R	940.31	939.02	939.42	941.62	940.72	940.07	940.10	942.76	941.49	940.58	940.02	940.21	940.02	939.71	939.72	939.51
MW-22R	941.35	936.86	940.17	941.31	941.79	940.87	941.99	942.43	942.64	941.39	940.91	940.47	940.91	940.84	940.84	941.03
MW-36	950.73	949.43	949.18	949.10	950.70	950.05	950.08	951.65	952.41	950.95	949.98	949.2	949.98	949.98	949.98	949.1
MW-204	931.64	929.88	930.55	930.24	933.46	931.30	931.40	935.63	933.29	930.93	930.99	930.32	930.99	930.39	930.20	930.70
MW-206	948.27	946.98	946.72	947.27	948.25	947.56	948.35	949.23	949.96	948.49	948.11	946.76	948.11	947.47	947.50	946.80
MW-212SR [1]	950.59	948.68	948.46	949.12	950.06	949.33	950.27	951.15	951.68	950.20	949.97	948.43	949.97	949.22	949.26	949.04
MW-213	935.09	934.54	935.54	937.96	937.12	936.37	936.47	938.41	936.68	933.19	935.51	935.58	935.51	934.78	934.74	935.1
MW-214	933.26	932.86	933.69	935.59	935.06	934.37	934.41	936.14	934.77	933.40	933.76	933.4	933.76	932.98	932.90	933.50
MW-3R	932.00	931.20	932.31	936.58	930.47	933.98	934.32	937.21	934.41	931.73	932.73	931.97	932.73	931.21	931.22	932.28
MW-10R	929.51	929.10	930.14	936.05	931.94	930.55	930.63	935.58	931.33	929.06	929.82	930.33	929.82	929.05	929.10	930.28
MW-13	929.19	927.88	929.07	932.56	931.02	930.38	933.47	933.76	930.49	928.71	929.26	928.48	929.26	928.41	928.51	928.86
MW-14	929.36	--	929.66	935.90	931.53	931.96	935.55	935.84	930.63	928.84	930.20	929.71	930.20	928.48	928.50	929.84
MW-19R	939.55	938.31	938.64	940.38	940.52	939.16	939.31	942.69	940.84	939.42	939.40	938.98	939.40	939.20	939.23	939.32
MW-32/33	951.36	949.39	949.15	949.08	950.71	950.05	950.81	950.65	952.42	950.95	950.64	949.15	950.64	949.95	949.96	949.32
MW-54R [1]	931.37	930.15	929.97	931.28	932.04	930.63	932.14	932.65	932.30	930.86	930.30	930.20	930.30	930.30	930.37	930.15
MW-59	929.43	928.16	929.32	934.11	930.12	931.37	934.19	934.77	930.80	928.93	930.04	929.55	930.04	928.50	928.51	929.55
MW-60	929.94	928.19	928.92	930.60	929.90	929.44	931.55	932.07	931.06	929.40	929.06	928.30	929.06	928.91	928.71	928.30
MW-62S	929.65	927.95	928.75	930.03	930.84	929.25	931.54	932.06	930.78	929.10	928.84	928.11	928.84	928.64	928.71	928.30
MW-63	951.39	949.45	949.21	949.72	950.74	950.09	950.82	951.67	952.44	950.95	950.66	950.57	950.66	950.02	950.06	949.16
MW-19R	939.55	938.31	938.64	940.38	940.52	939.16	939.31	942.69	940.84	939.42	939.4	938.98	939.4	939.2	939.23	939.32
MW-20R	939.58	938.30	938.65	939.80	940.33	939.15	939.47	941.85	940.90	939.50	939.34	938.81	939.34	939.15	939.20	939.04
MW-21R	940.31	939.02	939.42	941.62	940.72	940.07	940.10	942.76	941.49	940.58	940.02	940.21	940.02	939.71	939.72	939.51
MW-59	929.43	928.16	929.32	945.71	930.12	931.37	934.19	934.77	930.80	928.93	930.04	929.55	930.04	928.5	928.51	929.55
MW-62S	929.65	927.95	928.75	949.44	930.84	929.25	931.54	932.06	930.78	929.10	928.84	928.11	928.29	928.64	928.71	928.30
MW-62D	929.05	927.74	928.30	930.17	930.07	928.96	930.76	931.54	930.15	928.69	928.60	928.20	928.60	929.37	929.40	928.50
JCL-Well-11	931.15	929.34	929.20	931.03	931.74	930.09	930.12	932.61	932.40	930.13	929.61	929.39	929.61	928.93	929.09	930.10
JCL-Well-12	930.05	931.39	929.30	931.27	931.10	930.10	930.21	932.50	931.17	929.63	929.65	929.17	929.65	929.4	929.37	929.29
JCL-Well-13	924.44	913.81	924.15	925.68	930.02	924.58	924.79	927.04	925.38	923.95	924.18	923.99	924.18	923.84	923.87	924.09
JCL-Well-14	924.44	923.90	924.13	925.68	930.03	924.58	924.66	926.90	925.34	923.99	924.26	924.05	924.26	923.93	924.03	924.03
MW-15	941.99	939.79	938.77	941.63	943.04	941.61	943.91	945.01	944.36	941.43	--	943.30	943.93	939.56	939.70	943.81
MW-37	948.33	946.17	946.48	946.21	948.01	946.92	947.94	948.56	949.47	947.90	--	--	947.82	946.76	946.78	947.7
MW-46	928.57	928.04	928.07	930.33	930.28	928.56	928.85	931.69	929.81	928.25	--	--	928.94	928.05	928.06	929.01
MW-55	929.85	928.85	928.79	930.34	930.76	929.41	931.23	931.74	930.91	929.39	--	--	929.05	928.97	929.01	929.02
MW-56	930.16	929.59	929.49	931.42	931.33	930.19	930.32	932.77	931.30	929.83	--	--	929.82	929.54	929.57	929.76
MW-61S	928.64	927.97	928.00	929.42	929.95	928.69	928.77	931.54	929.82	928.24	--	--	928.29	928	928.04	928.4
MW-61D	928.59	927.94	927.94	929.39	929.85	928.66	928.80	931.46	929.76	928.22	--	--	928.6	927.96	928.01	928.37
OW-205	949.95	948.06	947.89	948.75	949.46	948.70	949.70	950.52	951.01	948.70	--	--	949.5	948.61	948.59	949.4
OW-212D	949.03	947.38	947.23	947.99	948.75	947.99	949.04	949.78	950.08	948.68	--	--	949.01	947.84	947.94	949.05

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 1
Sumary of Historical Groundwater Elevations
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL ID	10/12/2023	1/25/2024	4/10/2024	7/18/2024	10/7/2024
MW-21R	939.52	939.60	939.40	940.06	939.06
MW-22R	941.06	940.80	941.03	941.24	941.07
MW-36	949.10	950.00	949.03	951.01	948.90
MW-204	930.72	930.17	930.84	931.72	930.19
MW-206	946.80	947.62	946.90	947.43	946.20
MW-212SR [1]	949.08	949.20	949.02	949.02	948.38
MW-213	935.11	935.01	935.02	937.51	934.68
MW-214	933.50	932.92	933.40	935.33	933.21
MW-3R	932.30	931.30	932.26	933.20	932.07
MW-10R	930.24	929.06	930.14	931.00	930.05
MW-13	928.83	928.45	928.75	933.64	928.10
MW-14	929.85	928.46	929.74	935.80	929.26
MW-19R	939.33	939.20	939.26	941.79	939.00
MW-32/33	949.35	949.90	950.00	950.07	949.90
MW-54R [1]	930.18	930.28	930.10	932.00	929.69
MW-59	929.50	928.66	929.40	934.61	928.69
MW-60	928.40	928.45	928.32	931.00	928.02
MW-62S	928.41	928.70	928.34	931.04	928.05
MW-63	949.2	950.01	949.11	951.06	949.01
MW-19R	939.33	939.20	939.26	941.79	939.00
MW-20R	939.09	939.10	939.02	940.75	938.30
MW-21R	939.52	939.60	939.40	940.06	939.06
MW-59	929.50	928.66	929.40	934.61	928.69
MW-62S	928.41	928.70	928.34	931.04	928.05
MW-62D	928.57	929.30	928.51	931.15	928.11
JCL-Well-11	930.12	929.02	930.20	929.13	930.05
JCL-Well-12	929.33	929.29	929.30	929.39	929.17
JCL-Well-13	924.09	923.79	923.96	923.50	923.50
JCL-Well-14	924.10	924.01	--	923.81	922.16
MW-15	943.81	939.40	944.04	940.40	943.01
MW-37	947.7	946.71	947.53	948.04	947.04
MW-46	929.09	928.01	929.01	929.01	927.10
MW-55	929.02	929.08	929.17	929.40	929.01
MW-56	929.73	929.40	929.35	931.10	929.10
MW-61S	928.4	928.04	928.30	929.03	928.01
MW-61D	928.37	928.00	928.11	929.04	927.81
OW-205	949.4	948.20	949.11	948.59	948.70
OW-212D	949.05	948.02	949.20	948.52	948.43

NOTES:
[1] Replacement wells MW-54R and MW-212SR were installed in October 2005; groundwater elevations before this date are for MW-54 and OW-212S, respectively.
[2] In accordance with MDEQ agreement, MW-201S and MW-202 were monitored on an interim basis until background was established for MW-213 and MW-214.
[3] Water level below top of pump.
[4] MW-201S, MW-202, and OW-201D were removed and abandoned in September 2010.
[5] MW-29, MW-30, MW-31, MW-34, MW-35, MW-38, MW-53, and MW-101 were abandoned and removed in July 2012.
[6] Water levels recorded in feet above meal sea level (ft asl)
[7] '--' = Not Measured.

TABLE 2
Horizontal Groundwater Flow Velocity - 2024
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

Flow Path	Δ h[1]	Δ l[2]	Hydraulic Gradient Δh / Δl	Average Hydraulic Conductivity (k)[3] (ft/day)	Effective Porosity (n)[3]	Average Calculated Groundwater Velocity[4] (ft/day)
1/25/2024						
A	14	810	0.015	0.60	0.3	0.03
B	8	684	0.009	1.37	0.3	0.04
4/10/2024						
A	14	817	0.015	0.60	0.3	0.03
B	8	681	0.011	1.37	0.3	0.05
7/18/2024						
A	12	740	0.015	0.60	0.3	0.03
B	8	726	0.011	1.37	0.3	0.05

NOTES:

1. Δ h = Change in groundwater elevation in feet.
2. Δ l = Distance along flow paths in feet.
3. Average Hydraulic Conductivity (k) and effective porosity (n) based on values reported within the 2005 Hydrogeologic Investigation Report by NTH Consultants.
4. Velocity = k(Δh/Δl) / n.

TABLE 3
Summary of Vertical Gradients - 2024
Waste Management of Michigan - McGill Road Landfill
Jackson, Michigan

WELL PAIR ID	1/25/2024 (ft)	4/10/2024 (ft)	7/18/2024 (ft)	10/7/2024 (ft)
MW-212SR/OW-212D[1]	0.027	0.004	0.011	0.001
	DOWNWARD	UPWARD	DOWNWARD	UPWARD
MW-62S/MW-62D	0.045	0.013	0.008	0.005
	UPWARD	UPWARD	UPWARD	UPWARD
MW-61S/MW-61D	0.002	0.010	0.001	0.011
	DOWNWARD	DOWNWARD	UPWARD	DOWNWARD

NOTES:

[1] Replacement well MW-212SR was installed in October 2005; groundwater elevations before this date are for OW-212S.

Appendix A

CONSTRUCTION PERMIT APPLICATION
McGILL ROAD LANDFILL PHASE V
JACKSON, MICHIGAN

VOLUME I

Section 1 Permit Application
Section 2 Part 115 Checklist for Administrative Completeness
Section 3 Environmental Assessment
Section 4 Construction Quality Assurance Plan
Section 5 Closure and Post-Closure Plans
Section 6 Operations Plan

VOLUME II – ENGINEERING BASIS OF DESIGN REPORT

VOLUME III – HYDROGEOLOGIC REPORT

VOLUME IV

Section 1 Hydrogeologic Monitoring Plan
Section 2 Gas Monitoring Plan

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CONSTRUCTION PERMIT APPLICATION
McGILL ROAD LANDFILL PHASE V
JACKSON, MICHIGAN

VOLUME III – HYDROGEOLOGIC REPORT

Report on:

Hydrogeologic Investigation
Phase V Expansion Area
McGill Road Landfill

Prepared for:

McGill Road Landfill
Jackson, Michigan

NTH Project No. 13-030114-03
March 2004
Revised March 2005

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

38955 Hills Tech Drive
Farmington Hills, MI 48331
248.553.6300
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Mr. Paul Mazanec
Waste Management
5900 Hannan Road
Wayne, Michigan 48184

March 16, 2005
Project No. 13-030114-03

RE: Report on Hydrogeologic Investigation
Proposed Phase V Landfill Expansion
McGill Road Landfill
Jackson, Michigan

Dear Mr. Mazanec:

The attached report presents the results on a Hydrogeologic Investigation completed by NTH Consultants, Ltd., at the McGill Road Landfill located in Jackson, Michigan. This investigation was prepared in conjunction with the Construction Permit Application, and in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994, P.A. 451, Part 115, Solid Waste Management (Part 115), and applicable parts of Administrative Rules 299.4902 and 299.4904. Specifically, Rule 299.4902(1)(c) requires that a construction permit application shall include a hydrogeologic report that contains the information listed in Rule 299.4904.

The Construction Permit Application was originally submitted to the Michigan Department of Environmental Quality (MDEQ) in December 2003. According to the letter from the MDEQ dated January 23, 2004, the application was considered administratively incomplete, based primarily on the content of the Hydrogeologic Report. We met with MDEQ on January 29, 2004, to discuss the apparent deficiencies and to come to an understanding as to how they would be satisfactorily addressed.

Administrative Completeness

We have revised the Hydrogeologic Report to include the items listed as missing in the MDEQ's letter. The following presents each of MDEQ's comments regarding the administrative incompleteness of the application and our response to each comment.

Item 1: The hydrogeological Report does not discuss the area and vertical extent of known groundwater impacts at the site as required by Rule 299.4904(a).

Response:

The nature of known groundwater impacts at the existing McGill Road Landfill site is discussed in Section 2.2 of the report. This section describes the apparent source(s) of impacts, the areas affected, and the response activities that McGill Road Landfill has

conducted to address these impacts. Plate 3, Horizontal Extent of Known Groundwater Impacts, has been added to the report to depict the estimated limits of parameters that exceed Part 201 Generic Residential Cleanup Criteria, based on groundwater sampling conducted to support the Remedial Action Plan, dated February 3, 2005.

Item 2: Figures do not include all borings located within ½ mile as required by Rule 299.4904(4)(b). All borings placed as a result of previous investigations that were completed both as part of McGill Road and Jackson County Landfill investigations should be illustrated on this figure.

Response:

Plate 5, Rule 299.4904(b) Comprehensive Map, has been added to the report to depict the locations of known borings located within ½ mile of the expansion area. This plate includes soil borings and monitoring wells completed at the McGill Road Landfill property and at the Jackson County Landfill No. 1, based on Freedom of Information Act (FOIA) review of the MDEQ file, and water supply wells based on MDEQ records and visual identification.

Item 3: Known or potential sources of groundwater contaminants are not specifically identified on Plate 1 as identified on the applicant's Part 115 checklist for administrative completeness. This information is required by Rule 299.4904(4)(b).

Response:

Plate 5, Rule 299.4904(b) Comprehensive Map, has been added to the report to depict known and potential sources of groundwater contamination in the surrounding area. The legend of this figure provides a brief description of each known and/or potential source of contamination.

Item 4: A map of groundwater surface elevations was not provided at the required one foot contour interval as required by Rule 299.4904(4)(d).

Response:

Plates 16 through 18, Groundwater Elevation Contour Maps, have been revised to reflect the requirement for contours to be presented on a 1-foot contour interval.

With the addition of the items described above, we believe that the Hydrogeologic Report is complete with respect to the requirements of Rule 299.4904. We have updated the Administrative Completeness Review Checklist (Form EQP 5521) to reflect the revised report.

Technical Comments

In addition to the items presented above, the MDEQ letter included a number of technical comments based on their preliminary review of the Hydrogeologic Report. We also discussed these items during our meeting with MDEQ on January 29, 2004. Based on our discussion, we have revised the report and/or developed a response. The following presents each of MDEQ's technical comments and our response to each comment.

1. ***Checklist item C.3:*** *Thus far, it appears that only one set of samples has been collected. It is expected that the report should include a provision that upon approval of the Construction Permit Application (CPA), independent samples will be collected and statistical background will be determined prior to waste placement.*

   Response:

   At the time the Hydrogeologic Report was compiled, one set of groundwater samples had been collected from the observation wells installed at the Phase V Expansion area. The results from these samples provided sufficient information to characterize the groundwater quality on a preliminary basis and to develop the *Hydrogeologic Monitoring Plan* (HMP), submitted with the application. The HMP specifically describes the provisions for sampling new monitoring wells and establishing a background database. At least eight sets of independent groundwater samples will be collected from new monitoring wells, and background will be established in accordance with the statistical analysis plan prior to the placement of waste within the expansion area. McGill Road Landfill has already begun collecting additional background groundwater samples from the observation wells as part of the quarterly monitoring program for the site.

2. ***Checklist item C.4:*** *All information referenced in "a-g" should be illustrated on one appropriately scaled map. The map could be illustrated in four or more sections or quadrants so as not to be too cluttered.*

   Response:

   (4)(b)(i)-(vii)
   Plate 5, Rule 299.4904(b) Comprehensive Map, has been included to depict all of the information required under the referenced rule. This map is submitted in color to readily identify the required items. We note that for previous submittals, at this site and others, we have submitted several drawings in the permit application, which together contain all the information identified in "a-g." This approach has been considered preferable so as not to clutter the drawings and clearly identify all of the required items.

3. ***Checklist item C.4.c:*** *Future maps will need to make it more apparent as to the locations of streams and rivers. This issue will likely be resolved with a more appropriately scaled map.*

   Response:

   Plate 5 is submitted in color with the streams and rivers identified in blue.

4. ***Checklist item C.4.d:*** *More detail will be required regarding surface drainage directions.*

   Response:

   Surface drainage flow arrows have been added to Plate 5. These arrows are shown in a unique color (blue) to depict surface drainage directions.

5. ***Checklist item C.4.f:*** *Greater detail regarding topographic features will be required on future maps. This issue will likely be resolved with a more appropriately scaled map.*

   Response:

   Plate 5 has been submitted at a scale of 1 inch = 200 feet. Topographic features are clearly defined on this map.

6. ***Checklist item C.5:*** *In addition to all known borings being located on a map, copies of all available boring logs including boring logs associated with the Jackson County Landfill (provided they are within ½ mile of the expansion area) should be provided.*

   Response:

   Copies of available logs for soil borings and wells located within ½ mile of the Phase V Expansion area, including those associated with Jackson County Landfill No. 1, are included in Appendix E of the Hydrogeologic Report.

7. ***Checklist item C.6.a:*** *Maps from historical groundwater monitoring reports should be reviewed and figures illustrating the most extreme groundwater flow direction variations should be provided for reference.*

   Response:

   The Hydrogeologic Report included an evaluation of groundwater flow direction variability for the Phase V Expansion area, based on conditions observed during the relatively limited period when the hydrogeologic investigation was conducted from mid- to late-2003. To supplement this evaluation, we reviewed and compiled quarterly groundwater elevation

contour maps for the existing McGill Road Landfill from September 1997 through September 2003. Based on the information from these maps, we developed a figure that depicts the range of groundwater flow directions observed at the existing facility over this period. This figure is presented in the Hydrogeologic Report as Plate 19, Historic Groundwater Flow Directions, September 1997 – September 2003.

Review of Plate 19 indicates that groundwater flow has been generally toward the north or north-northwest across Phases I through IV for the period of record with relatively little variability. Although historic groundwater elevations for the Phase V Expansion are not available, we can infer that the groundwater flow direction in this area is similarly consistent.

8. ***Checklist item C.8**: Please illustrate soil sample locations and soil sample types on the cross-sections. Also, additional cross sections should be provided in and around the proposed expansion area. At least two more north-south sections, one on either side of C-C' (near the solid waste boundaries), are necessary. In addition, at least three east-west sections, one of which should bisect the existing landfill are also required.*

Response:

Additional cross-sections have been prepared as agreed during our meeting with MDEQ on January 29, 2004, and are included within the Hydrogeologic Report as Plates 10 through 15. In addition, soil sample intervals and Unified Soil Classifications (USC) for individual soil samples have appropriately been added to the cross sections. As agreed, soil sample intervals and USC data have been added to the cross sections only for those wells and/or borings that were completed as part of the Phase V hydrogeologic investigation.

9. *In regard to the vertical isolation of groundwater from the landfill, staff will be comparing known maximum static water level values from wells along the eastern edge of the existing landfill to the proposed adjacent landfill grades as a means of evaluating vertical isolation and whether or not adding 5 feet to the June 2003 contour elevations is sufficient.*

Response:

The basis for establishing the appropriate groundwater elevations for vertical isolation design is discussed in 5.3.3 of the Hydrogeologic Report. We believe that quantifying the groundwater level variability based on average observed changes at all of the available wells at the existing McGill Road Landfill is a reasonable approach because it is based on a relatively long record (17 years) and incorporates site-wide historic information rather than relying on a limited number of wells.

However, to provide additional confirmation that the Phase V Expansion design meets the requirement of Rule 299.4411(2)(a), we reviewed the maximum historic groundwater

elevations observed at the monitoring wells located along the east side of the existing McGill Road Landfill (i.e., MW-21, MW-22, and MW-23). These historic maximum groundwater elevations were then extrapolated across the Phase V Expansion area, based on the current groundwater flow direction. We then compared these estimated maximum groundwater elevation contours to the proposed landfill subgrade elevations. Based on this comparison, the design grades are sufficient to provide greater than the required 10-foot vertical isolation distance.

10. *As per Rule 299.4904(3), "a determination of hydrogeological conditions shall cover sufficient area to allow for a definition of the potential impact of the landfill on groundwater". Note that the rule references the "landfill" not a section of, or specific expansion area of the landfill. Staff will be looking for a comprehensive hydrogeologic report that utilizes and discusses not only newly acquired data, but also data gathered as a result of previous investigations at the landfill. The hydrogeologic report that was provided with the construction permit application does integrate some historical data, but not to the extent necessary to facilitate a comprehensive review of the site for the purposes of the construction permit application.*

Response:

The Hydrogeologic Report has been expanded to incorporate information from the existing active landfill site and surrounding area in a number of respects. As mentioned above, the report now includes a total of seven subsurface geologic profiles. Four of these profiles extend east-west across both the existing landfill and the Phase V Expansion area. In addition, north-south profile C-C' extends along the boundary between the existing site and the expansion area. Finally, north-south geologic profile H-H' extends north through Jackson County Landfill No. 1, based on subsurface information from four monitoring wells located at that site. As discussed in the report, the geologic profiles demonstrate that the subsurface conditions throughout the area within and surrounding the Phase V Expansion area are relatively uniform.

As mentioned previously, Section 2.2 has been added to the Hydrogeologic Report to discuss the nature and extent of known groundwater impacts at the existing McGill Road Landfill, as well as the response activities that have been conducted to address these impacts.

Based on the additions and revisions discussed in this letter, MDEQ's comments have been addressed, and we anticipate you'll find the Construction Permit Application is administratively complete and technically sound. We have provided a comprehensive summary of the groundwater quality issues at the site and have prepared a landfill design which is protective of human health and the environment.

If you have any questions regarding the information presented in this report, please contact us. We appreciate the opportunity to be of service to McGill Road Landfill.

Sincerely,

NTH Consultants, Ltd.

Dawn L. Prell
Project Geologist

Alan C. Erickson, P.E.
Senior Project Engineer

DLP/ACE/tt

cc: Mr. Eric Wallis – WM

attachment

Report on Hydrogeologic Investigation
Phase V Expansion Area – McGill Road Landfill
NTH Project No. 13-030114-03

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Report on Hydrogeologic Investigation
Phase V Expansion – McGill Road Landfill
NTH Project No. 13-030114-03

1.0 INTRODUCTION

This report presents the results of a hydrogeologic investigation completed by NTH Consultants, Ltd. (NTH), for the proposed Phase V Expansion Development at the McGill Road Landfill (MRL). This report is submitted on behalf of MRL as part of a Construction Permit Application. This document has been prepared in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994, P.A. 451, Part 115, Solid Waste Management (Part 115), and applicable parts of Administrative Rules 299.4902 and 299.4904. Specifically, Rule 299.4902(1)(d) requires that a construction permit application shall include a hydrogeologic report that contains the information listed in Rule 299.4904.

1.1 LOCATION & PROPOSED ACTION

Plate 1, Site Location Map, included in Appendix A, depicts the location of the MRL facility referenced to major roadways and topographic features. The existing MRL facility is located within Section 24, Township 2 South, Range 1 West, Blackman Township, in Jackson County, Michigan. The Phase V Expansion area will be contiguous and directly east of the existing MRL site. A relatively small portion of the proposed expansion area is also located in Section 24 of Blackman Township, and the greater part of the expansion area is located in Section 19, Township 2 South, Range 1 East, Leoni Township, Jackson County, Michigan.

As designed, the solid waste boundary of the proposed Phase V Expansion encompasses 15.2 acres and will include one master cell. The Phase V Expansion area, as shown on Plate 1, is bordered to the west by the existing MRL site, to the south and east by private property that is primarily used for agricultural and residential purposes, and to the north by the former Jackson County Landfill No. 1.

Plate 2, Site Plan, shows the location of adjacent property lines, roads, and the solid waste boundaries for the existing site and proposed Phase V Expansion area.

1.2 SCOPE OF WORK

Completion of a hydrogeologic investigation is required pursuant to Rule 299.4904 of the current Part 115 regulations. The purpose of the hydrogeologic investigation is to:

- Describe the subsurface characteristics of the site.
- Establish the suitability of the site for development as a Type II solid waste disposal facility in accordance with the requirements of Part 115, Administrative Rule 299.4904.
- Develop an appropriate monitoring strategy for the site.

To accomplish these objectives, NTH prepared and implemented a *Work Plan for Hydrogeologic Investigation, McGill Road Landfill, Proposed Eastern Expansion*, dated May 16, 2003. This work plan was submitted to the Michigan Department of Environmental Quality (MDEQ) for review and comment. We also met with MDEQ staff to discuss the proposed scope of work and investigative methods. Based on these discussions, the final scope of work for this investigation and report included the following tasks:

- A visual inspection of site conditions prior to field exploration.
- Drilling and sampling of test borings at eleven locations.
- Installation of eight groundwater observation wells.
- Collection and laboratory testing of numerous soil samples.
- Measurement of groundwater levels at the site.
- Collection of groundwater samples for water quality characterization at the site.
- An analysis of hydrogeologic conditions.
- Development of a hydrogeologic model for use in the conceptual design for the construction of a Type II disposal facility.

This work was performed in accordance with currently accepted hydrogeological practices as well as present guidelines established by the MDEQ for the collection and analysis of geologic data at proposed Part 115 landfill sites. This report refers to current rules under Part 115 adopted as of the date of this report.

2.0 PREVIOUS HYDROGEOLOGIC STUDIES

Hydrogeologic studies have previously been completed for existing landfill cells adjacent to the Phase V Expansion area. The reports from these studies describing the regional geologic and hydrologic conditions were submitted to MDEQ and accepted in support of the MRL Construction Permits and Operating Licenses. The studies listed below present the hydrogeology of landfill facilities adjoining the proposed landfill expansion area:

[1] *Report of Phase I Hydrogeologic Investigation*, Hunter/Keck, 1989.

[2] *Hydrogeologic Characterization of a Proposed 20-Acre Expansion of the McGill Road Type II Solid Waste Disposal Facility*, Envirologic Technologies, Inc., May 1991.

[3] *Report of Environmental Testing/Hydrogeologic Investigations at the State Prison of Southern Michigan, Jackson, Michigan*, Snell Environmental Group, Inc., July 1993.

[4] *Jackson County Landfill No. 1 Remedial Investigation Report*, Metcalf and Eddy, August 13, 1993.

[5] *Response Action Plan for Phase I Landfill Unit, Philip McGill Road Landfill, Jackson, Michigan*, NTH Consultants, Ltd., May 2, 1997.

[6] *Alternate Source Demonstration for Sulfate, Philip McGill Road Landfill, Jackson, Michigan*, NTH Consultants, Ltd, February 2, 1998.

[7] *Report on Trommeled Soil Investigation, Philip McGill Road Landfill, Jackson, Michigan*, NTH Consultants, Ltd., July 1, 1999.

[8] *Off-Site Investigation Report for Inorganic Parameters, Philip McGill Road Landfill, Jackson, Michigan*, NTH Consultants, Ltd., August 31, 1999.

[9] *Addendum to Response Action Plan*, NTH Consultants, Ltd., November 1, 1999.

[10] *Hydrogeologic Monitoring Plan, Philip McGill Road Landfill, Jackson, Michigan,* NTH Consultants, Ltd., November 15, 1999.

[11] *Trommeled Soil Response Action Plan*, NTH Consultants, Ltd., January 18, 2000.

[12] *Alternate Source Demonstration, McGill Road Landfill*, NTH Consultants, Ltd., May 15, 2000.

[13] *Supplemental Alternate Source Demonstration – Landfill Gas Investigation, McGill Road Landfill*, NTH Consultants, Ltd., March 11, 2002.

[14] *Construction Certification – McGill Road Landfill Trommeled Soil Removal*, NTH Consultants, Ltd., December 2002.

[15] *Remedial Action Plan – McGill Road Landfill*, NTH Consultants, Ltd., February 3, 2005.

We have prepared a brief history of previous and current groundwater quality response activities at MRL, based on the information presented in these documents. The following section provides background information, including a number of items that are relevant to understanding the context and rationale for response activities. The second section then presents a chronology and brief description of the various response activities that have been completed.

2.1 BACKGROUND INFORMATION

MRL consists of two closed Type III units identified as Phase I (Cells 1-8), and Phase II (Cell 1); and and active Type II unit identified as Phase III (Cells 1, 1A, 2 and 4) and Phase IV (Cells 1 and 1A).

The closed Jackson County Landfill No. 1 (JCL) is located immediately north (i.e., downgradient) of the MRL site. Investigations conducted by the Michigan Department of Environmental Quality (MDEQ) indicate that JCL has impacted groundwater quality. Impacts from volatile organic compounds (VOCs) and other organic contaminants have been noted. Limited information is available regarding impact from inorganic constituents at the JCL site.

The Phase I (Type III waste) area of MRL was reportedly overfilled by previous owners above approved final grades. To reduce the total waste volume during closure activities, the previous owners excavated the overfill material (which consisted primarily of construction and demolition waste and interim cover soils) and fed this material through a large rotary trommel-screening device, located within Cell 1 of the Phase II area. The oversized material was trapped inside the trommeling device's rotating drum and discharged into Cell 1 of Phase II. The segregated fine-grained soil and Type III waste was stockpiled. In late 1994, approximately 6,500 cubic yards of this trommeled waste was placed outside the Phase II boundary, primarily along the northern slope and northeastern corner of the cell. The balance was used for daily cover within the Phase II landfill.

2.2 KNOWN GROUNDWATER QUALITY IMPACTS & RESPONSE ACTIVITIES

Elevated concentrations of inorganic constituents have been detected in groundwater at the MRL site since the mid-1990s. MRL has investigated the source, nature, and extent of the inorganic occurrences and, with MDEQ approval, implemented interim corrective measures to address their impacts. These interim response activities have included:

- improved landfill cap runoff control,
- improvement of drainage routes to minimize erosion and sedimentation,

- improved management of site runoff,
- excavation and removal of overburden soils and underlying tommeled waste,
- collection of confirmatory soil samples at the excavated areas,
- placement of clean structural backfill soil, and
- installation of erosion control measures

Groundwater sampling and analysis conducted to monitor the progress of response measures has demonstrated a reductions in the number of locations and inorganic parameters that exceed the Part 201 Generic Residential Cleanup Criteria (GRCC). To address the remaining exceedances, MRL submitted a *Remedial Action Plan* (RAP), dated February 3, 2005, which was developed in accordance with Part 201 (P.A. 451 of 1994) and was approved by the MDEQ. This RAP was prepared specifically to address:

- detections of dissolved boron above phytotoxicity-based criteria in one monitoring well (MW-62S), and
- intermittent detections of sulfate above aesthetic-based criteria in one monitoring well (MW-19R).

The RAP includes a detailed summary of previous groundwater quality-related investigations and findings, including a delineation of the horizontal and vertical extent of inorganic parameters in groundwater exceeding Part 201 GRCC. As described in the RAP, boron is the only site-related parameter that currently exceeds Part 201 GRCC in groundwater. The horizontal extent of boron at the GRCC (i.e., 0.5 milligrams per liter) is estimated to occur at a distance of approximately 70 feet downgradient of MW-62S.

Plate 3, Horizontal Extent of Known Groundwater Impacts, included in Appendix A, presents a plan view of the groundwater impacts at the site.

The vertical extent of inorganic groundwater impacts is limited to the upper portion of the unconfined glacial groundwater unit at the site. The affected monitoring well MW-62S is

screened within the upper 10 feet of the aquifer. Information from the deeper nested monitoring well at this location and at downgradient locations indicates that the lower portion of the aquifer is not impacted.

In addition to the inorganic groundwater impacts attributed to the trommeled waste, volatile organic compounds (VOCs) have been detected at two monitoring wells located north of Phase I (MW-60 and MW-62S). MRL has investigated these VOC occurrences and provided demonstrations that landfill gas from the adjacent Jackson County Landfill No. 1 is the likely source.

MRL submitted an Alternate Source Demonstration (ASD) for organic parameters detected in wells MW-60 and MW-62S on May 15, 2000. NTH also prepared the *Report on Supplemental Alternate Source Demonstration – Landfill Gas Investigation*, dated March 11, 2002, which demonstrated that the source of the groundwater VOC detections is likely gas-phase to aqueous-phase partitioning of the VOCs. The investigation confirmed that MRL is not the source of gas causing the groundwater VOC detections and that the lateral migration of landfill gas from the adjacent Jackson County Landfill No. 1 is the likely source. The ASD for VOCs at MW-60 and MW-62S was approved by the MDEQ, as documented in a letter dated March 30, 2005.

Based on the most recent groundwater sampling results (First Quarter 2005), the following VOCs were detected in groundwater samples at MRL:

- At MW-60: 1,1-dichloroethane (3.6 µg/L); cis-1,2-dichloroethene (20 µg/L); trichloroethene (3.2 µg/L); and tetrachloroethene (6.6 µg/L).

- At MW-62S: 1,1-dichloroethane (120 µg/L) and chloroethane (55 µg/L).

This section is intended as a summary of known impacts and response activities that have been conducted at the MRL facility to address organic and inorganic constituents in

groundwater. Refer to the referenced documents for more complete information and details regarding the site conditions and findings of the various activities.

3.0 INVESTIGATION METHODS

The hydrogeologic study completed by NTH at the proposed Phase V Expansion area involved a detailed subsurface study completed during the period from June 2003 through September 2003. The subsurface study was performed to define the stratigraphy of the subsurface, identify the uppermost groundwater flow zone, and to install observation wells to collect groundwater samples and to further define groundwater flow conditions. A detailed analysis of the stratigraphic, geochemical, and physical soil test data was performed as it relates to the development of the site as a Type II sanitary landfill.

3.1 VISUAL SITE INSPECTION

A site visit was conducted prior to commencing detailed subsurface exploration activities. The purpose of this visit was to document existing conditions and to identify borehole locations and observation well locations in the field prior to drilling.

3.2 SUBSURFACE EXPLORATION

Part 115, Rule 299.4904, presents guidance and objectives for a subsurface exploration program. The subsurface exploration program was completed to meet the objectives set forth in this rule.

3.2.1 Test Borings

A subsurface investigation plan was developed prior to beginning the field work to provide sufficient subsurface data to adequately define the hydrogeologic conditions within the expansion area. Fourteen (14) test borings, designated as TB-201S, TB-201D, TB-202, TB-204 through TB-208, TB-208A, TB-209, TB-210, TB-211, TB-212S, and TB-212D, were completed in June 2003 by Rau Drilling Company (Rau) of Bay City, Michigan. The drilling operations were completed under the full-time observation of a geologist with NTH. Plate 4, Test Boring and Observation Well Location Map, included in Appendix A, presents the locations of the test borings and observation wells completed during the hydrogeologic investigation of the proposed MRL Phase V Expansion area.

As shown on Plate 4, six of the test boring locations are spaced around the perimeter of the proposed landfill footprint, and five of the test boring locations are positioned within the proposed limits of the landfill. At each of the perimeter locations, one test boring was extended to approximately 10 feet below the level where groundwater was encountered during drilling to obtain information on the site subsoils and groundwater conditions. In addition, Rule 299.4904(4)(e) requires the definition of bedrock characteristics, if bedrock exists within 50 feet of the proposed base of the fill. Therefore, to obtain information on the characteristics of the underlying bedrock formation, at two of the perimeter locations (TB-201D and TB-212D) a deeper test boring was extended approximately 10 feet into competent rock. The test borings located within the proposed landfill footprint were extended to approximately 25 feet below the anticipated landfill liner elevation (TB-207, TB-208A, and TB-211) or approximately 10 feet into competent rock (TB-209 and TB-210). At one location within the interior (TB-208), what was likely a large boulder was encountered at least 40 feet higher than the regional bedrock surface elevation. The drill rig was moved approximately 65 feet to the south and west, and a second test boring (TB-208A) was completed to the planned depth with no rock encountered.

Rau completed each boring with a rotary drill rig using hollow-stem augers or rotary wash methods. NTH field personnel maintained a log of each test boring in the field, which included a description of each soil sample, information on groundwater conditions, and other pertinent data. In general, soil samples were collected during drilling at 5-foot intervals in each of the test borings, except at TB-208, TB-208A, and TB-211 where samples were collected continuously below the anticipated landfill floor elevation.

During drilling, Rau collected soil samples using one of three methods, depending on the stratigraphy and the intended purpose of the samples. Throughout most of the granular soil intervals, soil samples were collected using a 2-inch outside-diameter split-barrel sampler using the Standard Penetration Test Method (ASTM D-1586) as described in Exhibit A, in Appendix A. The Standard Penetration Resistance value (N) presented on the test boring logs is used to assign a consistency to the soil materials.

In some cases, the split-barrel sampler contained several 1-3/8-inch inside diameter, 3-inch long brass liner inserts. Soil samples recovered in this manner are designated as "LS-" on the respective logs of test boring. Soil samples recovered directly from the split-barrel sampler, without liner inserts, are designated "S-" on the test boring logs. The NTH field geologist selected a representative portion of each sample that was recovered from the sampler, split it lengthwise, and described the sample on a field log. Soil samples recovered from 2-inch split-barrel samplers were sealed in glass jars and delivered to the NTH laboratory for further classification and testing.

A limited number of relatively undisturbed samples of cohesive soils were collected using Shelby tubes (ASTM D 1587). This type of sample is collected by pushing a 3-inch inside-diameter, thin-walled metal tube into the soil and withdrawing the tube with a cylinder of soil enclosed. After collection, the field geologist cleaned both ends of the tube and sealed them with wax or putty in the field. The Shelby tubes were then capped and stored in an upright position until delivery to the NTH laboratory. Shelby tube samples obtained in this manner are designated "ST-" on the boring logs. Such samples are considered undisturbed and were used in laboratory soil permeability tests.

Upon completion, those boreholes that were not used for installation of observation wells were backfilled to ground surface with a bentonite grout. To accomplish grouting, the thickened bentonite slurry was tremie-grouted from the bottom of the borehole to the surface inside the augers. The augers were then slowly retracted from the borehole.

The subsurface conditions encountered at the drilling locations have been evaluated and are presented as individual Logs of Test Boring, Figure Nos. A-1 through A-14 in Appendix A. We note that the stratification lines shown on the test boring logs represent the subsurface conditions at the actual boring locations. Variations may occur between the borings. Additionally, the stratigraphic lines represent the approximate boundary between soil types; however, the transition may be more gradual than what is shown. The descriptions of the soils presented on the individual test boring logs are based on both visual identification of the soils encountered in

the field and laboratory test data. Where soil laboratory data is available from individual samples, the Unified Soil Classification (USC) designation of the sampled layer is also presented on the log.

The boring logs also present information regarding sample data, standard penetration results, groundwater conditions observed in the borings, personnel involved, and other pertinent data. General Notes defining the nomenclature used in the soil descriptions on the boring logs and elsewhere in this report are presented as Exhibit A in Appendix A.

3.2.2 Observation Wells

Eight observation wells (OW-201S, OW-201D, OW-202, OW-204, OW-205, OW-206, OW-212S, and OW-212D) were installed by Rau, under the full-time observation of an NTH geologist, as part of the hydrogeologic investigation. The purpose of these observation wells was to determine the groundwater elevations and to provide preliminary water quality data. Water level data were used to define the direction of groundwater flow, establish horizontal and vertical gradients, and to develop recommendations concerning design of the landfill cell floor.

The observation wells were installed by completing a borehole to the desired depth and flushing the borehole with clean water. A steam-cleaned well assembly, consisting of 2-inch diameter, Schedule 40 PVC with a 2-inch diameter, Schedule 40 PVC, 0.010-inch slotted screen, was placed into the borehole. Silica sand was added as a filter pack from the bottom depth of the well to approximately 4 to 5 feet above the top of the well screen. A bentonite slurry was used as a seal and was placed on top of the filter pack. The remaining annular space around the well was then backfilled to ground surface with a cement bentonite grout.

The observation wells were developed using a submersible pump. During development, the observation wells were repeatedly surged, and field parameters (pH, temperature, and conductivity) and flow volume were recorded. Well development was considered complete when field parameters had stabilized (three consecutive conductivity and temperature readings

within 10%, and pH within 0.1 Standard Units) and the amount of fine granular material brought to the surface as the result of surging the well was minimal. The observation wells were capped and fitted with locking anodized aluminum protective casings, cemented in place, labeled and surveyed by McNeely & Lincoln Associates, Inc. (McNeely), of Livonia, Michigan, for location coordinates, ground surface elevation, and top of casing elevation.

Pertinent well construction details are summarized on Table 1, Observation Well Construction Details. Information regarding the installation of the groundwater observation wells are presented on individual Logs of Observation Well, Figure Nos. A-15 through A-22 in Appendix A.

The eight observation wells, in conjunction with the existing monitoring wells installed on the adjacent landfill sites, provide sufficient water level information to characterize groundwater flow direction and hydraulic gradients within the uppermost aquifer across the expansion site.

3.3 LABORATORY SOIL TESTING

The soil testing for this project was completed in the NTH geotechnical laboratory on representative samples of the soils encountered at the site. NTH used the most recent edition of each individual ASTM method to conduct the soil laboratory tests. The tests that were performed and the respective test methods are summarized below:

- Grain size distribution by both sieve and hydrometer methods (ASTM D422)
- Atterberg Limits (ASTM D4318)
- Natural moisture content (ASTM D2216)
- Dry density (ASTM D2937)
- Unconfined compressive strength (ASTM D2166)

The results of the soil laboratory tests conducted during this investigation are presented on the Tabulation of Laboratory Test Data sheets, Figure No. B-1 in Appendix B. Grain Size Distribution Curves are plotted and presented as Figure Nos. B-2 through B-23 in Appendix

B. The moisture content and in-place dry density of the tested soil samples are also presented on the respective Logs of Test Boring.

3.4 HYDRAULIC PERFORMANCE TESTING

To evaluate the hydraulic properties of the water-bearing granular unit, NTH performed slug tests at observation well locations OW-201S, OW-201D, OW-202, OW-206, and OW-212D. The slug tests were performed in accordance with ASTM D4044-6, utilizing a 6-foot long PVC slug (with a displacement of approximately 0.32 gallons), a pressure transducer, and an electronic datalogger. A pressure transducer coupled with a datalogger is capable of measuring small changes in groundwater head within the observation well over very short time intervals (100ths of a second). These measurements are recorded and stored by the datalogger for later analysis.

Prior to beginning the test, the static water level within the observation well being tested was recorded with an electronic water level meter. The pressure transducer was then lowered into the observation well, and groundwater measurements were recorded until the groundwater level had stabilized to the initial level. After the groundwater level stabilized, the slug was quickly lowered into the observation well until it was completely submerged rapidly raising the water level inside the well. As the slug was lowered, the data logger was initiated and changes in water level were recorded.

Immediately after the slug was lowered below the static water level, the water level within the observation well rose to accommodate the volume of water displaced by the slug. After the initial increase, the water level subsided until it was in equilibrium with the static water level within the groundwater flow system. The rate at which the water level subsided was used to estimate the hydraulic conductivity of the aquifer material in which the well screen was placed.

Analysis of the slug test data was completed using the computer program AQTESOLV. An empirical relationship describing the water level response in an unconfined aquifer due to the

instantaneous injection or withdrawal of water from a well was developed by Bouwer and Rice (1976). The Bower and Rice Method, as described by Fetter (1994), is given by:

$$\ln(s_o) - \ln(s_t) = \frac{2KLt}{r_{ce}^2 \ln(r_c/r_{we})}$$

Where:

K = hydraulic conductivity (feet/min)

s_o = initial displacement in well (feet)

s_t = displacement at time (t) (feet)

r_c = radius of the well casing (feet)

r_w = radius of the well (feet)

r_{ce} = equivalent casing radius (feet)

r_{we} = equivalent well bore radius (feet)

L = length of the well screen (feet)

t = time at displacement (s_t) (minutes)

n = porosity of the filter pack

H = height of the water column (feet)

C = dimensionless coefficient; a function of L/r_w

K_z / K_r = anisotropy ratio

The results of the slug tests are discussed in Section 5.3 of this report and are included in Appendix C, Aquifer Performance Testing. Also presented in Appendix C are graphs of the static water level versus time for the duration of each test. The graph depicts the static water level and provides timed data as the water level recovers back to static after the injection or removal of the slug.

3.5 GROUNDWATER SAMPLING & ANALYSIS

As part of the investigation, NTH obtained groundwater samples from the eight observation wells in the proposed Phase V Expansion area on July 10, 2003. Prior to groundwater sampling, static water level measurements were recorded using a water level measurement instrument, accurate to 0.01-foot. Measurements were obtained from the top of casing, with a reference to a permanent survey mark using United States Geological Survey datum.

In accordance with Rule 299.4907(9), groundwater samples must be representative of the site's groundwater quality. To insure representative samples, wells were purged, by disposable bailer, to remove at least three well volumes of groundwater, before the groundwater samples were collected. Following well purging, groundwater samples were collected directly from disposable bailers. Groundwater samples were collected in the designated size and type of containers as supplied by the laboratory and preserved accordingly. Samples collected for dissolved metals were filtered through a clean disposable 0.45-micron membrane filter prior to sample preservation. Following sample collection, samples were stored in cooler(s) and cooled to between 4° and 8° Celsius and transported to the laboratory, following chain-of-custody protocol, for chemical analysis.

Samples were shipped to Severn Trent Laboratories (STL), of Amherst, New York, and tested for the parameters included in Rules 299.4450 through 299.4454 of Part 115. These include primary inorganics, alternate inorganics, heavy metals, and primary and secondary organic compounds. One other parameter (dissolved calcium) was added to the groundwater analysis to provide a more complete characterization of the major inorganic species. Specific conductance, temperature, and pH were determined in the field. The laboratory data report presenting the results of the initial background water quality sampling event for the observation wells in the expansion area are presented in Appendix D, Groundwater Quality Laboratory Report.

4.0 REGIONAL CONDITIONS

This section presents the regional geographic, hydrologic, and hydrogeologic conditions for the area surrounding the MRL facility. This includes a map of the site and surrounding area, drawn to scale, and showing the information required by Rule 299.4904(4)(b). This map is included as Plate 5, Rule 299.4904(4)(b) Comprehensive Map, in Appendix A. The information presented on this map and discussed in this section is based on published references and data developed during previous hydrogeologic studies for the MRL facility. The required items presented on Plate 5 are also depicted on individual maps to allow for greater detail. These maps are referenced and discussed in the relevant sections of the report.

To obtain information on subsurface conditions and groundwater use in the area, we obtained water well records from the MDEQ and plotted their location on Plate 6, Regional Water Supply Well Location Map. Copies of the logs are included in Appendix E. To aid in the interpretation of the subsurface conditions, we developed a generalized geologic profile using the geologic descriptions presented on the water well logs. Regional Subsurface Profile AA-AA' is presented on Plate 7, included in Appendix A.

Review of the profile and the available regional geologic information indicates that the geology of the region consists of unconsolidated granular deposits overlying sedimentary bedrock. Glacial deposits in Blackman and Leoni Townships are composed of glacial outwash and outwash channel deposits consisting of interbedded fine sand, sand, and gravel with varying silt content. These outwash deposits may also contain discontinuous seams of silt and silty clay soils. Glacial drift thickness in the area north of Jackson ranges from approximately 40 to 100 feet (Passero, et. al., 1983).

Underlying the glacial soils is the Parma Sandstone, a member of the Pennsylvanian Saginaw Formation. The Saginaw formation consists of alternating and inter-stratified stream and river channel sands, river floodplain silts and clays, shallow water marine or tidal swamp shales and

limestones, as well as swamp-laid coals (Dorr and Eschman, 1970). The sandstone is the predominant bedrock type in the study area, with some significant limestone deposits present to the east. Research published in "Geohydrology of Carboniferous Aquifers of the Michigan Basin," indicates that the Parma Sandstone may be contemporaneous with the Mississippian Bayport Limestone and that the two units are time-stratigraphic equivalents. Generally, bedrock is encountered at an elevation of 900 feet msl, as shown on Plate 7.

Groundwater occurs regionally within both the granular glacial soils and the sedimentary bedrock units. The regional groundwater flow pattern, based on surface topography and visible expressions of the water table (such as lakes, streams and wetlands) presented on the U.S. Geological Survey (USGS) Quadrangle maps, is presented on Plate 8, Regional Groundwater Elevation Contour Map, included in Appendix A. As shown, regional groundwater flow is to the northwest, and likely discharges to the Portage and Grand Rivers north and west of the site. Recharge to the bedrock likely occurs as surface infiltration through unconsolidated glacial deposits.

Water supply for the area surrounding the proposed expansion is serviced by water supply wells, either Type I, Type II, Type III, or domestic. Appendix E, presents the available well logs for the surrounding area. The nearest documented Type I or Type IIa water supply wells are located at the Southern Michigan State Prison, approximately 1 mile (i.e., 5,280 feet) northwest of the Phase V Expansion. Plate 6 depicts the minimum isolation distances required under Rule 299.4412(6). As shown, based on the descriptions provided on the logs, none of the water supply wells for which records are available are located within the 800-foot isolation distance that is applicable to domestic, Type III, and Type IIb water supply wells. To supplement the well record search, surveyors with McNeely visually located the residential wells for each of the properties adjacent to the expansion area. The exact location of the each of the wells nearest to the property line was also surveyed by McNeely and was determined to be outside the 800-foot isolation distance. Refer to the *Report on Environmental Assessment* (NTH, March 2005) that is included as part of the Construction Permit Application for additional information on the location of nearby wells and other set back requirements.

Rule 299.4904(1)(e) requires that a hydrogeologic investigation define any aquifer that is utilized by Type I and Type IIa public water supplies, within 1/2 mile of the proposed active work area, and any aquifer that is utilized by Type IIb and Type III public water supplies, within 1,000 feet of the proposed active work area. Review of the regional well records and the corresponding location map indicates that no Type I or Type IIa water supply wells are apparently located within ½ mile of the proposed Phase V Expansion area. The nearest wells listed as Type I public water supply wells serve the State Prison of Southern Michigan. These include the wells designated as No. 22 and No. 24 in Appendix E. Review of these well logs indicates that they are apparently completed as open hole borings in the bedrock to depths of 352 and 439 feet, respectively. The available well records indicate that most of the other water supply wells in the area are also completed in the upper portion of the rock aquifer, which is typically described as "sandstone" or "sand rock." A few of the wells are screened in the glacial sand aquifer at depths ranging from approximately 34 to 70 feet below ground surface.

5.0 SITE HYDROGEOLOGIC CONDITIONS

The following presents a description of site hydrogeologic conditions, which were evaluated based on the most recent field activities, as well as the subsurface investigations previously cited. The following descriptions of the site topography and hydrogeology represent interpretation of the conditions present at the site at the time of the investigation.

5.1 SITE TOPOGRAPHY

Topographically, the site may generally be considered an upland area with a gentle slope toward the north and east. The topography of the site ranges in elevation from approximately 940 feet above mean sea level (msl) in the northern portion of the site to over 1000 feet msl in the central and southern portion of the site. Detailed topographic information, and a detailed topographic survey is presented as Sheet 1 of the Engineering Drawings included with the current Construction Permit Application.

5.2 SITE GEOLOGY

To evaluate the general site stratigraphy, we developed a series of subsurface cross-sections, identified as Generalized Geologic Profiles A-A' through H-H', based on the information obtained from the current drilling program in the Phase V Expansion area as well as geologic data developed for the existing MRL facility from previous investigations. Plate 9, Subsurface Profile Orientation Map, in Appendix A, depicts the location and direction of each of the subsurface profiles developed for this report. The geologic profiles are presented on Plates 10 through 15, and the results and interpretations presented on these plates are discussed below. We note that Profile H-H' includes monitoring wells that are installed at the adjacent Jackson County Landfill No. 1. The approximately locations of these wells are shown on Plate 5. Available logs of the historic test borings and monitoring wells located within ½ mile of the Phase V Expansion area are included in Appendix E.

Generally, the geology of the investigation area consists of approximately 30 to 90 feet of unconsolidated granular deposits overlying sedimentary bedrock. The uppermost portion of this unconsolidated deposit is described as brown silty sand extending to a general depth of

approximately 38 feet below grade. At the existing site, the uppermost portion is underlain by intermediate granular deposits comprised of dense gray silt, which ranges from 0.5 to 4 feet thick. This layer was not encountered at the Phase V Expansion area. The brown surficial sands encountered at the Phase V Expansion area are underlain by a gray silty sand and gravel unit, which is consistent across the entire site. Some isolated lenses of clay and silt also occur within the predominately sandy matrix but are localized and limited in extent. The finer materials are not correlative across the site, indicating that these finer-grained units are isolated, laterally discontinuous lenses.

Granular materials appear to become increasingly coarse with depth across the site. A sand and gravel mixture is generally encountered at approximately 920 ft msl at the northern part of the expansion area, and at approximately 940 ft msl in the eastern portion of the expansion area. Together, these granular units are the target-monitoring zone for the site. The underlying rock formation at the Phase V Expansion area consists of the Parma Sandstone, a gray to grayish green sandstone that was generally encountered at approximately 900 ft msl.

5.3 SITE HYDROGEOLOGY

Groundwater occurs in the unconsolidated glacial deposits under water table conditions down to bedrock. There are no laterally extensive confining zones within these glacial deposits as evidenced by only a few isolated, discontinuous lenses of clay and silt materials that exist at the site. The water table surface occurs at depths ranging from approximately 10 to 45 feet below ground surface, varying primarily due to the changes in topography. Groundwater elevations range from approximately 925 to 955 feet msl across the entire site. The horizontal hydraulic gradient observed at the site over the course of these field activities ranged from 0.012 ft/ft to 0.016 ft/ft. These findings are consistent with historic horizontal gradient data observed at the adjacent active landfill.

Site groundwater elevation contour maps, based on water level measurements on various dates during this investigation, are presented as Plates 16 through 18, Groundwater Elevation Contour Map. As shown on these maps, the general direction of groundwater flow is to the

north at the Phase V Expansion area, and to the north-northwest at the active site. This flow pattern conforms to the regional groundwater flow direction. The direction of groundwater movement and the static water level measurements for the Phase V Expansion area are consistent with historical data for the site dating back to at least 1995. These data are presented in Table 2, Groundwater Elevation Data.

To evaluate the variability in groundwater flow direction, we developed Plate 19, Historic Groundwater Flow Directions, September 1997 – September 2003, included in Appendix A. This plate presents the groundwater flow direction arrows determined based on groundwater elevation contour maps presented in the quarterly groundwater monitoring reports for the existing MRL facility during the referenced period. Review of Plate 19 indicates that groundwater flow has been generally toward the north or north-northwest across Phases I through IV for the period of record with relatively little variability. Although historic groundwater elevations for the Phase V Expansion are not available, we can infer that the groundwater flow direction in this area is similarly consistent.

5.3.1 Groundwater Flow Velocity

A representative value for the hydraulic conductivity of the water-bearing geologic materials at the site can be derived from permeability data developed during the current and previous investigations. The estimated permeability values of the uppermost water-bearing unit, as determined from slug test analyses by NTH for the Phase V Expansion area range from 1.14 foot/day (ft/d) to 1.53 ft/d, with a mean of 1.37 ft/d. Similar analysis by Westshore Engineering from previous site investigations found the permeability value of the water-bearing material is approximately 0.60 ft/d.

Groundwater flow velocity at the site can be calculated using the equation $V = K\, i/n_e$, where:

V = Groundwater flow velocity in feet/day
K = Permeability of the aquifer in ft/d
i = Horizontal hydraulic gradient in foot per foot
n_e = Effective porosity

Effective porosity, defined as the percentage of interconnected pore spaces through which water can flow, is generally equivalent to the specific yield of a particular soil unit under water table conditions. Although no direct measurements have been made, the porosity of the glacial drift sand can be estimated as approximately 30 percent, based on the grain size distributions and physical descriptions. For unconsolidated sand deposits, the effective porosity available for fluid flow is approximately equal to the total porosity (Todd, 1980).

A range of groundwater flow velocities have been calculated for both the Phase V Expansion area and the active site along the flow paths indicated on Plates 16 through 18. Using the hydraulic gradients along each flow path, an assumed effective porosity of 0.30, the average hydraulic conductivity 0.6 ft/d for the active site, and 1.37 ft/d for the Phase V Expansion area, groundwater flow velocities have been calculated for the site. These calculations are included in Table 3, Groundwater Flow Velocity Calculations. The estimated horizontal groundwater flow velocity within the uppermost aquifer ranges from approximately 0.025 to 0.074 feet/day.

5.3.2 Vertical Gradients

As shown on Plate 4, two nested well pairs, OW-201S/OW-201D and OW-212S/OW-212D, were installed at the Phase V Expansion area to identify vertical gradients between the unconfined granular unit and the bedrock unit, as required by the Part 115 regulations. Vertical gradients have been calculated by dividing the difference in piezometric head in the well pair (feet) by the distance between the mid-point of the respective well screens (feet). The vertical gradients for well pairs at the active site, as well as the Phase V Expansion area, are included in Table 4, Vertical Gradients. Review of Table 4 indicates that the vertical gradients are variable across the site. Generally, vertical gradients are minor and slightly downward within the glacial drift, and on average range from only 0.0004 ft/ft to 0.037 ft/ft. downward. The vertical gradient between the glacial drift and bedrock, as well as the vertical gradient within the bedrock, are minor, and generally downward. Based on the four well pairs

that include at least one bedrock well, the average vertical gradients range from approximately 0.001 ft/ft to 0.07 ft/ft downward.

5.3.3 Landfill Groundwater Isolation

Rule 299.4411(2)(a) requires that a Type II landfill shall be designed to maintain a minimum 10-foot vertical isolation from the top of the primary liner to the natural groundwater level. To develop a representative design groundwater elevation for the Phase V Expansion, we evaluated the historic fluctuations in groundwater levels at the existing MRL facility. Groundwater elevation records dating back to 1986 were compiled and evaluated. The available groundwater elevations are graphed on Plate 20, Historic Groundwater Elevations. As shown, the groundwater elevations at some of the on-site wells appear to have declined over the period of record. The upgradient wells appear to have been the most affected. The decline in groundwater elevations may be due to increased pumping from the regional aquifer(s), natural long-term variations in precipitation/recharge, or other factors.

To quantify the groundwater level variability and develop appropriate design groundwater elevations, we calculated the change in groundwater elevation at each well from its historic maximum elevation to the level measured during this hydrogeologic investigation (June 2003). We then calculated the average of these changes for all of the available wells. Based on this calculation, the groundwater levels measured in June 2003 are on average approximately 5 feet lower than historic maximum elevations. Plate 21, Estimated Historic Maximum Groundwater Elevation Contour Map, included in Appendix A, presents contours based on adding 5 feet to the June 2003 contour elevations. This contour map was used for design of the landfill grades for the Phase V area to maintain 10-foot vertical isolation distance from the historic maximum groundwater elevations.

To provide additional confirmation that the Phase V Expansion design meets the requirement of Rule 299.4411(2)(a), we reviewed the maximum historic groundwater elevations observed at the monitoring wells located along the east side of the existing MRL facility (i.e., MW-21, MW-22, and MW-23). These historic maximum groundwater elevations were then extrapolated across the

Phase V Expansion area, based on the current groundwater flow direction. We compared these estimated maximum groundwater elevation contours to the proposed landfill subgrade elevations. Based on this comparison, the design grades are sufficient to provide greater than the required 10-foot vertical isolation distance.

5.3.4 Groundwater Mounding

Rule 299.4904(4)(g) requires that a hydrogeologic investigation must evaluate potential groundwater mounding that may result from the diversion of infiltration and surface water run-off from the proposed landfill. As shown on Plate 2, the proposed site design for the Phase V Expansion includes a sedimentation basin ("D") in the northeast corner of the property.

To evaluate the potential effects of this sedimentation basin on groundwater levels, we developed a numerical groundwater model of the aquifer using the computer software MODFLOW©. The results of our analyses are presented graphically in Appendix F. Figures F-1 and F-2 present the steady state calibration of the model representing current conditions. The first simulation assumed the sedimentation basin was unlined and the stored surface water was free to infiltrate into the underlying granular soils. As shown on Figures F-3 and F-4, this condition is predicted to raise the groundwater level directly below the basin by approximately 8 feet, and the groundwater mound would propagate beneath a portion of the Phase V landfill.

Figures F-5 and F-6 represent the expected mounding under the basin assuming a layer of semi-permeable sediment that is expected to accumulate in the bottom of the basin. As shown, this sedimentation of the bottom does not result in any appreciable lessening of the groundwater mound. Based on these results, MRL plans to line the bottom of the storm water basin to prevent groundwater mounding.

Figures F-7 and F-8 present the predicted groundwater levels assuming the basin is lined with 1 foot of compacted clay having a hydraulic conductivity of 1×10^{-7} centimeters per second (cm/sec). As shown, placing this type of liner in the basin will result in only a minimal effect on groundwater levels.

5.4 EXISTING GROUNDWATER QUALITY

Groundwater samples were collected from the six observation wells installed for the Phase V Expansion area on July 12, 2003. The samples were analyzed for VOCs, dissolved metals, COD, bicarbonate and carbonate alkalinity, chloride, sulfate, phenolics, total cyanide, TOC, TIN, and TDS as approved in the site's current HMP. Specific conductance, temperature, and pH were determined in the field. Inspection of this data showed the following:

- No volatile organic compounds (VOCs) were detected in any of the observation wells installed for the Phase V Development.

- Dissolved iron concentrations at OW-202, OW-205, OW-206, and OW-212D exceeded the MDEQ Generic Residential Cleanup Criterion (GRCC) for iron (aesthetic-based criterion – 0.3 mg/L). This groundwater quality is representative of background conditions.

- Dissolved manganese concentrations at OW-201S, OW-202, OW-204, OW-205, OW-206, OW-212S and OW-212D exceeded the MDEQ GRCC for manganese (aesthetic-based criterion – 0.050 mg/L). This groundwater quality is representative of background conditions.

In addition, groundwater chemical data from samples collected from the observation wells installed for the Phase V Expansion area have been plotted on a Piper Trilinear Diagram. This type of diagram plots groundwater as a function of major ion chemistry. Groundwater at the Phase V Expansion area can be characterized as calcium/bicarbonate, with moderate amounts of the common cations (sodium, potassium, and magnesium), and common anions (chloride and sulfate). Overall, the groundwater in the proposed Phase V Expansion area shows a high degree of separation from landfill leachate compositions. This information indicates that a groundwater detection monitoring program will provide satisfactory indication in the event of a release from the unit.

In accordance with Rule 299.4440, the revised *Hydrogeologic Monitoring Plan* (HMP) submitted with the Construction Permit Application specifically describes the provisions for sampling new monitoring wells and establishing a background database. At least eight sets of independent groundwater samples will be collected from new monitoring wells, and background will be established in accordance with the statistical analysis plan prior to the placement of waste within the expansion area.

5.5 SURFACE WATER

Generally, surface runoff from the Phase V Expansion area flows to a low lying area along the north boundary of the property. Storm water generated from the site will be managed using engineered controls including overall site grading, ditches and detention basins. The detention basins provide sedimentation control and discharge the storm water at a controlled rate to the State Lateral Drain west of the landfill or to a wetland area north of the landfill. Plate 5 shows the current surface drainage direction within the Phase V Expansion area based on existing topography. The storm water collection and discharge system has been designed to minimize the potential disruption of existing surface water hydrology and flow patterns. Refer to the accompanying Engineering Drawings for more information regarding the proposed storm water management system for the existing MRL facility and the Phase V Expansion area.

The discharges are permitted under the site's existing NPDES industrial storm water permit number MIR 011450. This existing permit will be modified to include the proposed expansion area. In addition, MRL has applied for a Part 303 wetland permit for the proposed discharge of storm water to a wetland. Finally, to ensure compliance with Rule 299.4436, MRL will conduct a surface water monitoring program to evaluate the quality of the surface water discharges. This surface water monitoring program is included as part of the *Hydrogeologic Monitoring Plan* (NTH, March 2005) that is included in the current Construction Permit Application.

6.0 SITE MONITORING APPROACH

The purpose of this investigation/report was to provide specific geologic and hydrogeologic information pertinent to two aspects of the development of a Type II disposal facility; landfill design and environmental monitoring. Details pertaining to site monitoring are presented in the *Hydrogeologic Monitoring Plan* (HMP) for the site that is included in the Construction Permit Application.

Information pertaining to the location, presence, and current and historic elevation of the water table in the design area and adjacent site was provided to the landfill design team, so that the landfill floor grade elevation determinations could be made. Additionally, the design team was provided other necessary hydrogeologic characteristics relevant to the site design. Specifics related to the actual design of the landfill are included in the *Engineering Basis of Design Report* (McNeely & Lincoln, 2005).

The second aspect, environmental monitoring, includes discussion of the identification of the target monitoring zone, as well as justification for the placement of groundwater monitoring wells. Leachate and secondary collection system (SCS) monitoring, which is generally considered part of an environmental monitoring "system", is discussed in detail in the HMP.

As indicated in preceding sections of this report, the brown surficial sands and gray silty sand and gravel unit comprise the target monitoring zone for the site. This determination was made based on several factors, including; the continuous nature of the unit, groundwater use in the region, the direction of groundwater flow, the predominantly horizontal nature of groundwater flow, and the fact that it is the target monitoring zone at the existing site.

Both "monitorable" and "unmonitorable" monitoring approaches are anticipated for the site, with the Phase V Expansion area being "monitorable" and the existing operating landfill "unmonitorable." As noted, the active site is currently implement a Remedial Action Plan for inorganics (specifically, sulfate and boron) stemming from the placement of trommeled waste

at the north end of the active site. As shown on Plates 16, 17, and 18, the groundwater flow direction at the Phase V Expansion area is north, which makes the existing site sidegradient to the Phase V Expansion area. Therefore, it is unlikely that these past activities at the site will impact groundwater quality at the Phase V Expansion area, thus rendering the Phase V Expansion area "monitorable."

The groundwater flow direction exhibited at the entire site makes a two-tiered monitoring approach for the site possible. The proposed monitoring of the site will consist of two distinct areas, separated by a line of demarcation, separating the active site from the Phase V Expansion area. The expansion area will comprise the monitorable unit, and the active site will comprise the unmonitorable unit. The following presents a brief discussion of each unit:

- **Phase V Expansion Area** – The expansion area will comprise the monitorable unit. The landfill cells in the eastern area will be double-lined and include a SCS. Monitoring of the SCS will be the first line of leak detection for the site. Groundwater monitoring wells will also be used for detection monitoring purposes consistent with Part 115 requirements. Specifically, seven groundwater monitoring wells will be added to the program to effectively monitor the additional ±15 acres included in the Phase V Expansion area.

- **Existing Site** – The active site will comprise the unmonitorable unit. The proposed monitoring approach for the active site will consist of a monitoring well network with adequate upgradient and downgradient coverage. Groundwater quality data will be evaluated with time-concentration trend plots, as well as comparison to Part 201 groundwater protection standards.

OK
LB

Specifics regarding the proposed monitoring approach is included in the HMP (NTH, 2005) for the site.

7.0 CONCLUSIONS

A hydrogeologic investigation and was performed for the proposed Phase V Expansion area at the McGill Road Landfill. The McGill Road Landfill is located in Blackman and Leoni Townships, Jackson County, Michigan. The results of this study have determined the following:

- The site is hydrogeologically suitable for the development of a Type II sanitary landfill pursuant to Part 115 rules.

- There are two basic hydrogeologic units at the Phase V Expansion area:

  [1] **Upper water-bearing granular unit** – This zone consists of brown surficial sands and a gray silty sand and gravel unit, which together comprise the upper water-bearing unit.

  [2] **Bedrock unit** – The underlying rock formation at the Phase V Expansion area consists of the Parma Sandstone, a gray to grayish green sandstone generally encountered at approximately 900 feet msl.

- Groundwater occurs under unconfined conditions across the Phase V Expansion area. Groundwater flow in the uppermost unit is to the north at the Phase V Expansion area, and to the north-northwest at the active site.

- Groundwater flow within the uppermost granular unit at the site is essentially horizontal and exhibits very little vertical flow.

- No groundwater quality impacts are anticipated as a result of operations of the landfill. Similarly, no effect on the groundwater from the existing site has been

noted within the Phase V Expansion area. The proposed design meets or exceeds minimum Part 115 standards currently in effect.

Based on the hydrogeologic requirements for a Construction Permit Application, as set forth in Part 115 of P.A. 451, as amended, the site is suitable and has been adequately characterized for construction of a Type II sanitary landfill under the promulgated rules.

TABLE 1
OBSERVATION WELL CONSTRUCTION DETAILS
McGILL ROAD LANDFILL
NTH Proj. No. 13-030114-02

WELL DESIGNATION	HYDRAULIC LOCATION WITH RESPECT TO PHASE V	UNIT MONITORED	TOP OF CASING ELEVATION (feet msl)	SCREEN TIP ELEVATION (feet msl)	WELL CASING/ SCREEN MATERIALS	DATE INSTALLED
OW-201S	Downgradient	Glacial Sand	941.20	920.7	2" PVC/5' PVC	6/4/03
OW-201D	Downgradient	Bedrock	941.20	893.5	2" PVC/5' PVC	6/4/03
OW-202	Downgradient	Glacial Sand	941.45	921.6	2" PVC/5' PVC	6/4/03
OW-204	Downgradient	Glacial Sand	954.19	926.3	2" PVC/5' PVC	6/6/03
OW-205	Downgradient	Glacial Sand	989.81	939.0	2" PVC/5' PVC	6/12/03
OW-206	Upgradient	Glacial Sand	990.86	940.2	2" PVC/5' PVC	6/11/03
OW-212S	Upgradient	Glacial Sand	992.53	945.0	2" PVC/5' PVC	6/10/03
OW-212D	Upgradient	Bedrock	992.54	895.5	2" PVC/5' PVC	6/17/03

TABLE 2
GROUNDWATER ELEVATION DATA
McGILL ROAD LANDFILL
NTH Project No. 13-030114-02

Monitoring/Observation Well Designation	6/19/03	8/20/03	9/12/03
MW-3R	NA	929.27	928.90
MW-10R	929.59	928.19	927.76
MW-19R	939.22	937.87	937.56
MW-23R	947.43	946.95	946.69
MW-24R	947.45	946.90	946.69
MW-29	933.63	932.81	932.66
MW-30	931.85	930.98	930.75
MW-32/33	949.00	NA	NA
MW-36	948.93	948.47	948.24
MW-59	927.79	926.64	926.41
MW-60	927.94	926.92	926.64
MW-62S	927.72	926.62	926.44
MW-62D	NA	926.19	926.12
MW-63	948.98	948.57	948.28
MW-13	927.86	926.81	926.47
MW-14	NA	NA	NA
MW-46	NA	925.89	925.71
MW-54	NA	NA	NA
MW-55	927.80	NA	926.74
MW-61S	NA	925.81	925.64
MW-61D	NA	925.81	925.63
MW-4	NA	929.10	928.62
MW-15	936.26	935.61	935.74
MW-20R	938.85	937.78	937.56
MW-21	940.50	939.02	938.61
MW-22	937.89	941.43	939.62
MW-25	NA	948.30	948.15
MW-31	949.00	948.52	948.29
MW-34	NA	952.03	951.79
MW-35	NA	NA	NA
MW-37	NA	NA	NA
MW-38	NA	946.84	NA
MW-53	948.96	948.54	948.30
MW-101	948.97	948.51	948.29
OW-201S	931.52	930.09	929.74
OW-201D	931.48	930.07	929.70
OW-202	929.88	928.33	927.94
OW-204	939.18	937.24	936.75
OW-205	947.80	947.22	946.91
OW-206	948.62	948.15	947.94
OW-212S	948.41	947.86	947.70
OW-212D	NA	946.56	946.26

NOTES:

[1] Water level measurements by NTH Consultants, Ltd. on dates indicated.
[2] NA - Water level was not recorded.

TABLE 3
GROUNDWATER FLOW VELOCITY CALCULATIONS
McGILL ROAD LANDFILL
NTH Project No.: 13-030114-02

Flow Path	Δh	Δl	Hydraulic Gradient Δh/Δl	Average Hydraulic Conductivity, k (ft/day)	Assumed Effective Porosity, n	Average Calculated Groundwater Velocity (ft/day)
June 19, 2003						
A	20.0	1465	0.014	0.60	0.3	0.027
B	18.0	1340	0.013	1.37	0.3	0.061
August 20, 2003						
C	27.0	1955	0.014	0.60	0.3	0.028
D	18.0	1390	0.013	1.37	0.3	0.059
September 12, 2003						
E	22.0	1575	0.014	0.60	0.3	0.028
F	20.0	1480	0.014	1.37	0.3	0.062

Notes:

1. Average Hydraulic Conductivity (K) is based on slug test data reported within the Hydrogeological Investigation for the Philip McGill Road Landfill Completed by Westshore Engineering and Surveying, Inc., dated February 1995, and NTH Consultants dated June 2003.
2. Δh = Change in groundwater elevation.
3. Δl = Distance along flow paths.
4. Velocity = K(Δh / Δl) / n.

TABLE 4
VERTICAL GRADIENTS
McGILL ROAD LANDFILL
NTH Project No. 13-030114-02

DATE	Nested Well Pair										
	MW-3R/MW-4*	MW-19R/MW-20R*	MW-23R*/MW-24R	MW-29/MW-30*	MW-54/MW-55*	MW-61S/MW-61D	MW-62S/MW62D	MW-13*/MW-14	MW-36/MW-53*	OW-201S/OW-201D	OW-212S/OW212D
11/15/91	0.2917	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
01/03/95	0.3000	-0.0309	0.0000	-0.0934	0.0696	NA	NA	-0.0306	0.0000	NA	NA
12/03/96	-0.1167	-0.0603	-0.0010	-0.1238	-0.0842	NA	NA	-0.0194	0.0101	NA	NA
02/01/97	NA	-0.0551	0.0020	-0.1238	NA	NA	NA	NA	-0.0077	NA	NA
06/01/97	-0.0375	-0.0199	0.0000	-0.1245	-0.0816	NA	NA	-0.0296	-0.0060	NA	NA
09/15/97	-0.1542	0.0103	-0.0025	-0.1318	-0.0905	NA	NA	-0.0333	-0.0065	NA	NA
12/08/97	-0.0083	-0.0294	0.0000	-0.1238	-0.0835	NA	NA	-0.0278	-0.0018	NA	NA
03/09/98	-0.0417	-0.0441	0.0000	-0.1132	-0.0380	NA	NA	-0.0241	-0.0012	NA	NA
06/23/98	NA	-0.0096	0.0000	-0.1285	-0.0848	NA	NA	-0.0306	-0.0012	NA	NA
09/14/98	NA	-0.0110	-0.0005	-0.1318	-0.0918	NA	NA	-0.0250	-0.0006	NA	NA
12/14/98	-0.1708	-0.0169	-0.0005	-0.1232	0.0184	NA	NA	-0.0231	-0.0018	NA	NA
03/15/99	-0.0375	-0.0279	0.0005	-0.1179	-0.0759	NA	NA	-0.0259	-0.0018	NA	NA
06/07/99	NA	-0.0132	-0.0005	-0.1172	-0.0804	NA	NA	NA	-0.0012	NA	NA
08/30/99	-0.1125	-0.0074	-0.0005	-0.1225	-0.0892	0.0000	NA	-0.0213	-0.0012	NA	NA
12/06/99	-0.2292	-0.0132	-0.0034	-0.1132	-0.0861	0.0000	-0.0265	-0.0898	-0.0018	NA	NA
02/21/00	-0.0917	-0.0162	0.0000	-0.1099	-0.0880	0.0005	-0.0167	NA	-0.0006	NA	NA
05/08/00	0.1250	-0.0574	0.0000	-0.1007	-0.0734	0.0000	-0.0220	NA	-0.0006	NA	NA
8/10/00	NA	-0.0213	-0.0005	-0.1073	-0.0778	-0.0005	-0.0311	NA	0.0000	NA	NA
10/25/00	NA	-0.0228	0.0005	-0.0947	-0.0823	-0.0005	-0.0205	-0.0343	0.0006	NA	NA
01/19/01	NA	-0.0338	-0.0005	-0.1020	-0.0576	0.0011	-0.0333	-0.0250	0.0006	NA	NA
04/24/01	NA	NA	0.0010	-0.0894	-0.0633	-0.0005	-0.1598	0.0120	NA	NA	NA
7/18/01	NA	-0.0309	-0.0005	-0.1258	-0.0892	-0.0070	-0.0030	0.0472	-0.0006	NA	NA
10/9/01	NA	-0.0096	0.0005	0.1987	-0.0861	0.0157	-0.0258	-0.0685	-0.0006	NA	NA
1/30/02	NA	-0.0382	0.0069	-0.1113	-0.0892	0.0086	-0.0371	NA	0.0048	NA	NA
5/22/02	NA	-0.1904	-0.0495	-0.1020	-0.0873	-0.0216	-0.0515	0.0574	-0.0536	NA	NA
8/21/02	NA	-0.0228	0.0000	0.0517	-0.0576	-0.0016	-0.0568	-0.0463	-0.0036	NA	NA
11/14/02	NA	-0.0221	0.0005	-0.1437	NA	-0.0016	-0.0318	NA	0.0018	NA	NA
3/11/03	NA	-0.0346	0.0000	-0.1325	NA	0.0005	-0.0242	NA	-0.0060	NA	NA
6/19/03	NA	-0.0272	-0.0010	-0.1179	NA	NA	NA	NA	0.0018	-0.0015	NA
8/5/03	-0.0708	-0.0066	0.0025	-0.1212	NA	0.0000	-0.0326	NA	0.0042	-0.0007	-0.0478
9/12/03	-0.1167	0.0000	0.0000	-0.1265	NA	-0.0005	-0.0242	NA	0.0036	-0.0015	-0.0529
Average	-0.0314	-0.0297	-0.0016	-0.1008	-0.0688	-0.0004	-0.0373	-0.0231	-0.0024	-0.0011	-0.0504

Notes:

* Deep well

1. NA - Groundwater elevation not available for one or both wells
2. MW-54 and MW-55 are both set in bedrock
3. A negative value indicates a downward vertical gradient.

Shading indicates that the deep well is set in bedrock

APPENDIX A

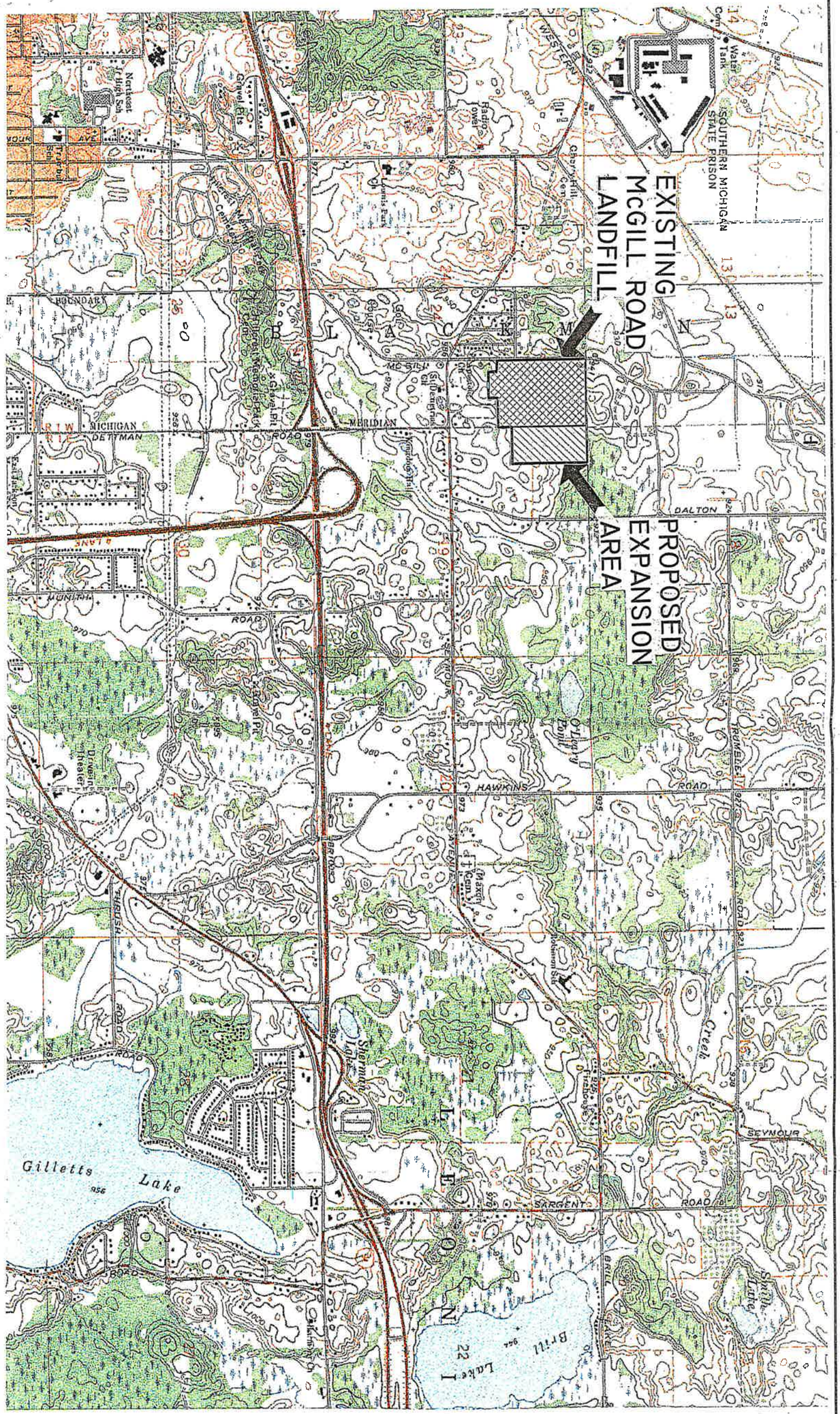
PLATES

EXHIBIT A – GENERAL NOTES

LOGS OF TEST BORING

LOGS OF OBSERVATION WELL

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10-10-03



BASE MAP USGS 7.5-MINUTE QUADRANGLE
TOPOGRAPHIC MAPS:
JACKSON NORTH, MICH. 1970
GILLETTS LAKE, MICH. 1970

QUADRANGLE LOCATION



SCALE

0 2000 4000

FEET

NORTH

SITE LOCATION MAP	PROJECT NO. 13-030114-02	NTH Consultants, Ltd.	
McGILL ROAD LANDFILL-EASTERN EXPANSION BLACKMAN AND LEONI TOWNSHIPS JACKSON COUNTY, MICHIGAN	SCALE: AS SHOWN DRAWN BY: JD CHECKED BY: ACE	Professional Engineering & Environmental Services Farmington Hills Detroit Exton Grand Rapids Lansing	

DATE: 09-15-03
SHEET 1 OF 1
PLATE NO: 1

E 2,600 E 2,800 E 3,000 E 3,200 E 3,400 E 3,600 E 3,800 E 4,000 E 4,200 E 4,400

N 8,200 N 8,000 N 7,800 N 7,600 N 7,400 N 7,200 N 7,000 N 6,800 N 6,600

VERY THICK TREE AREA

SEDIMENTATION BASIN B

SEDIMENTATION BASIN C

SEDIMENTATION BASIN A

PROPOSED SEDIMENTATION BASIN D

McGILL ROAD

BLACKMAN TOWNSHIP

LEONI TOWNSHIP

SUMP # 2

SUMP #1

SUMP #3

SUMP #4

SUMP #5

PHASE II CELL 1

PHASE III CELL 1A

PHASE IV CELL 1A

PHASE IV CELL 1

PHASE III CELL 1

PHASE III CELL 2

PHASE III CELL 4

PHASE V CELL 1

PILE

NORTH

0 100 200

SCALE FEET

LEGEND:

- PROPERTY LINE
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- PROPOSED SOLID WASTE BOUNDARY LINE
- PROPOSED ACCESS AND PERIMETER ROADS

NOTE:

1. BACKGROUND TOPOGRAPHY IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AERO-TRONIC'S, INC., JOB NO'S. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003.
2. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

REV.

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REVISED-5-04

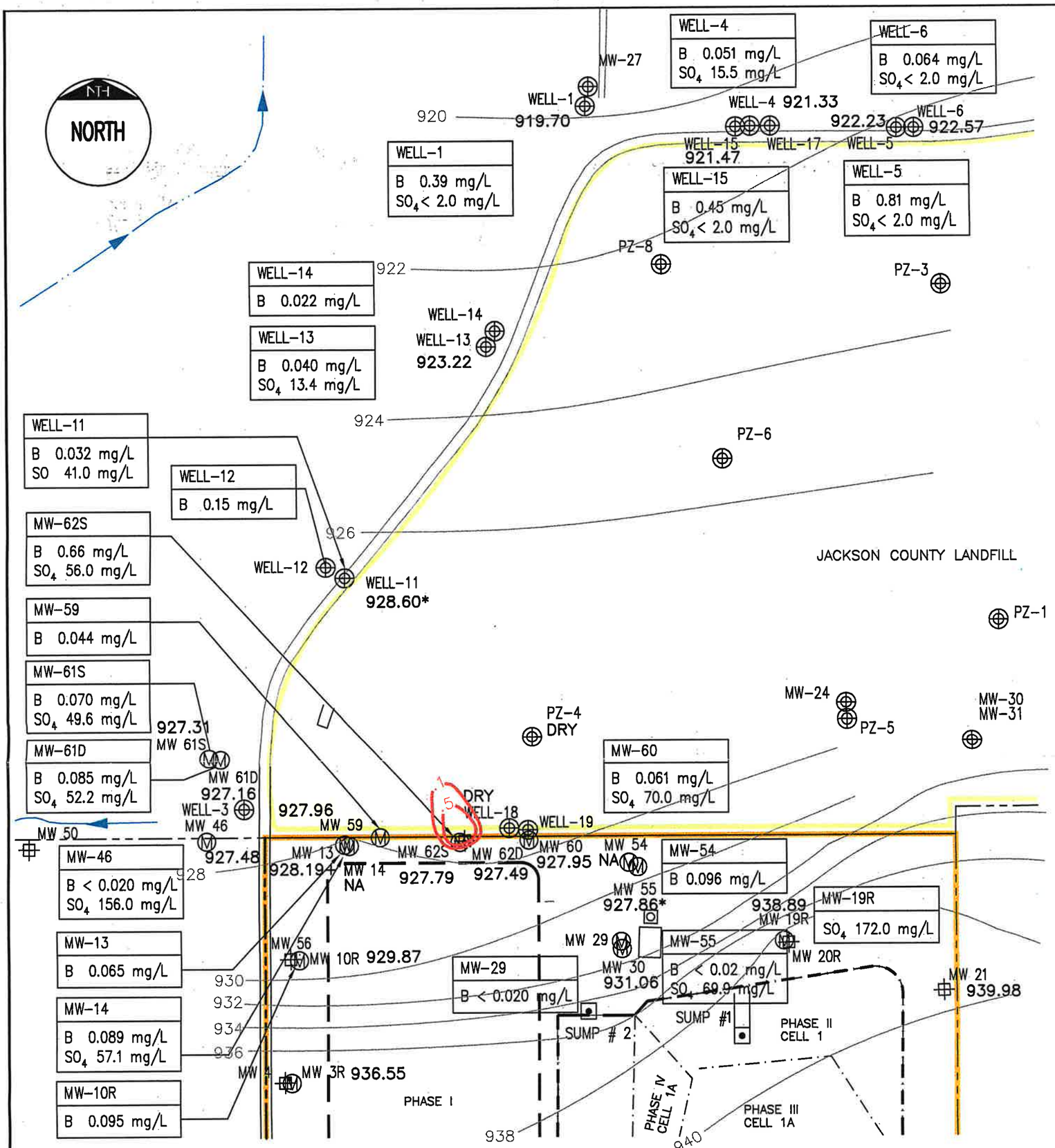
PROJECT NO. 03-030114-02
SCALE: AS SHOWN
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CHECKED BY: DJ

SITE PLAN

McGILL ROAD LANDFILL - PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-26-03
SHEET 1 OF 1
PLATE NO: 2

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03-08-04



LEGEND:

- MW 54 — EXISTING MONITORING WELL
- MW10 — EXISTING PIEZOMETER
- WELL-1 — JACKSON COUNTY LANDFILL MONITORING WELL
- PROPERTY LINE
- EXISTING CELL BOUNDARY LINE (APPROX.)
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- ACTIVE MCGILL ROAD LANDFILL SITE
- JACKSON COUNTY LANDFILL SITE
- 946.58 — GROUNDWATER ELEVATION MEASURED IN MONITORING WELL
- 922 — GROUNDWATER ELEVATION CONTOUR (DATUM: MEAN SEA LEVEL)
- 0.5 — DISSOLVED BORON CONCENTRATION CONTOURS (mg/L)

WELL I.D.
DISSOLVED BORON CONCENTRATION
SULFATE CONCENTRATION

NOTE:

1. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

JCL WATER LEVEL AND INORGANIC CONCENTRATION DATA BASED ON GROUNDWATER SAMPLES COLLECTED BY NTH CONSULTANTS, LTD. ON 5/11/04 AND 7/1/04

MRL WATER LEVEL AND INORGANIC CONCENTRATION DATA BASED ON GROUNDWATER SAMPLES COLLECTED BY SEVERN TRENT LABORATORIES, INC. ON 4/12 - 4/14/04

PLATE NO: 3 | SHEET 1 OF 1 | DATE: 03-17-05

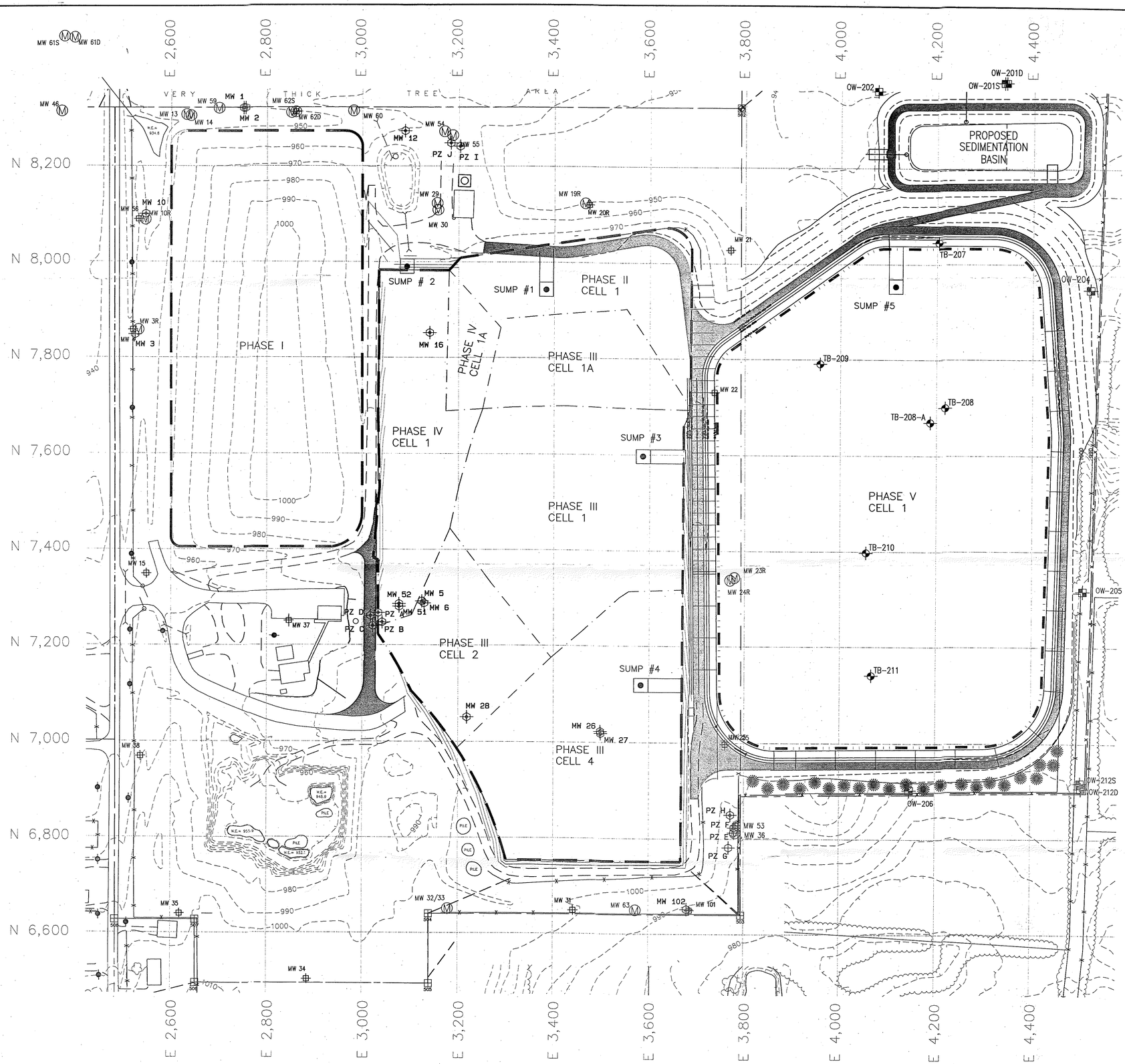
HORIZONTAL EXTENT OF KNOWN GROUNDWATER IMPACTS

McGILL ROAD LANDFILL
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

PROJECT NO. 13-030114-09
SCALE: 1" = 200'
DRAWN BY: HK
CHECKED BY: ACE

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

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03-17-05



NORTH

0 100 200

SCALE FEET

LEGEND:

- MW 54 (M) — EXISTING MONITORING WELL
- MW 10 — EXISTING PIEZOMETER
- MW 25 — FORMER MONITORING WELL OR PIEZOMETER (ABANDONED)
- PROPERTY LINE
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- PROPOSED SOLID WASTE BOUNDARY LINE
- TEST BORING DRILLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- TEST BORING WITH OBSERVATION WELL INSTALLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03

NOTE:

1. BACKGROUND TOPOGRAPHY IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AERETRONICS, INC., JOB NOS. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003.
2. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

REV. | DESIGNS | BY | DATE

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PROJECT NO: 13-030114-02
SCALE: AS SHOWN
DRAWN BY: ML
CHECKED BY: ACE

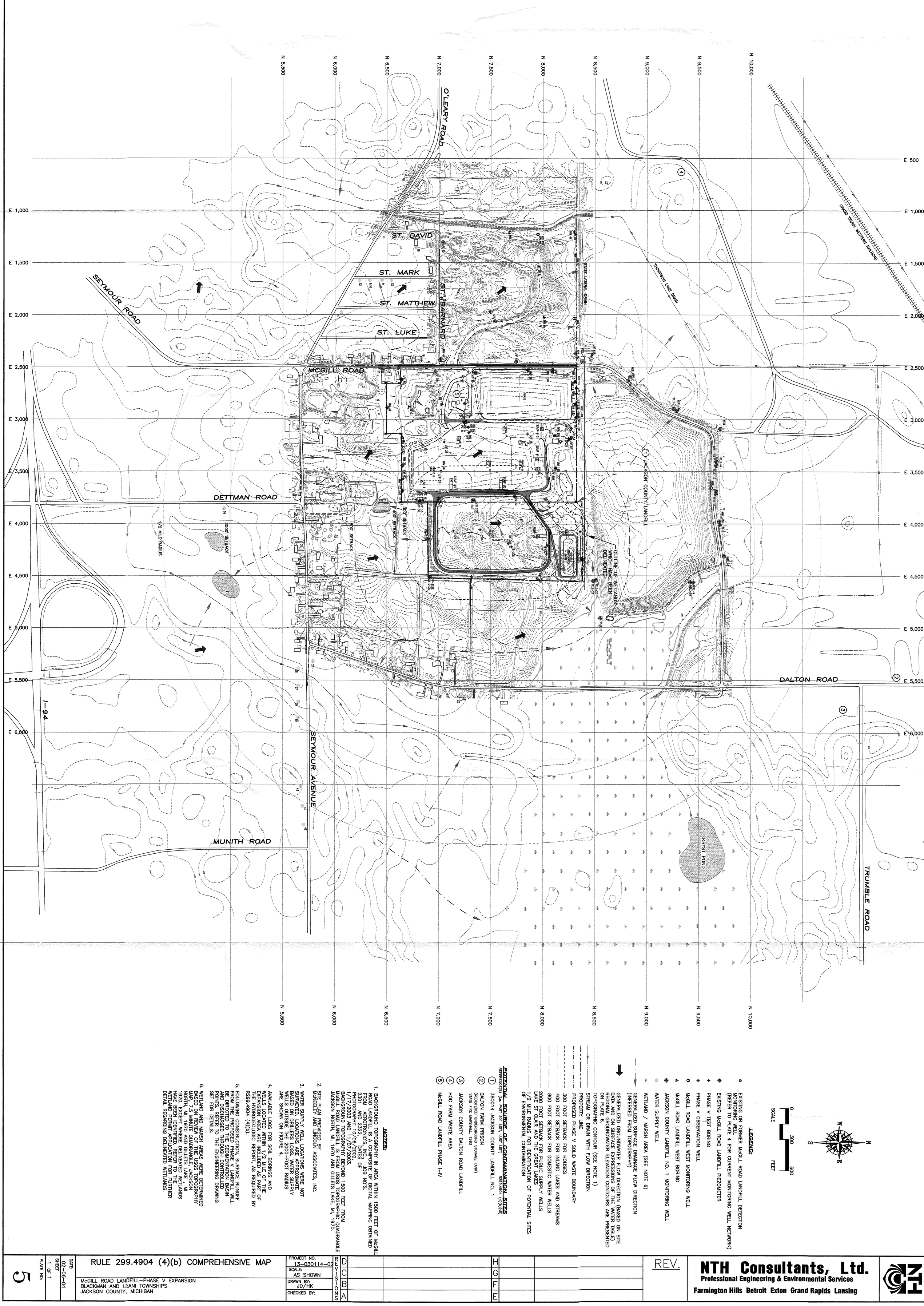
TEST BORING AND OBSERVATION WELL LOCATION MAP

McGILL ROAD LANDFILL - PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-26-03
SHEET 1 OF 1
PLATE NO: 4

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03-12-05

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02-06-04



LEGEND:

- EXISTING OR FORMER McGILL ROAD LANDFILL DETECTION MONITORING WELL (REFER TO PLATE 4 FOR CURRENT MONITORING WELL NETWORK)
- EXISTING McGILL ROAD LANDFILL PIEZOMETER
- PHASE V TEST BORING
- PHASE V OBSERVATION WELL
- McGILL ROAD LANDFILL WEST MONITORING WELL
- McGILL ROAD LANDFILL WEST BORING
- JACKSON COUNTY LANDFILL NO. 1 MONITORING WELL
- WATER SUPPLY WELL
- WETLAND / MARSH AREA (SEE NOTE 6)
- GENERALIZED SURFACE DRAINAGE FLOW DIRECTION (INFERRED FROM TOPOGRAPHY)
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON SITE DATA AND ON SURFACE EXPRESSIONS OF THE WATER TABLE) REGIONAL GROUNDWATER ELEVATION CONTOURS ARE PRESENTED ON PLATE 6.
- TOPOGRAPHIC CONTOUR (SEE NOTE 1)
- STREAM OR DRAIN WITH FLOW DIRECTION
- PROPERTY LINE
- PROPOSED PHASE V SOLID WASTE BOUNDARY
- 300 FOOT SETBACK FOR HOUSES
- 400 FOOT SETBACK FOR INLAND LAKES AND STREAMS
- 800 FOOT SETBACK FOR DOMESTIC WATER WELLS
- 2000 FOOT SETBACK FOR PUBLIC SUPPLY WELLS LAKE ST CLAIR AND THE GREAT LAKES
- 1/2 MILE RADIUS FOR IDENTIFICATION OF POTENTIAL SITES OF ENVIRONMENTAL CONTAMINATION

POTENTIAL SOURCE OF CONTAMINATION SITES

REFERENCE(S) (i.e. PART 201 LIST, LUST LIST) R299.4904 (4)(b)(vii)

1. 380014 JACKSON COUNTY LANDFILL NO. 1
2. DALTON FARM PRISON (REGISTERED UNDERGROUND STORAGE TANK) STATE FIRE MARSHALL 1993
3. JACKSON COUNTY DALTON ROAD LANDFILL
4. HOG FARM WASTE AREA
5. McGILL ROAD LANDFILL PHASE I–IV

NOTES:

1. BACKGROUND TOPOGRAPHY IN AREA WITHIN 1500 FEET OF McGILL ROAD LANDFILL IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AEROTRONIC'S, INC., JOB NO'S. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003. BACKGROUND TOPOGRAPHY BEYOND 1500 FEET FROM McGILL ROAD LANDFILL IS FROM USGS TOPOGRAPHIC QUADRANGLE JACKSON NORTH, MI, 1970 AND GILLETS LAKE, MI, 1970.
2. SITE PLAN PROVIDED BY McNEELEY AND LINCOLN ASSOCIATES, INC.
3. WATER SUPPLY WELL LOCATIONS WERE NOT SURVEYED. LOCATIONS ARE APPROXIMATE BASED ON DRILLERS LOGS. WATER SUPPLY WELLS OUTSIDE THE 2000-FOOT RADIUS ARE SHOWN ON FIGURE 4.
4. AVAILABLE LOGS FOR SOIL BORINGS AND WELLS LOCATED WITHIN 1/2 MILE OF THE EXPANSION AREA ARE INCLUDED AS PART OF THE HYDROGEOLOGIC REPORT, AS REQUIRED BY R299.4904 (4)(b).
5. FOLLOWING CONSTRUCTION, SURFACE RUNOFF FROM THE PROPOSED PHASE V LANDFILL WILL BE DIRECTED TO THE SEDIMENTATION BASIN AND DISCHARGED THROUGH CONTROLLED POINTS. REFER TO THE ENGINEERING DRAWING SET FOR DETAILS.
6. WETLAND AND MARSH AREAS WERE DETERMINED BASED ON REVIEW OF THE USGS TOPOGRAPHY MAP, 7.5 MINUTE QUADRANGLE, JACKSON NORTH, MI, 1970 AND GILLETS LAKE, MI 1970, EXCEPT WHERE DELINEATED WETLANDS HAVE BEEN IDENTIFIED. REFER TO THE WETLAND PERMIT APPLICATION FOR FURTHER DETAIL REGARDING DELINEATED WETLANDS.

REV.

REVISIONS		
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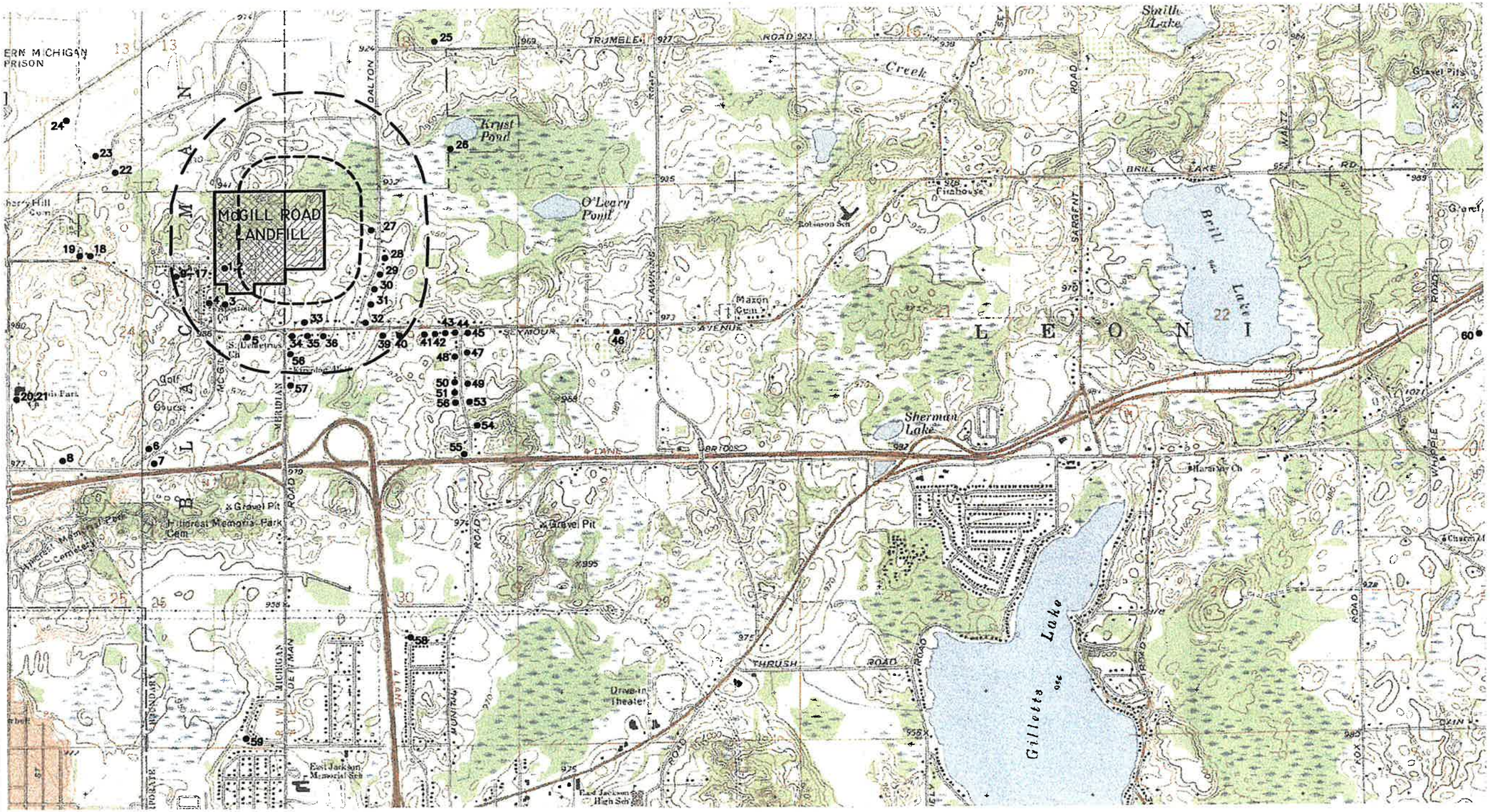
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Farmington Hills Betroit Exton Grand Rapids Lansing

RULE 299.4904 (4)(b) COMPREHENSIVE MAP

McGILL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LEANI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

PROJECT NO. 13-030114-02
SCALE: AS SHOWN
DRAWN BY: JD/HK
CHECKED BY:

DATE: 02-06-04
SHEET 1 OF 1
PLATE NO: 5



LEGEND:

- ●50 — WATER SUPPLY WELL LOCATION
- – – – – – – – — APPROXIMATE LIMITS OF 800–FOOT ISOLATION AREA FOR TYPE III AND TYPE II B WATER SUPPLY WELLS
- — — — — APPROXIMATE LIMITS OF 2000–FOOT ISOLATION AREA FOR TYPE I AND TYPE II A WATER SUPPLY WELLS

NOTE: REGIONAL WATER WELL LOCATIONS ARE APPROXIMATE BASED ON DESCRIPTIONS PROVIDED ON THE DRILLERS LOG.

BASE MAP USGS 7.5–MINUTE QUADRANGLE TOPOGRAPHIC MAPS:
JACKSON NORTH, MICH. 1970
GILLETTS LAKE, MICH. 1970



QUADRANGLE LOCATION

NORTH

0 2000 4000

SCALE FEET

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12–30–03

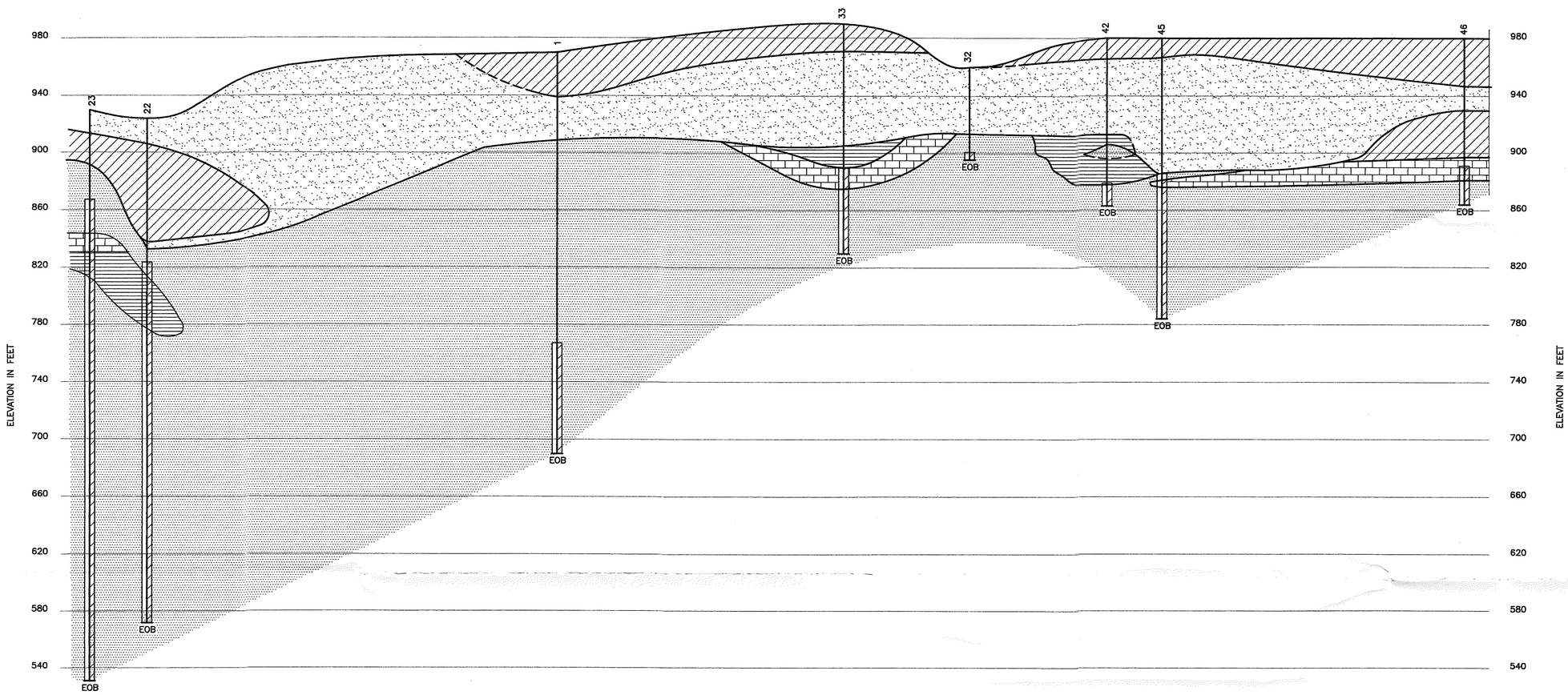
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Farmington Hills Detroit Exton Grand Rapids Lansing

REGIONAL WATER SUPPLY WELL LOCATION MAP

McGILL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

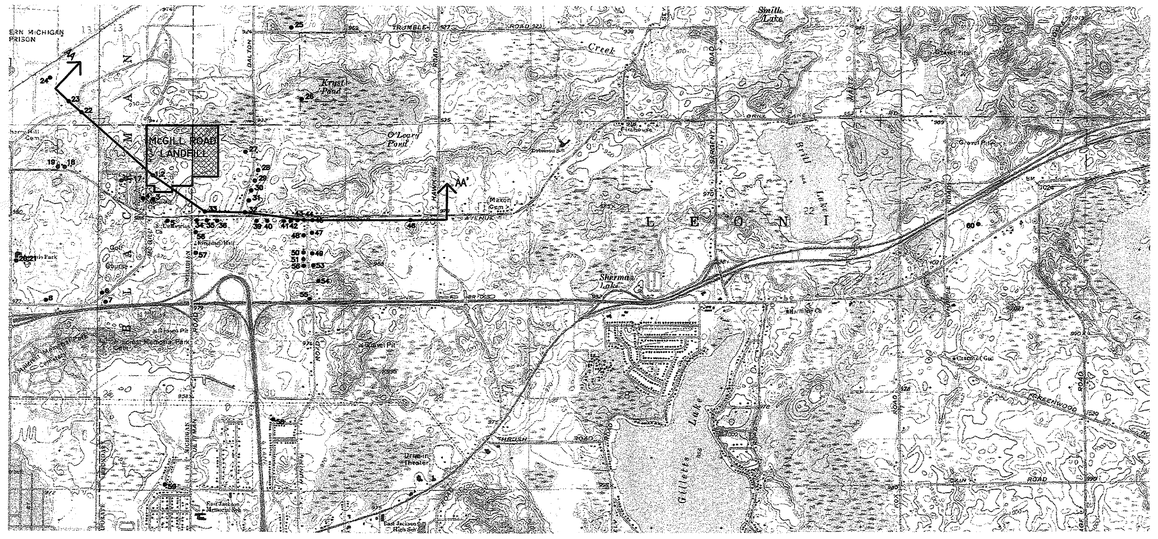
PROJECT NO. 13–030114–02
SCALE: AS SHOWN
DRAWN BY: HK
CHECKED BY: DLP
DATE: 12–19–03
SHEET 1 OF 1
PLATE NO: 6

NORTHWEST **AA** — **AA'** EAST



LEGEND:

- SILTY CLAY
- SILT
- SILTY SAND, SAND, SAND & GRAVEL
- SANDSTONE
- LIMESTONE
- SHALE
- WELL OPEN IN ROCK



LOCATION MAP

NOTE:

THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS REPORTED AT INDIVIDUAL WELL LOCATIONS. THE CONDITIONS BETWEEN WELLS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.

0 40 80
SCALE FEET
VERTICAL

0 500 1000
SCALE FEET
HORIZONTAL

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Farmington Hills· Detroit· Exton· Grand Rapids· Lansing

REV.

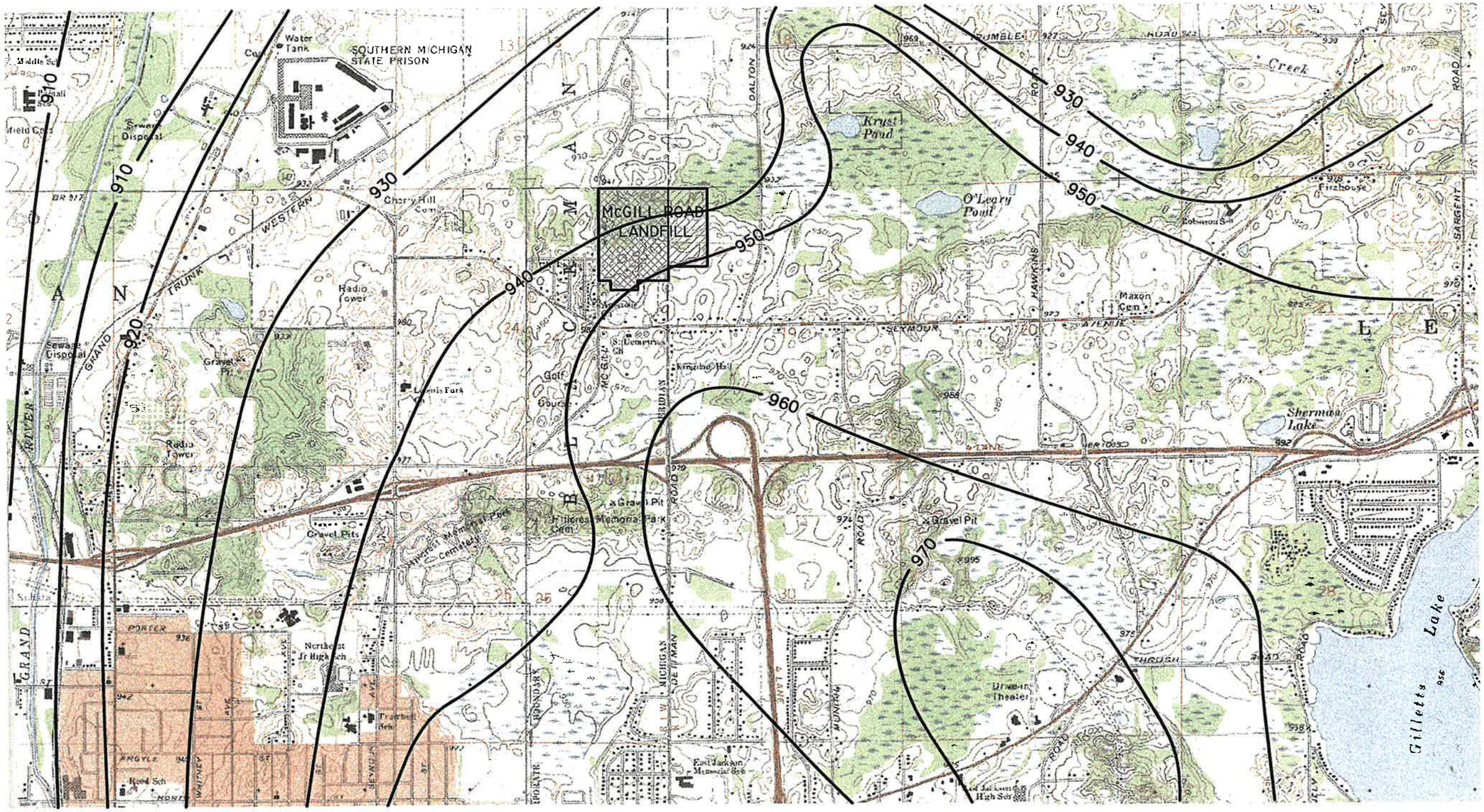
PROJECT NO.	12-030114-02
SCALE	AS SHOWN
DRWN. BY:	HK
CHECKED BY:	J.L.F.

REGIONAL SUBSURFACE PROFILE AA–AA'

McGILL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-22-03
SHEET 1 OF 1
PLATE NO: 7

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03-08-04



BASE MAP USGS 7.5–MINUTE QUADRANGLE
TOPOGRAPHIC MAPS:
JACKSON NORTH, MICH. 1970
GILLETTS LAKE, MICH. 1970



QUADRANGLE LOCATION

NOTE:

CONTOURS PRESENTED ARE GENERALIZED BASED ON SURFACE WATER ELEVATIONS PRESENTED AND THE GENERAL TOPOGRAPHY OF THE AREA.

NORTH

0 2000 4000

SCALE FEET

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12-29-03

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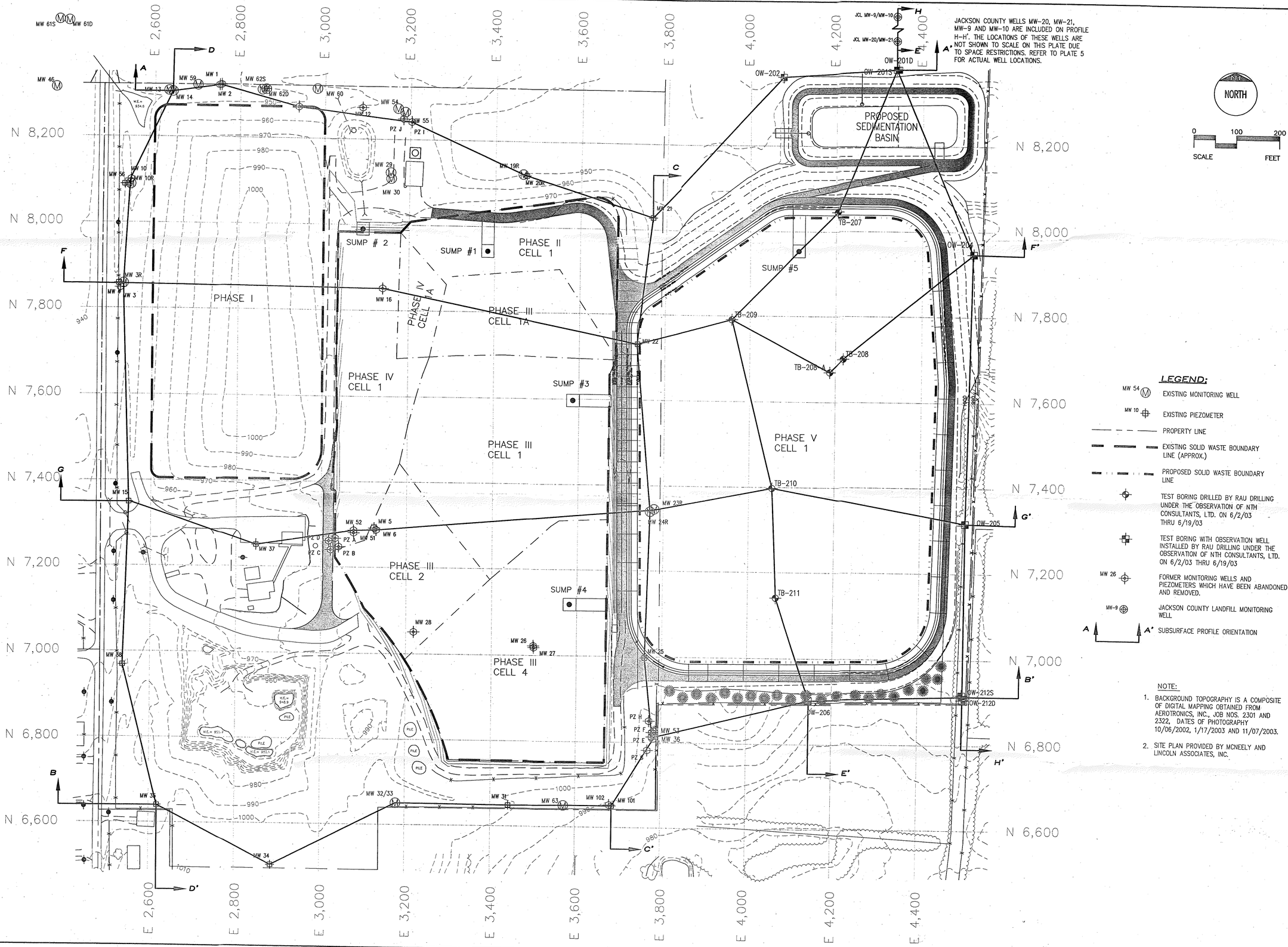
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

PROJECT NO. 13-030114-02
SCALE: AS SHOWN
DRAWN BY: HK
CHECKED BY: DLP

REGIONAL GROUNDWATER ELEVATION CONTOUR MAP

McGILL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-22-03
SHEET 1 OF 1
PLATE NO: 8



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Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

REV. | DESCRIPTION | DATE

PROJECT NO. 13-030114-02
SCALE AS SHOWN
DRAWN BY: HK
CHECKED BY: ACE

SUBSURFACE PROFILE ORIENTATION MAP
McCALL ROAD LANDFILL — PHASE V EXPANSION
BLACKMAN AND LIMA TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-26-03
SHEET 1 OF 1
PLATE NO: 9

J:\13\030114\PHASE.dwg
03-17-05

WEST A

A' EAST

ELEVATION IN FEET

970 960 950 940 930 920 910 900 890 880 870

MW-14 MW-13 MW-2 (REMOVED) MW-1 (REMOVED) MW-12R (REMOVED) MW-54 MW-55 PZ-J (REMOVED) MW-20 MW-19 MW-21 OW-202 OW-201D

SC SC SC

926.47 926.74 937.56 937.56 938.61 929.70 929.74

EOB

?

SP SC

WEST B

B' EAST

ELEVATION IN FEET

1000 990 980 970 960 950 940 930 920 910 900

MW-35 MW-34 MW-32/33 MW-31 MW-101 MW-102 REMOVED MW-53 OW-206 OW-212D

951.79 948.29 948.29 948.30 947.94 946.26

SM SP SW SW

EOB

?

LEGEND:

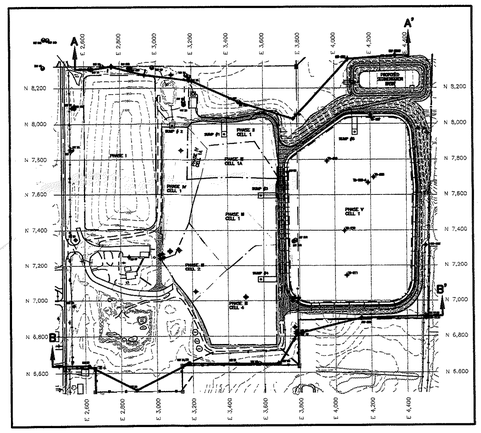
- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC) (SW)
- GRAVEL (GW) (GW–GM) (GM) (SW)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- SOIL SAMPLE INTERVAL (GENERALLY 2–FOOT SPLIT SPOON OR 5–FOOT ROCK CORE) REFER TO THE LOG OF TEST BORING FOR DETAILED SOIL DESCRIPTIONS AND n–VALUE. (SAMPLE INTERVALS ARE ONLY INCLUDED FOR THOSE BORINGS WHICH WERE DRILLED FOR THE PHASE V EXPANSION INVESTIGATION.)
- –SP UNIFIED SOIL CLASSIFICATION OF INDIVIDUAL SAMPLES AT DEPTHS IDENTIFIED, BASED ON LABORATORY TESTING
- ▽ GROUNDWATER ELEVATIONS RECORDED ON SEPTEMBER 2003.

NOTES:

1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.

0 10 20
SCALE FEET
VERTICAL

0 100 200
SCALE FEET
HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
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Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

REV.

REV.	DESCRIPTION	DATE
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C		
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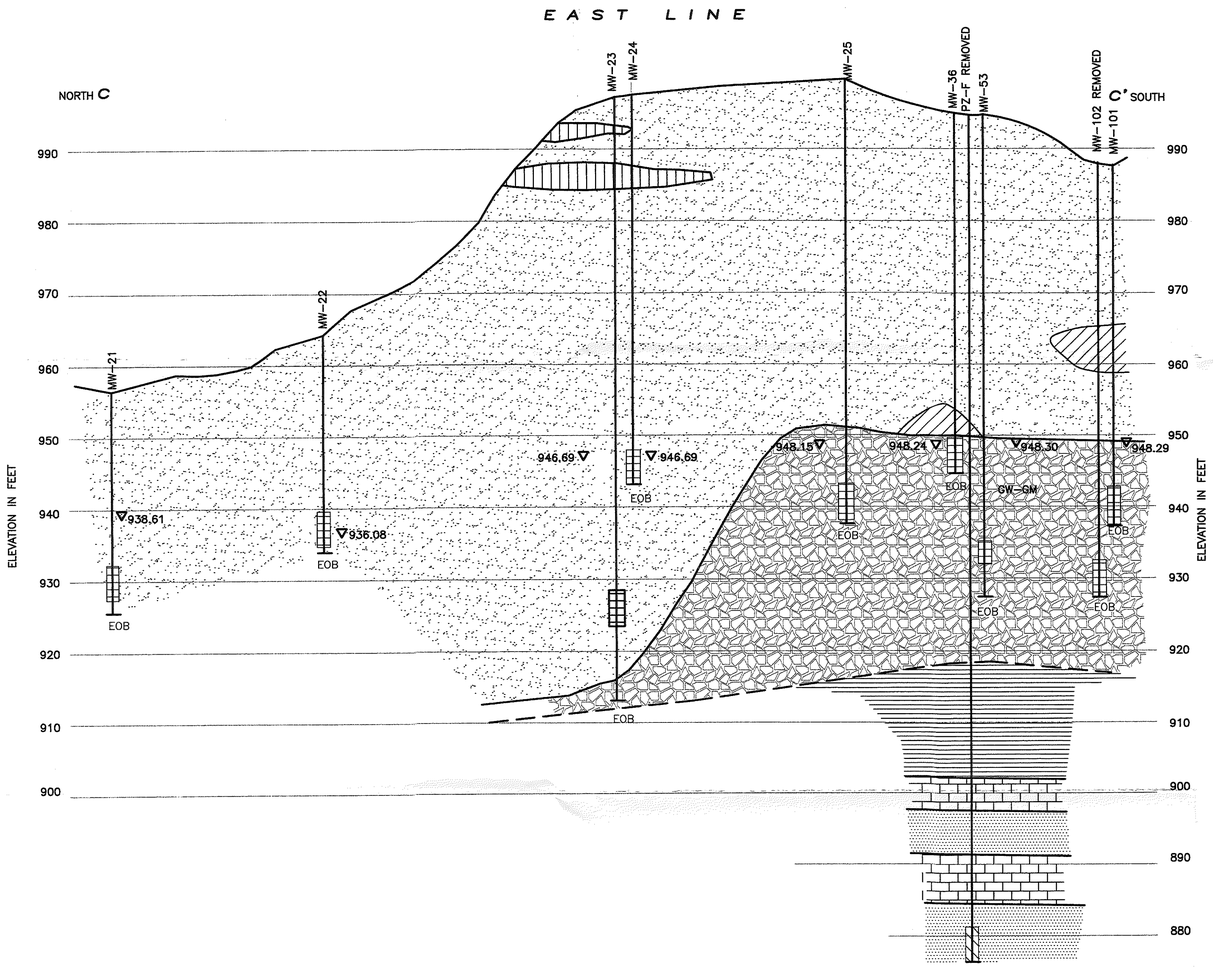
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DRAWN JD, PK
CHECKED BY: CLP

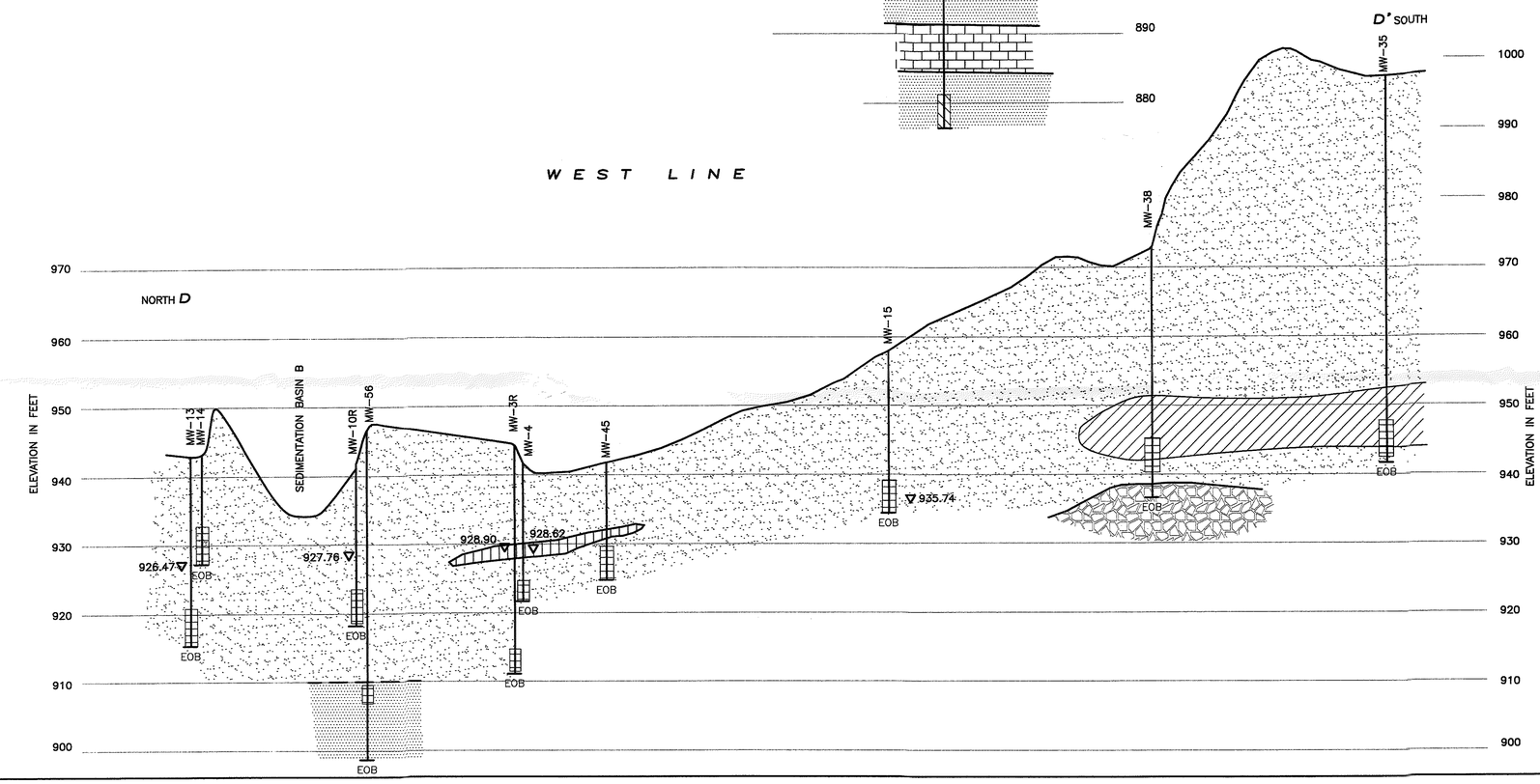
GENERALIZED GEOLOGIC PROFILE A–A' AND B–B'

NGGILL ROAD LANDFILL–PHASE V EXPANSION
SECTIONS 32 & 33, T2S, R1W
JACKSON COUNTY, MICHIGAN

DATE: 12–26–03
SHEET 1 OF 1
PLATE NO: 10

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12-29-03





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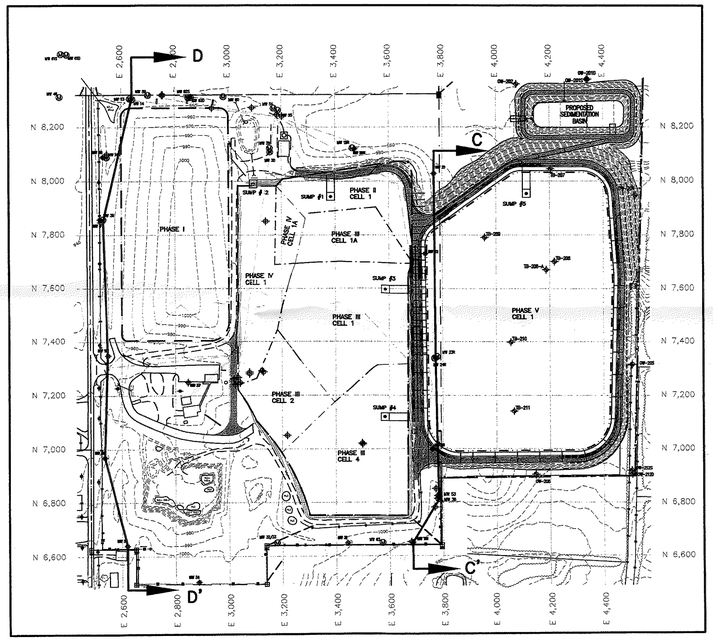
- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC)
- GRAVEL (GW) (GW–GM) (GM)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- GROUNDWATER ELEVATIONS RECORDED SEPTEMBER 2003.

NOTES:

1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.

0 10 20
SCALE FEET
VERTICAL

0 100 200
SCALE FEET
HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

REV.

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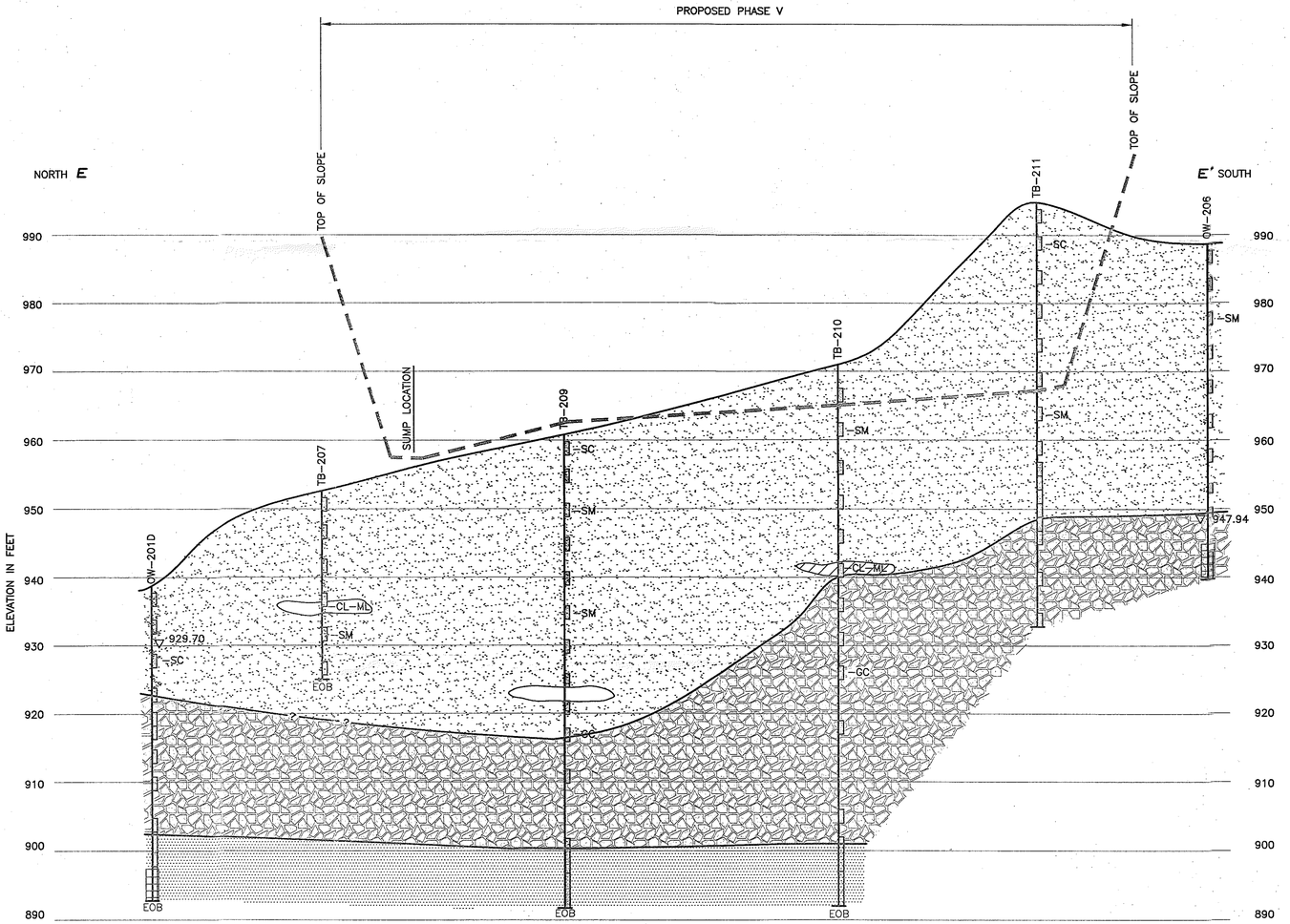
PROJECT NO. 03-030114-02
SCALE AS SHOWN
DRAWN BY DWK
CHECKED BY PLC

GENERALIZED GEOLOGIC PROFILE C–C' AND D–D'

McGILL ROAD LANDFILL – PHASE V EXPANSION
MUNICIPAL SOLID WASTE LANDFILL
JACKSON COUNTY, MICHIGAN

DATE: 03–15–03
SHEET 1 OF 1
PLATE NO: 11

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03–08–04



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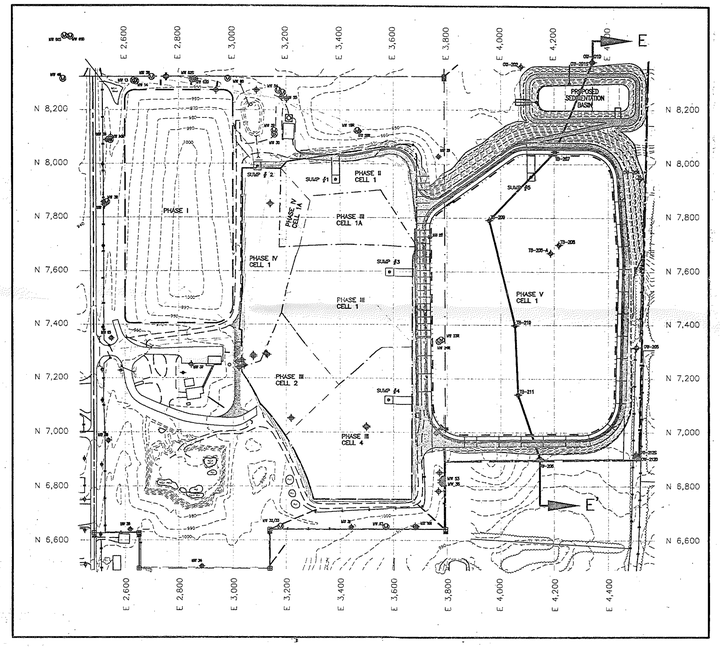
- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC) (SW)
- GRAVEL (GW) (GW–GM) (GM)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- SOIL SAMPLE INTERVAL (GENERALLY 2–FOOT SPLIT SPOON OR 5–FOOT ROCK CORE) REFER TO THE LOG OF TEST BORING FOR DETAILED SOIL DESCRIPTIONS AND n–VALUE. (SAMPLE INTERVALS ARE ONLY INCLUDED FOR THOSE BORINGS WHICH WERE DRILLED FOR THE PHASE V EXPANSION INVESTIGATION.)
- –SP UNIFIED SOIL CLASSIFICATION OF INDIVIDUAL SAMPLES AT DEPTHS IDENTIFIED, BASED ON LABORATORY TESTING
- GROUNDWATER ELEVATIONS RECORDED IN SEPTEMBER 2003.
- LANDFILL SUBGRADE (PROPOSED)

NOTES:

1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.

0 10 20
SCALE FEET
VERTICAL

0 200 400
SCALE FEET
HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

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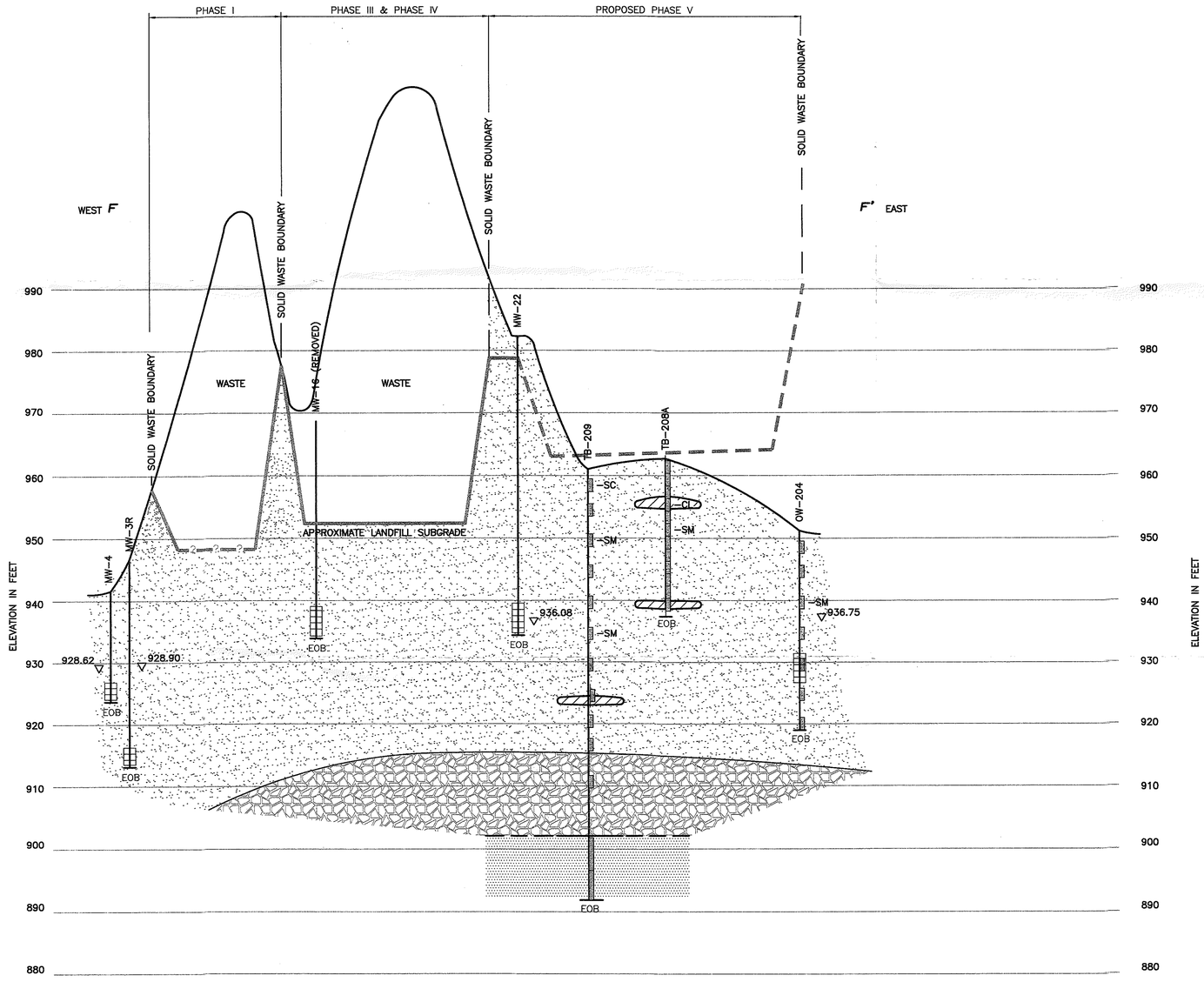
PROJECT NO. 030114-02
SCALE: AS SHOWN
DRAWN BY: JMH
CHECKED BY: ACE

GENERALIZED GEOLOGIC PROFILE E–E'

MCFALL ROAD LANDFILL – PHASE V EXPANSION
BLACKMAN AND LIMA TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 09–15–03
SHEET 1 OF 1
PLATE NO: 12

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03–17–05



LEGEND:

- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC) (SW)
- GRAVEL (GW) (GW–GM) (GM)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- SOIL SAMPLE INTERVAL (GENERALLY 2–FOOT SPLIT SPOON OR 5–FOOT ROCK CORE) REFER TO THE LOG OF TEST BORING FOR DETAILED SOIL DESCRIPTIONS AND n–VALUE. (SAMPLE INTERVALS ARE ONLY INCLUDED FOR THOSE BORINGS WHICH WERE DRILLED FOR THE PHASE V EXPANSION INVESTIGATION.)
- –SP UNIFIED SOIL CLASSIFICATION OF INDIVIDUAL SAMPLES AT DEPTHS IDENTIFIED, BASED ON LABORATORY TESTING
- GROUNDWATER ELEVATIONS RECORDED SEPTEMBER 2003.
- LANDFILL SUBGRADE (PROPOSED)
- LANDFILL SUBGRADE (CONSTRUCTED) (SEE NOTE 3)

NOTES:

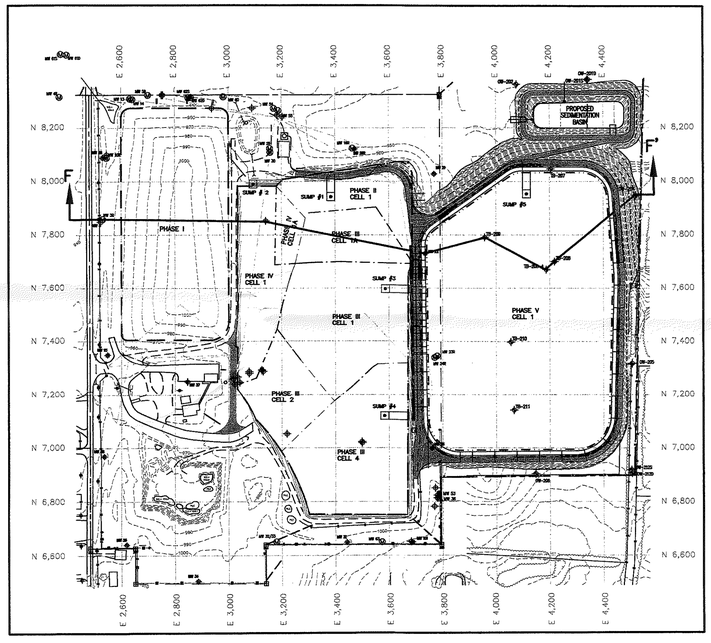
1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.
3. SUBGRADE FOR PHASE V IS ESTIMATED BASED ON THE ENGINEERING DRAWING SET PREPARED BY McNEELY AND LINCOLN ASSOCIATES, INC. AND INCLUDED WITH THIS SUBMITTAL.

   SUBGRADE FOR PHASE III ARE ESTIMATED BASED ON LEACHATE COLLECTION SUMP DETAIL FROM SHEET 5 OF WESTSHORE ENGINEERING, CONSTRUCTION PERMIT APPLICATION, MAY 1995.

   INFORMATION PERTAINING TO THE SUBGRADE ELEVATION FOR PHASE I IS ESTIMATED BASED ON REVIEW OF AVAILABLE FILES.

0 10 20 SCALE FEET VERTICAL

0 200 400 SCALE FEET HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

REV.

REV.	DATE	BY
E	1-5-04	JES
D	12-19-03	JES
C		
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A		

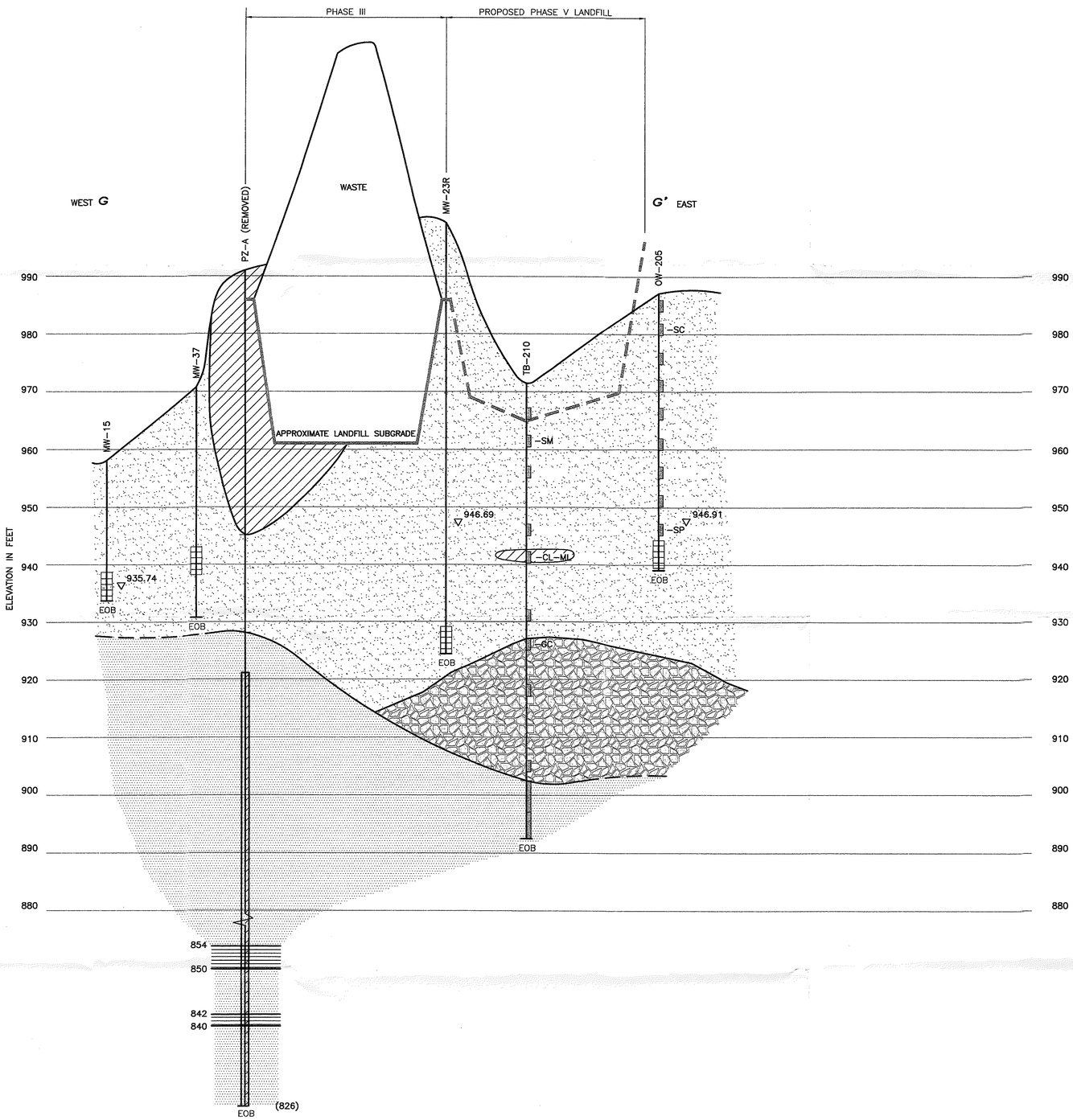
PROJECT NO. 03-0114-02
SCALE: AS SHOWN
DRAWN BY:
CHECKED BY:

GENERALIZED GEOLOGIC PROFILE F–F'

McCALL ROAD LANDFILL – PHASE V EXPANSION
BLOCK 34, SECTIONS 1 & 2, TYRONE TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 09-15-03
SHEET 1 OF 1
PLATE NO: 13

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02-04-04



LEGEND:

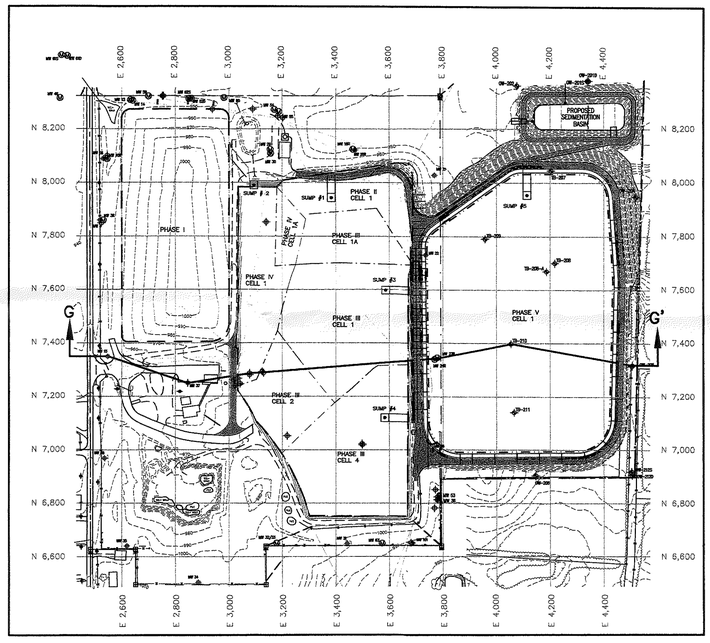
- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC) (SW)
- GRAVEL (GW) (GW–GM) (GM) (GC)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- WELL BORE OPEN TO ROCK
- SOIL SAMPLE INTERVAL (GENERALLY 2–FOOT SPLIT SPOON OR 5–FOOT ROCK CORE) REFER TO THE LOG OF TEST BORING FOR DETAILED SOIL DESCRIPTIONS AND n–VALUE. (SAMPLE INTERVALS ARE ONLY INCLUDED FOR THOSE BORINGS WHICH WERE DRILLED FOR THE PHASE V EXPANSION INVESTIGATION.)
- –SP UNIFIED SOIL CLASSIFICATION OF INDIVIDUAL SAMPLES AT DEPTHS IDENTIFIED, BASED ON LABORATORY TESTING
- GROUNDWATER ELEVATIONS RECORDED SEPTEMBER 2003.
- LANDFILL SUBGRADE (PROPOSED) (SEE NOTE 3)
- LANDFILL SUBGRADE (CONSTRUCTED) (SEE NOTE 3)

NOTES:

1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.
3. SUBGRADE FOR PHASE III ARE ESTIMATED BASED ON LEACHATE COLLECTION SUMP DETAIL FROM SHEET 5 OF WESTSHORE ENGINEERING, CONSTRUCTION PERMIT APPLICATION, MAY 1995.
4. SUBGRADE FOR PHASE V IS ESTIMATED BASED ON THE ENGINEERING DRAWING SET PREPARED BY McNEELY AND LINCOLN ASSOCIATES, INC. AND INCLUDED WITH THIS SUBMITTAL.

SCALE 0 10 20 FEET — VERTICAL

SCALE 0 200 400 FEET — HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

REV.

REV.	DATE	BY	CHK'D	APP'D
A	02-18-04	DLP		
B	09-15-03	DLP		
C				
D				

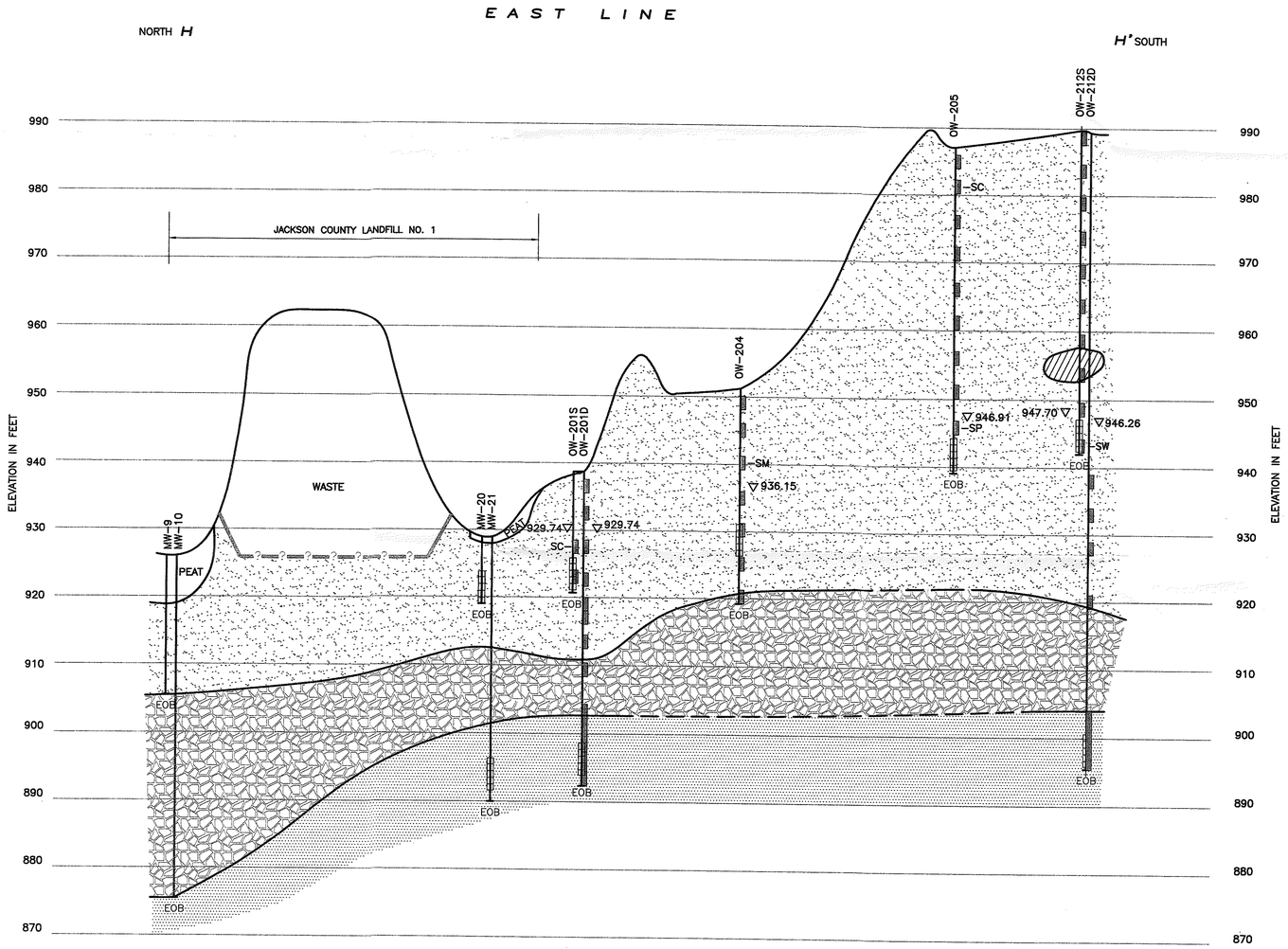
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SCALE: AS SHOWN
DRWN. BY: JH
CHECKED BY: DLP

GENERALIZED GEOLOGIC PROFILE G–G'

MCNEIL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LIMA TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 09–15–03
SHEET 1 OF 1
PLATE NO: 14

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02-18-04



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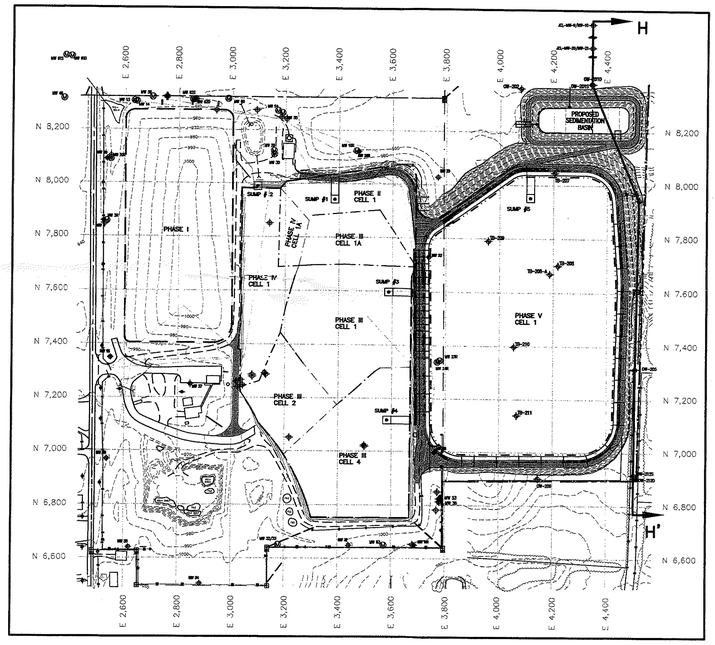
- SILTY CLAY (CL)
- SILT (ML)
- SAND, SILTY SAND, OR CLAYEY SAND (SP) (SP–SM) (SM) (SC) (SW)
- GRAVEL (GW) (GW–GM) (GM)
- SANDSTONE
- LIMESTONE
- SHALE
- MONITORING WELL SCREEN
- SOIL SAMPLE INTERVAL (GENERALLY 2–FOOT SPLIT SPOON OR 5–FOOT ROCK CORE) REFER TO THE LOG OF TEST BORING FOR DETAILED SOIL DESCRIPTIONS AND n–VALUE. (SAMPLE INTERVALS ARE ONLY INCLUDED FOR THOSE BORINGS WHICH WERE DRILLED FOR THE PHASE V EXPANSION INVESTIGATION.)
- –SP UNIFIED SOIL CLASSIFICATION OF INDIVIDUAL SAMPLES AT DEPTHS IDENTIFIED, BASED ON LABORATORY TESTING
- ▽ GROUNDWATER ELEVATIONS RECORDED ON SEPTEMBER 2003.
- LANDFILL SUBGRADE (CONSTRUCTED) (SEE NOTE 3)

NOTES:

1. THE GEOLOGIC STRATA SHOWN ON THIS PLATE ARE GENERALIZED BASED ON CONDITIONS ENCOUNTERED AT INDIVIDUAL TEST BORING LOCATIONS. THE CONDITIONS BETWEEN TEST BORINGS HAVE BEEN INFERRED AND MAY DIFFER FROM WHAT IS SHOWN.
2. BORING LOGS USED TO GENERATE SUBSURFACE CROSS SECTIONS HAVE BEEN INCLUDED WITHIN THIS REPORT.
3. SUBGRADE FOR THE JACKSON COUNTY LANDFILL NO. 1 IS UNKNOWN.

0 10 20
SCALE FEET
VERTICAL

0 200 400
SCALE FEET
HORIZONTAL



LOCATION MAP

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills • Detroit • Exton • Grand Rapids • Lansing

REV.

H
G
F
E
D
C
B
A

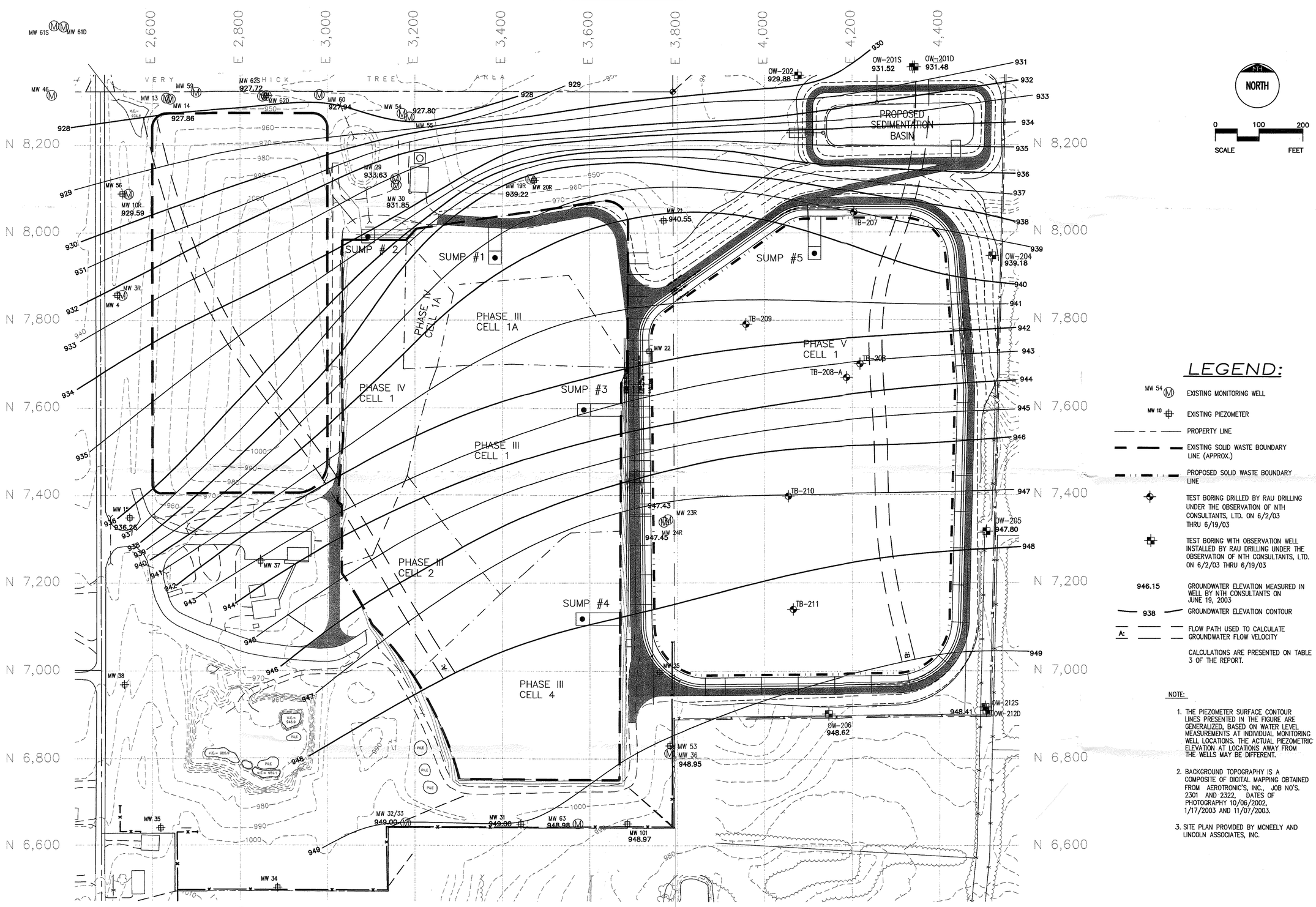
PROJECT NO. 13-030114-02
SCALE AS SHOWN
DRAWN BY HK
CHECKED BY JLV
09-05-03

GENERALIZED GEOLOGIC PROFILE H–H'

McGILL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 09–15–03
SHEET 1 OF 1
PLATE NO: 15

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09-04-03



LEGEND:

- MW 54 (M) — EXISTING MONITORING WELL
- MW 10 — EXISTING PIEZOMETER
- PROPERTY LINE
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- PROPOSED SOLID WASTE BOUNDARY LINE
- TEST BORING DRILLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- TEST BORING WITH OBSERVATION WELL INSTALLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- 946.15 — GROUNDWATER ELEVATION MEASURED IN WELL BY NTH CONSULTANTS ON JUNE 19, 2003
- 938 — GROUNDWATER ELEVATION CONTOUR
- A: — FLOW PATH USED TO CALCULATE GROUNDWATER FLOW VELOCITY

CALCULATIONS ARE PRESENTED ON TABLE 3 OF THE REPORT.

NOTE:

1. THE PIEZOMETER SURFACE CONTOUR LINES PRESENTED IN THE FIGURE ARE GENERALIZED, BASED ON WATER LEVEL MEASUREMENTS AT INDIVIDUAL MONITORING WELL LOCATIONS. THE ACTUAL PIEZOMETRIC ELEVATION AT LOCATIONS AWAY FROM THE WELLS MAY BE DIFFERENT.
2. BACKGROUND TOPOGRAPHY IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AEROTRONIC'S, INC., JOB NO'S. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003.
3. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

REV.

REVISIONS	DATE	BY
A		
B		
C		
D		

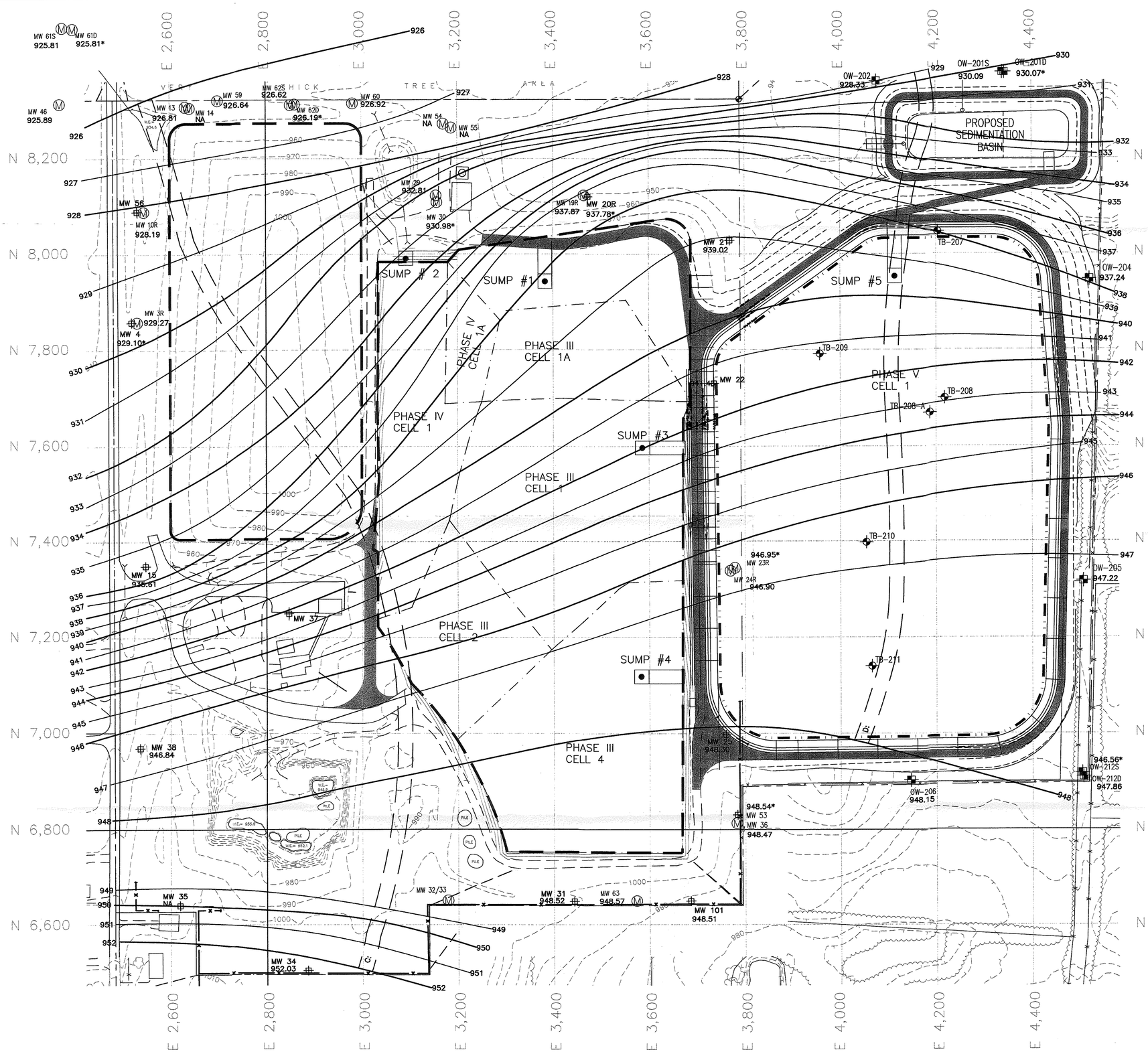
PROJECT NO. 13-030114-02
SCALE: AS SHOWN
DRAWN BY:
CHECKED BY:

GROUNDWATER ELEVATION CONTOUR MAP – JUNE 2003

MACAULL ROAD LANDFILL–PHASE V EXPANSION
BLACKMAN AND LIMA TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-26-03
SHEET 1 OF 1
PLATE NO: 16

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12-30-03



NORTH

0 100 200
SCALE FEET

LEGEND:

- MW 54 (M) — EXISTING MONITORING WELL
- MW 10 — EXISTING PIEZOMETER
- PROPERTY LINE
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- PROPOSED SOLID WASTE BOUNDARY LINE
- TEST BORING DRILLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- TEST BORING WITH OBSERVATION WELL INSTALLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- 946.15 — GROUNDWATER ELEVATION MEASURED IN WELL BY NTH CONSULTANTS ON AUGUST 20, 2003
- * — GROUNDWATER ELEVATION NOT USED FOR CONTOURING
- 938 — GROUNDWATER ELEVATION CONTOUR
- FLOW PATH USED TO ESTIMATE GROUNDWATER FLOW VELOCITY

CALCULATIONS ARE PRESENTED ON TABLE 3 OF THE REPORT.

NOTE:

1. THE PIEZOMETER SURFACE CONTOUR LINES PRESENTED IN THE FIGURE ARE GENERALIZED, BASED ON WATER LEVEL MEASUREMENTS AT INDIVIDUAL MONITORING WELL LOCATIONS. THE ACTUAL PIEZOMETRIC ELEVATION AT LOCATIONS AWAY FROM THE WELLS MAY BE DIFFERENT.
2. BACKGROUND TOPOGRAPHY IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AEROTRONIC'S, INC., JOB NO'S. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003.
3. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

REV.

REV.	DATE	BY	CHK
A	12-5-03		
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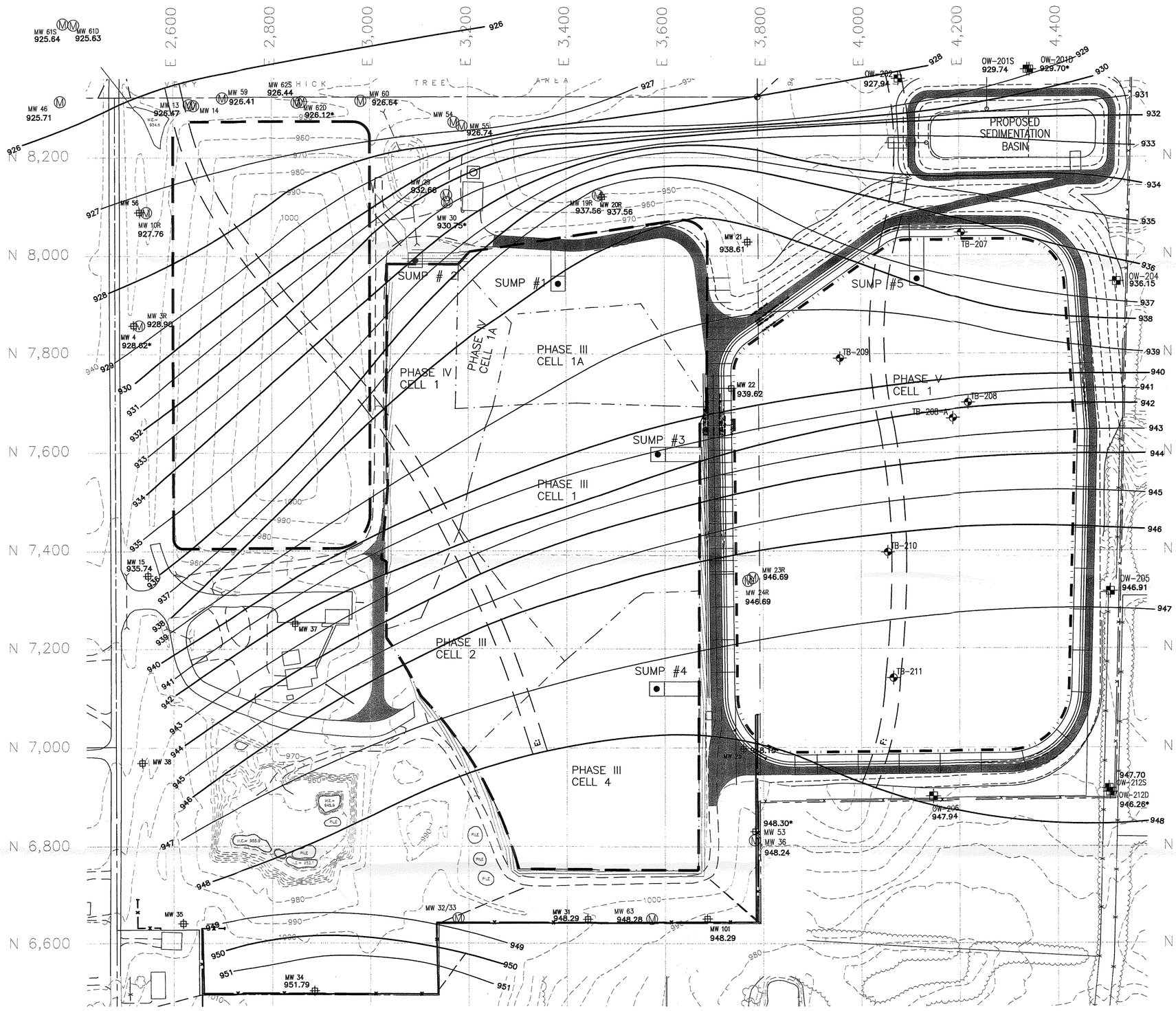
PROJECT NO. 13-030114-02
SCALE: AS SHOWN
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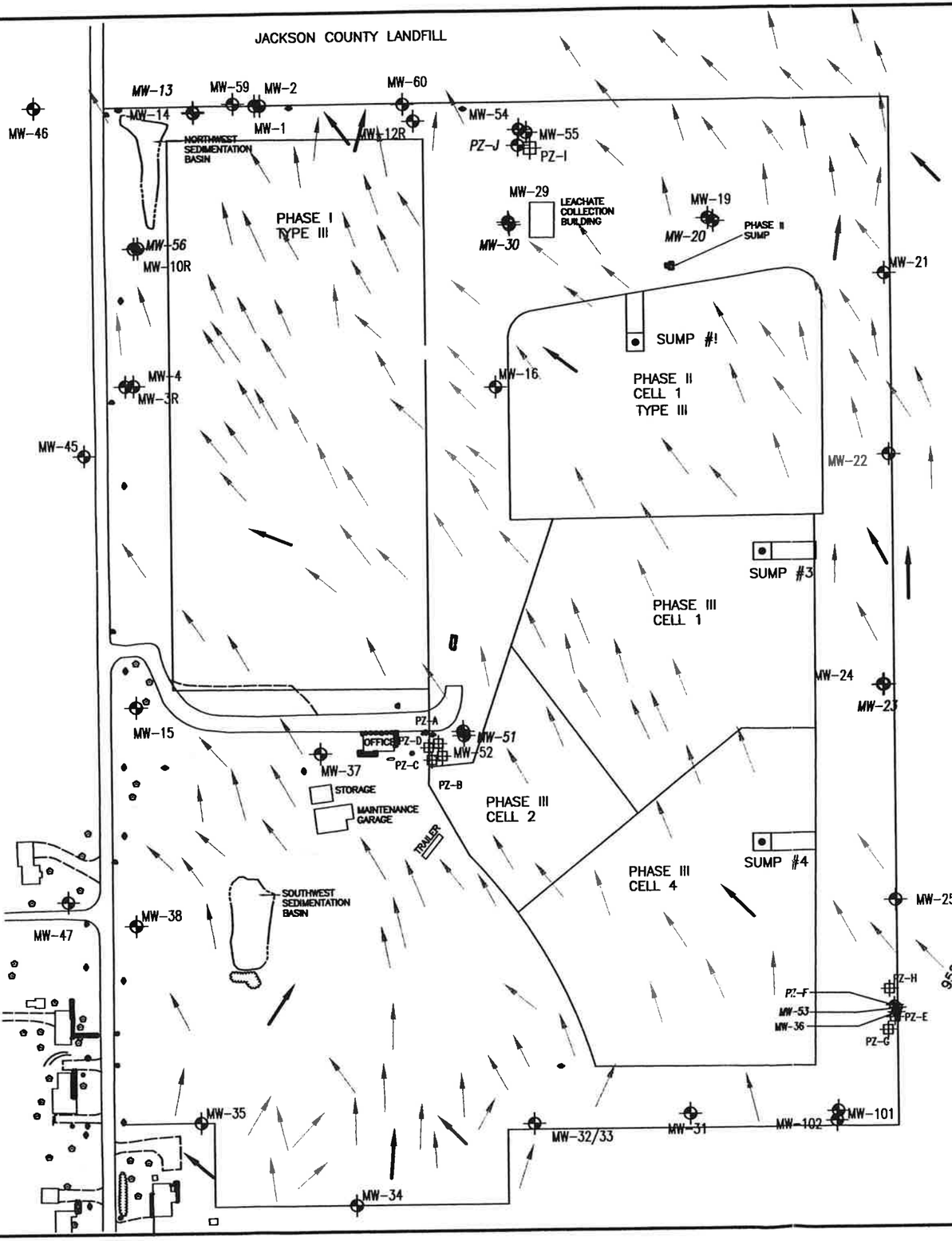
GROUNDWATER ELEVATION CONTOUR MAP - AUGUST 2003

McGILL ROAD LANDFILL - PHASE V EXPANSION
BLACKMAN AND ZONE TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-26-03
SHEET 1 OF 1
PLATE NO: 17

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12-26-03


E 2,600
E 2,800
E 3,000
E 3,200
E 3,400
E 3,600
E 3,800
E 4,000
E 4,200
E 4,400
N 8,200
N 8,000
N 7,800
N 7,600
N 7,400
N 7,200
N 7,000
N 6,800
N 6,600
MW 61S 925.64
MW 61D 925.63
MW 46 925.71
MW 13 926.47
MW 14
MW 59 926.41
MW 62S 926.44
MW 62D 926.12*
MW 60 926.64
MW 54
MW 55 926.74
MW 56
MW 10R 927.76
MW 28 932.66
MW 30 930.75*
MW 19R 937.56
MW 20R 937.56
MW 21 938.61
MW 3R 928.96
MW 4 928.62*
MW 15 935.74
MW 37
MW 38
MW 35
MW 32/33
MW 31 948.29
MW 63 948.28
MW 101 948.29
MW 34 951.79
MW 22 939.62
MW 23R 946.69
MW 24R 946.69
MW 25 948.15
MW 53
MW 36 948.24
948.30*
OW-201S 929.74
OW-201D 929.70*
OW-202 927.94
OW-205 946.91
OW-204 936.15
OW-212S 947.70
OW-212D 946.26*
OW-206 947.94
TB-207
TB-209
TB-208
TB-208-A
TB-210
TB-211
PROPOSED SEDIMENTATION BASIN
SUMP # 2
SUMP #1
SUMP #5
SUMP #3
SUMP #4
PHASE III CELL 1A
PHASE IV CELL 1
PHASE V CELL 1
PHASE III CELL 1
PHASE III CELL 2
PHASE III CELL 4
PHASE IV CELL 1A
PILE
926
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928
929
930
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946
947
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949
950
951
960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090



NORTH

0 200 400

SCALE FEET

LEGEND:

- GROUNDWATER MONITORING WELL
- PIEZOMETER LOCATION
- GROUNDWATER FLOW DIRECTION

NOTE:

1. GROUNDWATER FLOW ARROWS DEPICTED ARE BASED ON PREVIOUSLY SUBMITTED QUARTERLY GROUNDWATER ELEVATION CONTOUR MAPS FROM SEPTEMBER 1997 THROUGH SEPTEMBER 2003.
2. HIGHLIGHTED ARROWS REPRESENT THE GROUNDWATER FLOW EXTREMES FOR THE SITE.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

PROJECT NO. 13-030114-02
SCALE: AS SHOWN
DRAWN BY: HK
CHECKED BY: DLP

HISTORIC GROUNDWATER FLOW DIRECTIONS SEPT. 1997 – SEPT. 2003

McGILL ROAD LANDFILL
JACKSON, MICHIGAN

DATE: 03-05-04

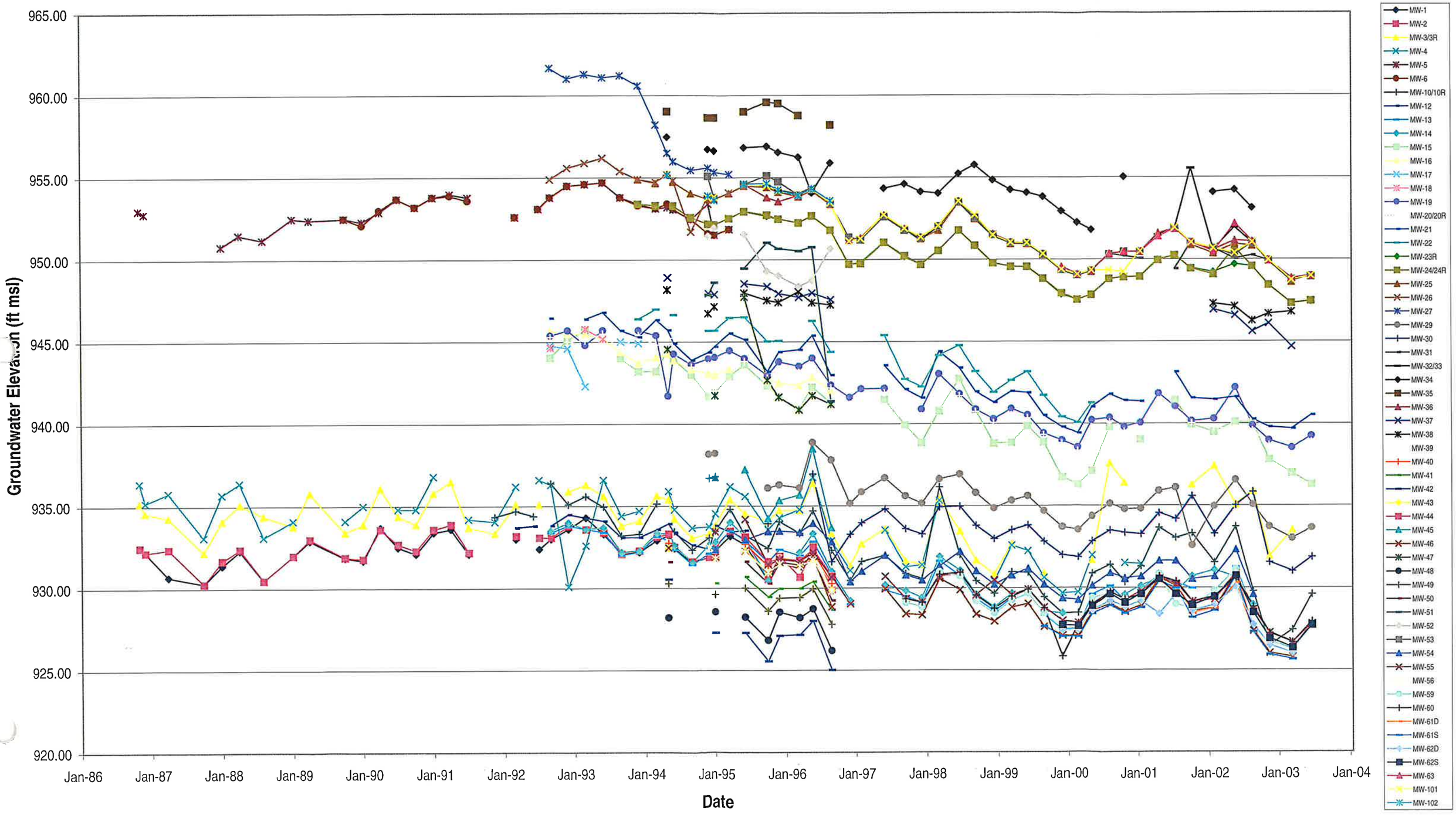
SHEET 1 OF 1

PLATE NO: 19

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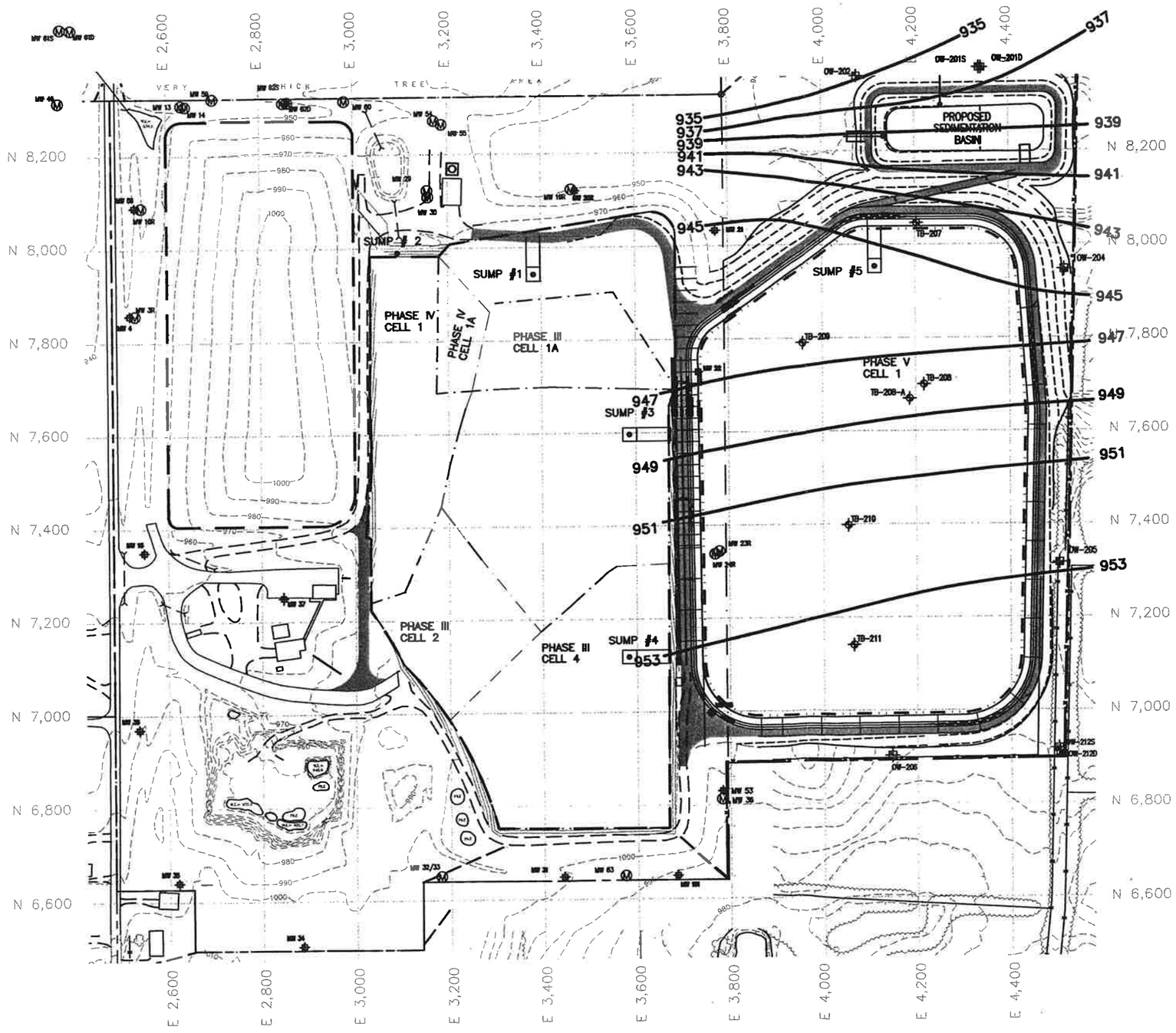
Plate 20: Historic Groundwater Elevations

McGill Road Landfill



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Prepared by NTH Consultants, Ltd. 3/8/04



NORTH

0 250 500

SCALE FEET

LEGEND:

- EXISTING MONITORING WELL
- EXISTING PIEZOMETER
- PROPERTY LINE
- EXISTING SOLID WASTE BOUNDARY LINE (APPROX.)
- PROPOSED SOLID WASTE BOUNDARY LINE
- TEST BORING DRILLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- TEST BORING WITH OBSERVATION WELL INSTALLED BY RAU DRILLING UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD. ON 6/2/03 THRU 6/19/03
- 943 ESTIMATED MAXIMUM HISTORIC GROUNDWATER ELEVATION CONTOUR

NOTE:

1. THE ESTIMATED MAXIMUM GROUNDWATER ELEVATIONS SHOWN ON THIS MAP ARE BASED ON AVERAGE FLUCATIONS OF GROUNDWATER LEVELS OBSERVED AT EXISTING MONITORING WELLS OVER THE PERIOD FROM APPROXIMATELY 1986 THRU 2003.
2. BACKGROUND TOPOGRAPHY IS A COMPOSITE OF DIGITAL MAPPING OBTAINED FROM AEROTRONIC'S, INC., JOB NO'S. 2301 AND 2322, DATES OF PHOTOGRAPHY 10/06/2002, 1/17/2003 AND 11/07/2003.
3. SITE PLAN PROVIDED BY MCNEELY AND LINCOLN ASSOCIATES, INC.

NTH Consultants, Ltd.
Professional Engineering & Environmental Services
Farmington Hills Detroit Exton Grand Rapids Lansing

PROJECT NO. 13-030114-02
SCALE: AS SHOWN
DRAWN BY: HK
CHECKED BY: ACE

ESTIMATED HISTORIC MAXIMUM GROUNDWATER ELEVATION CONTOUR MAP

McGILL ROAD LANDFILL-PHASE V EXPANSION
BLACKMAN AND LEONI TOWNSHIPS
JACKSON COUNTY, MICHIGAN

DATE: 12-30-03
SHEET 1 OF 1
PLATE NO: 21

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NTH Consultants, Ltd.

A Neyer, Tiseo & Hindo Company

GENERAL NOTES

TERMINOLOGY

Unless otherwise noted, all terms utilized herein refer to the Standard Definitions presented in ASTM D 653.

PARTICLE SIZES

Boulders	-	Greater than 12 inches (305mm)
Cobbles	-	3 inches (76.2mm) to 12 inches (305mm)
Gravel - Coarse	-	3/4 inches (19.05 mm) to 3 inches (76.2mm)
Fine	-	No. 4 - 3/16 inches (4.75mm) to 3/4 inches (19.05 mm)
Sand - Coarse	-	No. 10 (2.00mm) to No. 4 (4.75mm)
Medium	-	No. 40 (0.425mm) to No. 10 (2.00mm)
Fine	-	No. 200 (0.074mm) to No. 40 (0.425mm)
Silt	-	0.005mm to 0.074mm
Clay	-	Less than 0.005mm

CLASSIFICATION

The major soil constituent is the principal noun, i.e., clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituents (percent by weight)
Trace - 1 to 12%	Trace - 1 to 12%
Adjective - 12 to 35% (clayey, silty, etc.)	Little - 12 to 23%
And - Over 35%	Some - 23 to 33%

COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modified; i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils; i.e., silty clay, trace of sand, little gravel.

Consistency	Unconfined Compressive Strength (psf)	Approximate Range of (N)
Very Soft	Below 500	0 - 2
Soft	500 - 1000	3 - 4
Medium	1000 - 2000	5 - 8
Stiff	2000 - 4000	9 - 15
Very Stiff	4000 - 8000	16 - 30
Hard	8000 - 16000	31 - 50
Very Hard	Over 16000	Over 50

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

COHESIONLESS SOILS

Density Classification	Relative Density %	Approximate Range of (N)
Very Loose	0 - 15	0 - 4
Loose	16 - 35	5 - 10
Medium Compact	36 - 65	11 - 30
Compact	66 - 85	31 - 50
Very Compact	86 - 100	Over 50

Relative density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.

SAMPLE DESIGNATIONS

AS - Auger Sample - directly from auger flight
BS - Miscellaneous Sample - bottle or bag
S - Split Spoon Sample - ASTM D 1586
LS - Split Spoon Sample S with Liner Insert 3 inches in length
ST - Shelby Tube Sample - 3 inch diameter unless otherwise noted
PS - Piston Sample - 3 inch diameter unless otherwise noted
RC - Rock Core - NX core unless otherwise noted
CS - Continuous Sample - from rock core barrel or continuous sampling device
VS - Vane Shear

STANDARD PENETRATION TEST (ASTM D 1586) - A 2.0" outside-diameter, 1-3/8" inside-diameter, split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).

ROCK MASS DESCRIPTION*

Description	Average Fracture Spacing
Massive Bedding	Bedding Planes >2 m Apart
Layered	Bedding Planes <2 m Apart
Very Close Fractures	<5 cm Apart
Close Fractures	5 - 30 cm Apart
Moderately Wide Fractures	30 cm - 1 m Apart
Wide Fractures	1 - 3 m Apart
Very Wide Fractures	>3 m Apart
Very Broken Rock	<5 cm Between Fractures
Broken Rock	8 - 30 cm Between Fractures
Blocky Rock	30 cm - 2 m Between Fractures
Solid Rock	>2 m Between Fractures

ROCK QUALITY DESIGNATION (RQD) DESCRIPTIONS

RQD %	Description	Approx. Equivalent Fracture Spacing
0 - 25	Very Poor	Very Close
25 - 30	Poor	Close
30 - 75	Fair	Moderately Close
75 - 90	Good	Wide
90 - 100	Excellent	Very Wide

* From Deere, D.H., 1964, Technical Description of Rock Cores for Engineering Purposes, Rock Mechanics and Geology, 1:16-22.

LOG OF TEST BORING NO: TB-201S

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 938.71

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Dark Brown SANDY TOPSOIL — 1.0	
935		Loose Brown SILTY FINE SAND — 5.0	5
930		Loose Brown CLAYEY SAND (moist) — 10.0	10
925		Loose Brown CLAYEY FINE SAND with Trace of Gravel (wet) [SC] — 15.0	15
920		Medium Compact Gray SAND & GRAVEL with Trace of Clay & Silt (wet) — 18.0	20
		END OF BORING	
915			25
910			30
905			35

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	3 4 5	9				
S-2	3 5 7	12				

Total Depth: *18 FT*
Drilling Date: *06/04/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 9.5 ft bgs.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-201S installed in borehole with screen tip set at 17.4 ft bgs.

Location Coordinates:
E *4338.52* N *8377.17*

FIGURE NO. A-1

LOG OF TEST BORING NO: TB-201D

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 938.70

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Dark Brown SANDY TOPSOIL — 1.0	
935		Loose Brown SILTY FINE SAND — 5.0	5
930		Loose Brown CLAYEY SAND (moist) — 10.0	10
		Loose Brown SILT (moist) — 10.5	
		Stiff Gray SANDY CLAY with Trace of Gravel — 11.5	
925		Loose Brown SILTY FINE SAND — 15.0	15
920		Gray to Black GRAVEL & SHALE with Sand & Clay (wet)	20
915			25
910			30
905			35
		BEDROCK: Gray to Green SANDSTONE — 36.0 / 37.0	

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	1 2 3	5				
S-2	2 2 2	4				
S-3&4	2 2 4	6				
S-5	4 6 9	15				
S-6	4 4 5	9				
S-7						
S-8	8 11 15	26				
S-9	8 12 14	26				
S-10	8 19 29	48				

Total Depth: *46 FT*
Drilling Date: *06/03/03 - 06/04/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
4-1/4" inside-diameter, hollow-stem augers to 17' bgs; wash rotary to 36' bgs; rock coring to end of boring.

Plugging Procedure:
Observation well no. OW-201D installed in borehole with screen tip set at 46.0 ft bgs.

Water Level Observation:
Groundwater encountered at 6.8 ft; No meaningful water level data obtained below 20 ft due to use of drilling fluids.

Notes:

Location Coordinates:
E *4344.88* N *8377.50*

FIGURE NO. A-2

LOG OF TEST BORING NO: TB-201D

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 938.70

BEDROCK: Gray to Green SANDSTONE

46.0

END OF BORING

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
900		40							
			RC-1	-- -- --	Run = 60"				
895		45							
			RC-2	-- -- --	Run = 60"				
890		50							
885		55							
880		60							
875		65							
870		70							
865		75							
860		80							

LOG OF TEST BORING NO: TB-202

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 938.45

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Brown SANDY TOPSOIL	1.0
935		Loose to Very Loose Brown SILTY FINE SAND with Trace of Gravel	5
930			9.0
			10
925		Loose to Medium Compact Gray FINE TO MEDIUM SAND with Trace of Clay & Gravel (wet)	15
920			20
915			24.0
		Medium Compact Gray GRAVELLY MEDIUM TO COARSE SAND with Trace of Silt (wet) [SP]	25
			26.0
910		END OF BORING	30
905			35

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	1 1 1	2				
S-2	5 5 5	10				
S-3	3 4 4	8				
S-4	3 4 6	10				
S-5	3 7 9	16				
S-6	3 11 13	24				

Total Depth: *26 FT*
Drilling Date: *06/04/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 11.6 ft bgs; at 7.0 ft bgs upon completion.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-202 installed in borehole with screen tip set at 17.0 ft bgs.

Location Coordinates:
E *4076.44* N *8360.36*

FIGURE NO. A-3

LOG OF TEST BORING NO: TB-204

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 951.21	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
950		Brown SANDY TOPSOIL 1.0								
				LS-1	2 3 4	7				
			5							
945				LS-2	3 4 6	10				
		Loose to Medium Compact Brown SILTY FINE SAND [SM]	10							
940				LS-3	3 4 7	11	13.5	116.7		
			15							
935		16.0		LS-4	3 4 6	10				
		Loose to Medium Compact Brown SILTY SAND with Trace of Gravel (wet) 20.0	20							
930				LS-5	4 8 9	17				
		Medium Compact Gray SILTY FINE TO MEDIUM SAND with Trace of Gravel (wet) 25.0	25							
925				LS-6	8 9 10	19				
		Medium Compact Brown SILTY FINE SAND with Trace of Gravel (wet) 30.0	30							
920		Gray SAND & GRAVEL (wet) 32.0		S-1	6 6 7	13				
		END OF BORING								
			35							
915										

Total Depth: *32 FT*
Drilling Date: *06/04/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 17.55 ft bgs; at 16.10 ft bgs upon completion.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-204 installed in borehole with screen tip set at 25.0 ft bgs.

Location Coordinates:
E *4519.86* N *7944.74*

FIGURE NO. A-4

LOG OF TEST BORING NO: TB-205

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 987.09	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		Brown SANDY TOPSOIL 1.0								
985				LS-1	4 3 3	6				
		Loose Brown CLAYEY FINE SAND with Trace of Silt [SC]	5							
980				LS-2	2 3 4	7	14.2	110.5		
		10.0	10							
975		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel		LS-3	5 12 17	29				
			15							
970				LS-4	7 20 41	61	11.8	130.5		
		20.0	20							
965		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND		LS-5	8 9 17	26				
			25							
960				LS-6	7 17 18	35				
			30							
955				LS-7	9 18 20	38				
		35.0	35							
		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel (moist) 37.0		LS-8	4 7 8	15				

Total Depth: *48 FT*
Drilling Date: *06/11/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 39.3 ft bgs; at 39.4 ft bgs upon completion.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-205 installed in borehole with screen tip set at 48.0 ft bgs.

Location Coordinates:
E *4506.28* N *7317.55*

FIGURE NO. A-5

LOG OF TEST BORING NO: TB-205

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 987.09	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel (moist)	40							
		40.0								
945				LS-9	4 3 5	8				
		Loose Black to Gray GRAVELLY MEDIUM TO COARSE SAND with Little Clay (wet) [SP]	45							
940		48.0								
		END OF BORING	50							
935										
			55							
930										
			60							
925										
			65							
920										
			70							
915										
			75							
910										
			80							

LOG OF TEST BORING NO: TB-206

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 988.20	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		Brown SANDY TOPSOIL 1.0								
985		Loose to Medium Compact Brown CLAYEY FINE TO MEDIUM SAND	5	LS-1	1 2 4	6				
				LS-2	4 5 7	12				
980		10.0	10	LS-3	5 7 8	15	11.0	129.7		
975		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Clay & Gravel [SM]	15	LS-4	9 12 16	28				
970			20	LS-5	4 18 22	40				
965		25.0	25	LS-6	12 30 35	65				
960		Compact to Very Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel	30	LS-7	12 25 20	45				
955		35.0	35	LS-8	29 30 50	80				
		Very Compact Brown FINE TO MEDIUM SAND (moist) 37.0								

Total Depth: *49 FT*
Drilling Date: *06/10/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 39.2 ft bgs.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-206 installed in borehole with screen tip set at 48.0 ft bgs.

Location Coordinates:
E *4146.34* N *6902.46*

FIGURE NO. A-6

LOG OF TEST BORING NO: TB-206

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 988.20

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
950		Very Compact Brown FINE TO MEDIUM SAND (moist)	
		38.5	
		Very Compact Black CLAYEY COARSE SAND & GRAVEL (wet)	
		40.0	40
945		Compact Gray to Black GRAVELLY FINE TO MEDIUM SAND with Trace of Clay [SP]	45
940			
		49.0	
		END OF BORING	50
935			55
930			60
925			65
920			70
915			75
910			80

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
	20					
	50					
LS-9	39	89				
	10					
	14					
LS-10	20	34				
	--					
	--					
AS-1	--	--				

LOG OF TEST BORING NO: TB-207

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 952.19

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Brown SANDY TOPSOIL — 1.0	
950		Loose Brown SILTY FINE SAND with Trace of Gravel — 5.0	5
945		Loose Brown SILTY FINE SAND	10
940		— 15.0	15
		Brown SILTY SAND with Trace of Gravel [SM] — 16.0	
935		Gray SANDY CLAY [CL-ML] — 17.0	20
930		Loose Gray SANDY SILT with Trace of Gravel (wet) [SM]	25
925		— 27.0	
		END OF BORING	30
920			35

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	2 2 6	8				
S-2	3 3 3	6				
S-3	4 4 4	8				
S-4	2 2 3	5			4000*	
S-5	3 3 3	6				
S-6	1 2 3	5				

Total Depth: *27 FT*
Drilling Date: *06/02/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:
Groundwater encountered at 14.5 ft bgs; at 12.85 ft bgs upon completion.

Notes:
** - Pocket Penetrometer Value*

Location Coordinates:
E *4204.38* N *8046.58*

FIGURE NO. A-7

LOG OF TEST BORING NO: TB-208

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 960.82

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
960		Brown SANDY TOPSOIL 1.0	
955		Loose to Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Clay & Gravel	5
950			10
		12.5	
		Large SANDSTONE BOULDER 13.0	
		AUGER REFUSAL @ 13.0'	15
945			
			20
940			
			25
935			
			30
930			
			35
925			

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	2 3 3	6				
S-2	1 2 4	6				
--	8 10 10	20				
S-3	4 5 6	11				
S-4	2 2 4	6				
S-5/S-6	2 3 4	7				

Total Depth: *13 FT*
Drilling Date: *06/02/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:

Notes:
NR - No Recovery

Location Coordinates:
E *4128.00* N *7700.00*

FIGURE NO. A-8

LOG OF TEST BORING NO: TB-208A

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: *ACF*

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 962.72

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Brown SANDY TOPSOIL	1.0
960		Loose to Medium Compact Brown CLAYEY to SILTY SAND	6.0
955		Medium Brown SILTY CLAY with Some Sand [CL]	8.0
		Loose Brown SILTY SAND with Some Clay	12.0
950		Loose Brown SILTY FINE TO MEDIUM SAND	20.0
945			
940		Very Loose Brown FINE SAND with Trace of Silt (wet) [SM]	23.5
		Very Stiff Brown & Gray SANDY CLAY	24.0
		END OF BORING	
935			
930			

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
LS-1	2 2 3	5				
LS-2	1 2 2	4				
LS-3	8 6 7	13				
LS-4	1 3 4	7	21.2	105.7	1000*	
LS-5	1 3 6	9				
LS-6	3 4 3	7				
LS-7	2 2 3	4				
LS-8	3 3 3	6				
LS-9	WOH 3 3	6				
LS-10	1 3 2	5				
LS-11	1 1 2	3				
LS-12/13	4 8 14	22			7000*	

Total Depth: *24 FT*
Drilling Date: *06/19/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:
Groundwater encountered at 20.4 ft bgs.

Notes:
** - Pocket Penetrometer Value*
WOH - Weight of Hammer

Location Coordinates:
E *4187.21* N *7669.89*

FIGURE NO. A-9

LOG OF TEST BORING NO: TB-209

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-030114-02*

Checked By: ACE

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 961.05	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
960		Brown SANDY TOPSOIL 1.0								
		Loose Brown CLAYEY FINE SAND with Some Silt & Trace of Gravel [SC] 5.0	5	LS-1	3 3 5	8	14.8	116.2		
955				LS-2	5 11 15	26				
			10	LS-3	4 7 8	15				
950		Medium Compact Brown SILTY FINE SAND with Trace of Gravel [SM]								
			15	LS-4	5 7 9	16				
945		20.0	20	LS-5	3 5 7	12				
940		Medium Compact Gray SILTY FINE TO MEDIUM SAND with Trace of Gravel (moist to wet) 25.0	25	LS-6	3 4 8	12				
935		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel (wet) [SM]	30	LS-7	4 8 7	15				
930		31.0								
		Medium Compact Gray SAND with Trace of Gravel (wet) 34.0	35	LS-8/S-1	4 6 9	15			5000*	
925		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel (wet) 36.5								

Total Depth: *69 FT*
Drilling Date: *06/05/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
4-1/4" inside-diameter, hollow-stem augers to 38' bgs; wash rotary to 59' bgs; rock coring to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:
Groundwater encountered at 22.55 ft; No meaningful water level data obtained below 38 ft due to use of drilling fluids.

Notes:
** - Pocket Penetrometer Value*
NR - No Recovery

Location Coordinates:
E *3956.90* N *7791.47*

FIGURE NO. A-10

LOG OF TEST BORING NO: TB-209

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 961.05

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Very Stiff Gray SILTY CLAY	
		38.0	
920		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel	40
		43.0	
915			45
		Medium Compact to Very Compact Gray SAND with Trace of Clay & Gravel [GC]	50
910			
			55
905			
		59.0	
			60
900		BEDROCK: Greenish-Gray SANDSTONE	
			65
895			
		69.0	
		END OF BORING	70
890			
			75
885			
			80
880			

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
--	14 12 11	23	NR			
LS-9	6 5 6	11				
--	8 9 43	52	NR			
RC-1	-- -- --	Run = 60"				
RC-2	-- -- --	Run = 60"				

LOG OF TEST BORING NO: TB-210

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 971.46	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
970		Brown SANDY TOPSOIL 1.0								
		Very Loose to Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Clay [SM]	5	ls-1	2 1 1	2				
965			10	LS-2	5 4 5	9				
960			15	LS-3	1 1 4	5				
955			20	LS-4	10 8 4	12				
950			25	LS-5	10 11 11	22				
945		29.0								
940		Very Stiff Gray SANDY CLAY with Some Silt [CL-ML] 31.0	30	LS-6	5 7 9	16			8000*	
935		Gray SAND & GRAVEL	35	--	8 9 12	21	NR			
		37.0								

Total Depth: *79 FT*
Drilling Date: *06/18/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compos*

Drilling Method:
CME-55 drill rig with 4-1/4" hollow-stem auger to 10'; wash rotary to 69'; rock core to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:
Due to use of drilling fluids, no water level data was obtained.

Notes:
** - Pocket Penetrometer Value*
NR - No Recovery

Location Coordinates:
E *4053.42* N *7397.84*

FIGURE NO. A-11

LOG OF TEST BORING NO: TB-210

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ALE

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 971.46	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		Gray SAND & GRAVEL								
		39.0	40		5					
					5					
930				LS-7	9	14				
			45		10					
					16					
925				LS-8	22	38				
			50							
920		Compact to Medium Compact Gray SANDY GRAVEL with Trace of Clay [GC]			--					
					--					
				BS-1	--	--				
			55							
915										
			60							
910										
		65.0	65		--					
					--					
905		Gray SAND & GRAVEL with Green Mudstone & Little Black Shale		BS-2	--	--				
		69.0	70							
900										
		BEDROCK: Gray to Grayish-Green SANDSTONE	75							
895										
					--					
		79.0			--					
				RC-1	--	Run = 60"				
		END OF BORING	80							
890										

LOG OF TEST BORING NO: TB-211

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 995.60	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
995		Brown SANDY TOPSOIL 1.0								
		Loose Brown CLAYEY FINE TO MEDIUM SAND with Trace of Gravel [SC]	5	LS-1	2 2 4	6				
990				LS-2	5 3 7	10	11.0			
		10.0	10							
985		Loose Brown SILTY FINE TO MEDIUM SAND		LS-3	2 4 4	8	5.4			
		15.0	15							
980		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel		LS-4	5 7 9	16				
			20							
975				LS-5	11 14 17	31				
			25							
970				LS-6	11 17 17	34	7.1			
		30.0	30							
965		Compact Brown SILTY FINE SAND [SM]		LS-7	8 17 21	38	7.6	102.6		
		35.0	35							
960		Compact to Very Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel 37.0		LS-8	24 29 45	74				

Total Depth: *62 FT*
Drilling Date: *06/12/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Borehole backfilled with bentonite grout.

Water Level Observation:
Groundwater encountered at 47.8 ft bgs; at 47.3 ft bgs upon completion.

Notes:

Location Coordinates:
E *4065.90* N *7140.24*

FIGURE NO. A-12

LOG OF TEST BORING NO: TB-211

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 995.60	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
955		Compact to Very Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel	40	LS-9	20 21 26	47	8.8			
		42.0		LS-10	20 26 21	47				
950		Medium Compact Gray SILTY FINE TO MEDIUM SAND with Trace of Gravel (moist)	45	LS-11	9 12 11	23				
		46.0		LS-12	4 3 10	13				
		Medium Compact Brown SILTY FINE TO MEDIUM SAND with Trace of Gravel (wet)		LS-13	4 6 18	24				
945		48.0	50	LS-14	7 10 12	22				
940		Medium Compact Gray COARSE SAND & GRAVEL with Trace of Clay (wet)	55	LS-15	12 13 14	27				
935			60							
		62.0		AS-1	-- -- --	--				
		END OF BORING								
930			65							
925			70							
920			75							
915			80							

LOG OF TEST BORING NO: TB-212S

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 989.73	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		Brown SANDY TOPSOIL 1.0								
985		Loose Brown CLAYEY FINE SAND 5.0	5							
980		Medium Compact Brown SILTY FINE SAND with Trace of Gravel 10.0	10							
975			15							
970		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND	20							
965			25							
960			30							
		32.0								
955		Hard Gray SILTY CLAY with Trace of Gravel 35.0	35							
		Stiff Gray SILTY CLAY with Trace of Gravel 37.0		LS-1	4 13 18	31			3000*	

Total Depth: *47 FT*
Drilling Date: *06/09/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Observation well no. OW-212S installed in borehole with screen tip set at 44.0 ft bgs.

Water Level Observation:
Groundwater encountered at 39.57 ft bgs; at 37.4 ft bgs upon completion.

Notes:
*[1] * - Pocket Penetrometer Value.*
[2] No samples were obtained above 35.0 ft bgs; descriptions based on adjacent boring TB-212D.

Location Coordinates:
E *4503.86* N *6913.75*

FIGURE NO. A-13

LOG OF TEST BORING NO: TB-212S

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 989.73	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
950			40							
		Compact Gray FINE TO MEDIUM SAND & GRAVEL with Black Shale (wet)		LS-2	17 19 20	39				
945			45							
				LS-3	16 16 20	36				
		47.0 END OF BORING								
940			50							
935			55							
930			60							
925			65							
920			70							
915			75							
910			80							

LOG OF TEST BORING NO: TB-212D

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 989.37

ELEV. (FT)	PRO-FILE		DEPTH (FT.)
		Brown SANDY TOPSOIL	
		1.0	
985		Medium Compact Brown SILTY FINE SAND with Trace of Gravel	5
980		10.0	10
975		Medium Compact to Compact Brown SILTY FINE TO MEDIUM SAND	15
970			20
965			25
960			30
		32.0	
955		Hard Gray SILTY CLAY with Trace of Gravel	35
		36.0	

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
LS-1	3 4 5	9				
LS-2	6 8 15	23				
LS-3	9 12 13	25				
LS-4	11 15 16	31				
LS-5	9 10 12	22				
LS-6	8 9 9	18				
LS-7	4 4 7	11				
LS-8&9	4 18 44	62			8000*	

Total Depth: *94 FT*
Drilling Date: *06/06/03 - 06/16/03*
Inspector: *S. Pratt*
Contractor: *Rau Drilling Co.*
Driller: *G. Compo*

Water Level Observation:
Groundwater encountered at 32.5 ft bgs; no meaningful water level data was obtained below 70 ft bgs due to drilling fluids.

Notes:

Drilling Method:
CME-55 drill rig with 4-1/4" inside-diameter, hollow-stem augers to 70'; wash rotary to 85'; rock coring to end of boring.

Plugging Procedure:
Observation well no. OW-212D installed in borehole with screen tip set at 94.0 feet.

Location Coordinates:
E *4505.55* N *6907.79*

FIGURE NO. A-14

LOG OF TEST BORING NO: TB-212D

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: ACE

SUBSURFACE PROFILE				SOIL SAMPLE DATA						
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 989.37	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
950		Very Compact Gray COARSE SAND with Some Gravel (wet)	40							
		40.0								
				LS-10	16 32 33	65				
945		Medium Compact to Very Compact Gray GRAVELLY SAND with Trace of Clay (wet) [SW]	45							
				LS-11	13 14 16	30				
940			50							
		50.0								
				LS-12	10 16 24	40				
935		Medium Compact to Very Compact Gray GRAVELLY SAND with Black Shale & Little Clay (wet) [SW]	55							
				LS-13	3 9 14	23				
930			60							
		62.0								
				LS-14	47 45 15	60				
925		COARSE SAND & GRAVEL (wet)	65							
				AS-1	-- -- --	--				
920			70							
		70.0								
915		Gray SAND & GRAVEL with interbedded Shale & Mudstone	75							
910			80							
		82.0								

LOG OF TEST BORING NO: TB-212D

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH CONSULTANTS, LTD.

NTH Proj. No: *13-030114-02*

Checked By: *ACE*

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 989.37

Gray SAND & GRAVEL
with interbedded Shale & Mudstone

85.0

BEDROCK: Gray to Grayish-Green
SANDSTONE

94.0

END OF BORING

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
905		85							
			RC-1	-- -- --	Run = 36"				
900		90							
895		95							
890		100							
885		105							
880		110							
875		115							
870		120							
865		125							

OBSERVATION WELL NO: OW-201S

NTH CONSULTANTS, LTD.

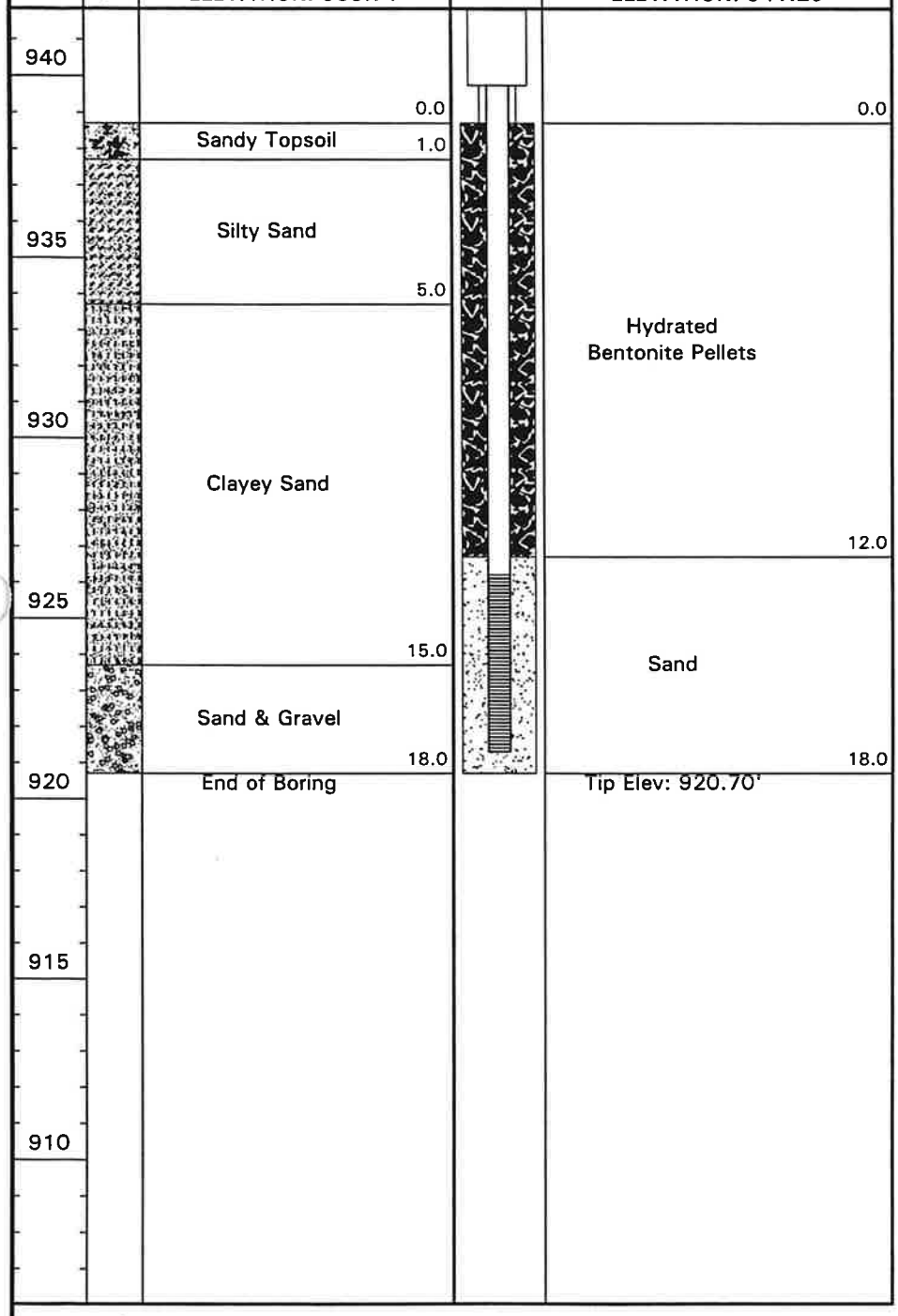
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-05-03	932.08	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-201S.

[2] Coordinates: E 4338.52, N 8377.17

Started:	*06/04/03*	Casing Diameter:	*2.0 in*
Completed:	*06/04/03*	Casing Length:	*15.5 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-15

OBSERVATION WELL NO: OW-201D

NTH CONSULTANTS, LTD.

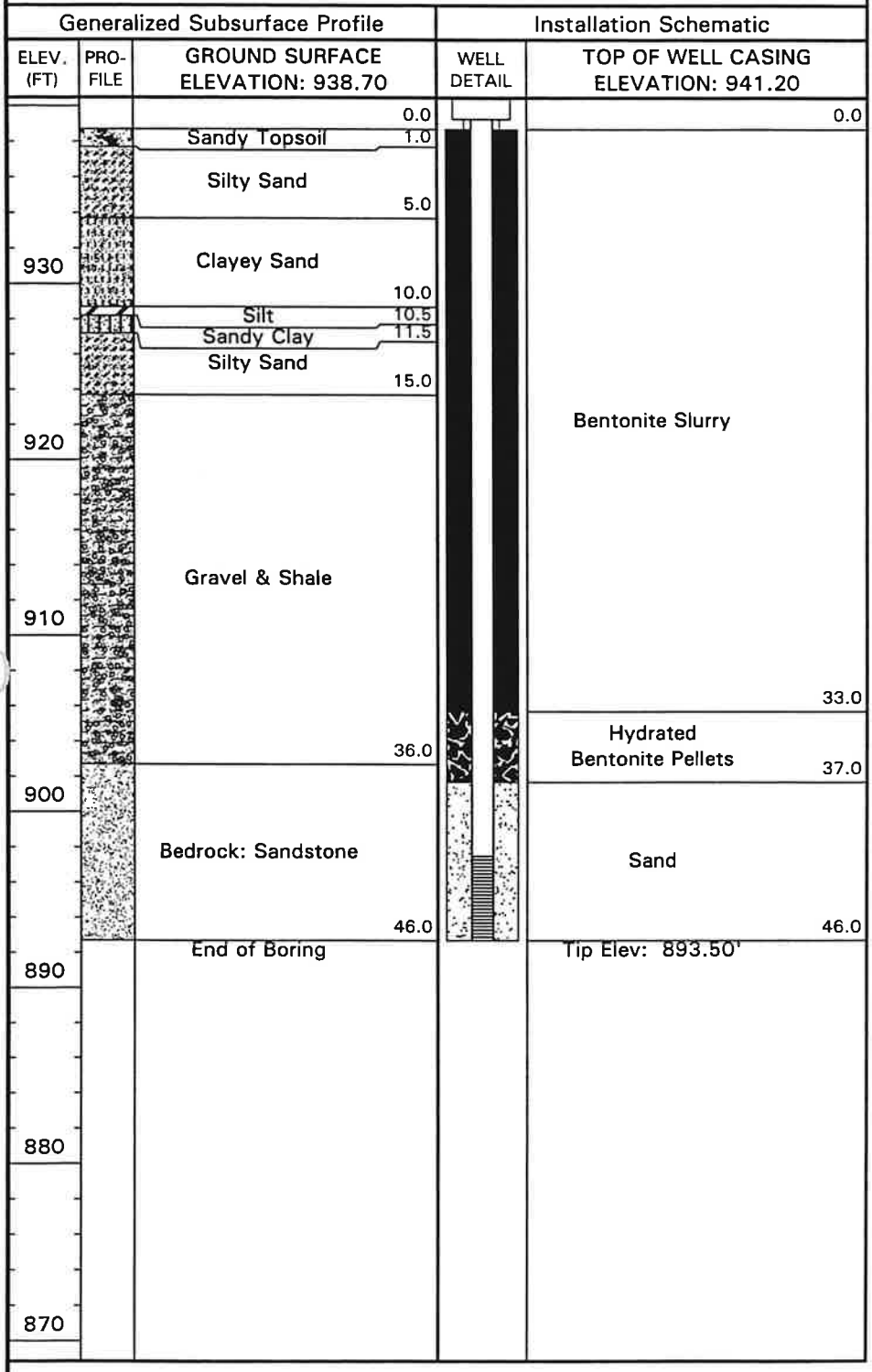
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-05-03	931.95	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-201D.

[2] Coordinates: E 4344.88, N 8377.50

Started:	*06/03/03*	Casing Diameter:	*2.0 in*
Completed:	*06/04/03*	Casing Length:	*42.7 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-16

OBSERVATION WELL NO: OW-202

NTH CONSULTANTS, LTD.

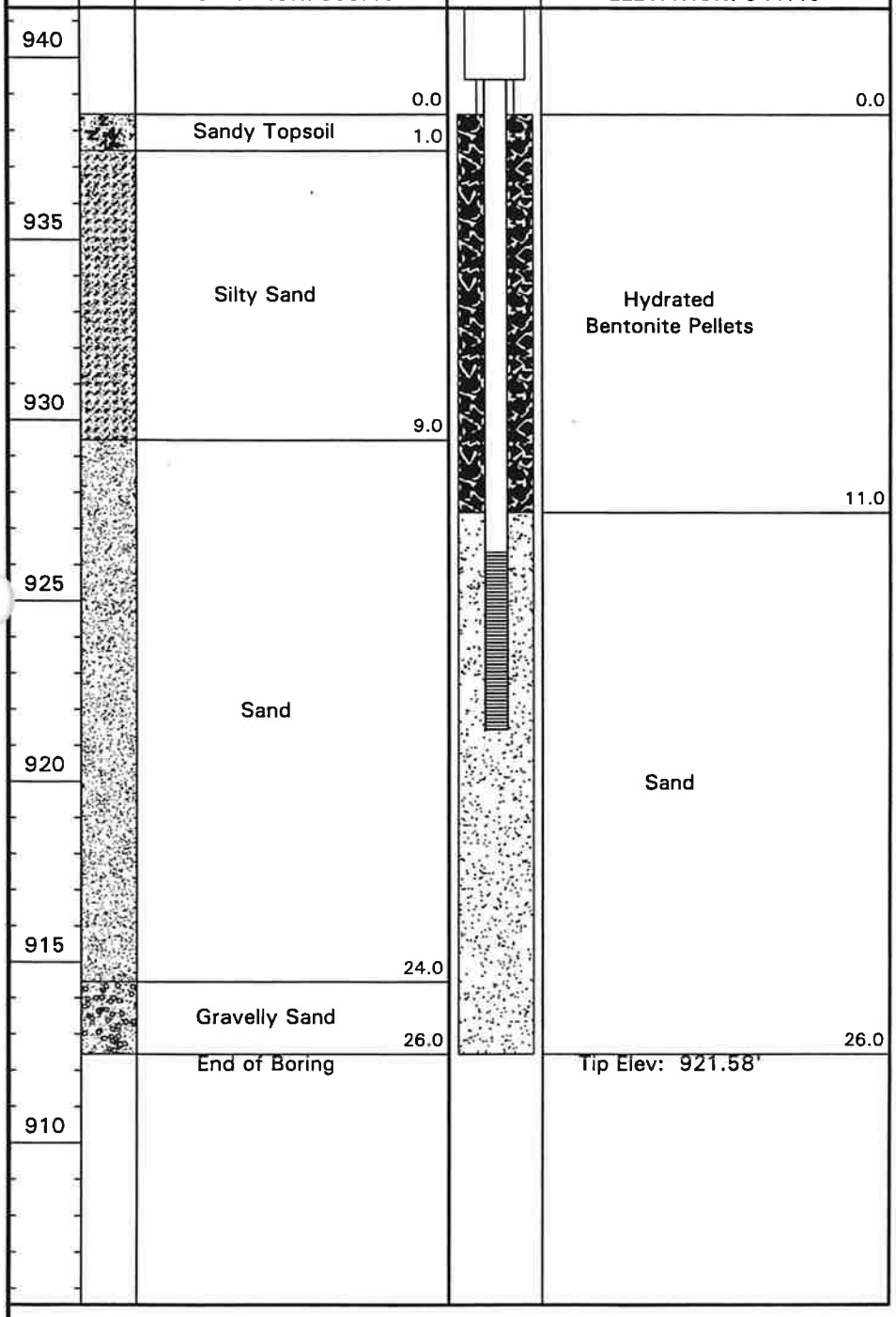
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-05-03	932.42	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-202.

[2] Coordinates: E 4076.44, N 8360.36

Started:	*06/04/03*	Casing Diameter:	*2.0 in*
Completed:	*06/04/03*	Casing Length:	*14.87 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-17

OBSERVATION WELL NO: OW-204

NTH CONSULTANTS, LTD.

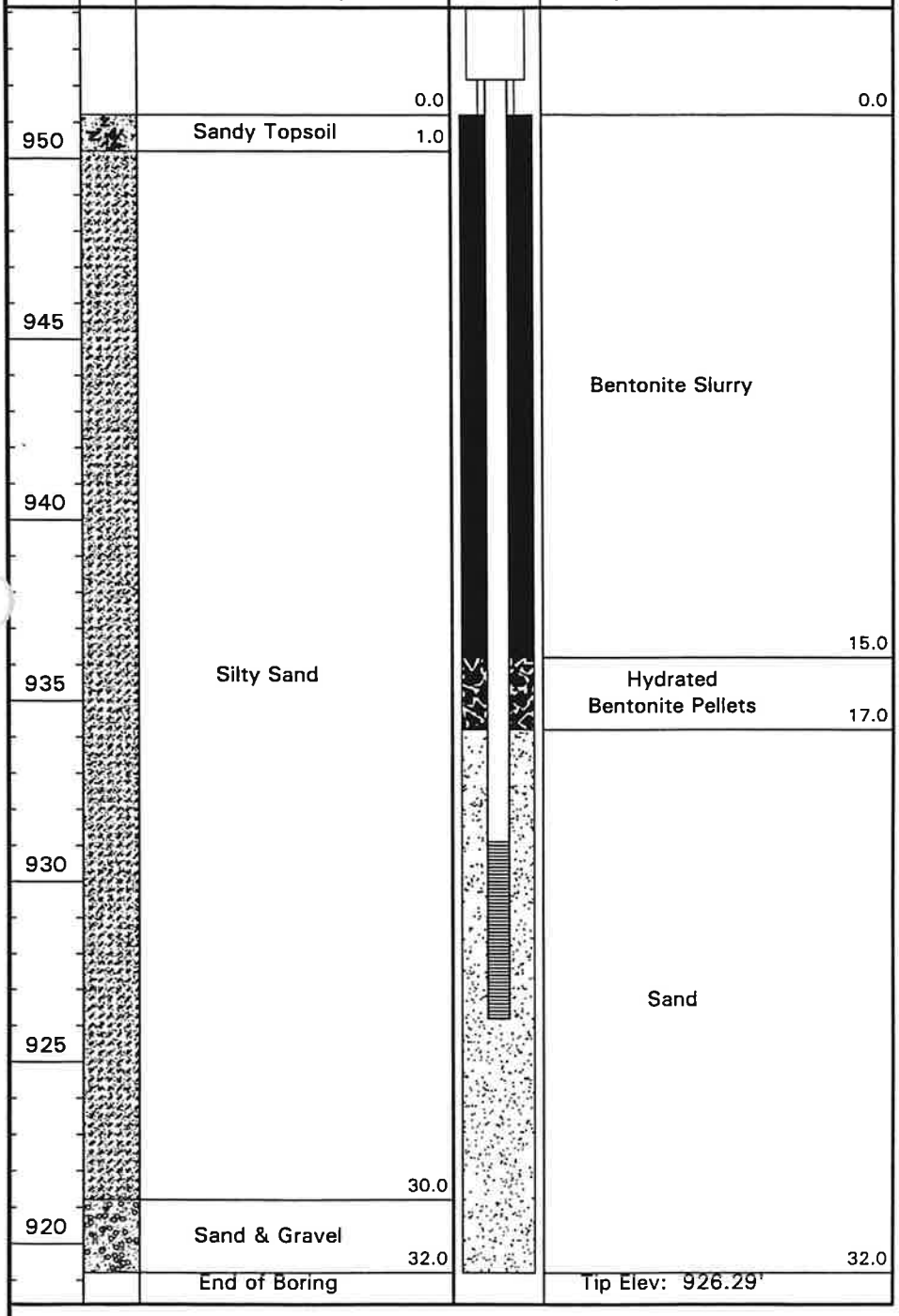
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-09-03	938.89	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-204.

[2] Coordinates: E 4519.86, N 7944.74

Started:	*06/06/03*	Casing Diameter:	*2.0 in*
Completed:	*06/06/03*	Casing Length:	*22.90 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-18

OBSERVATION WELL NO: OW-205

NTH CONSULTANTS, LTD.

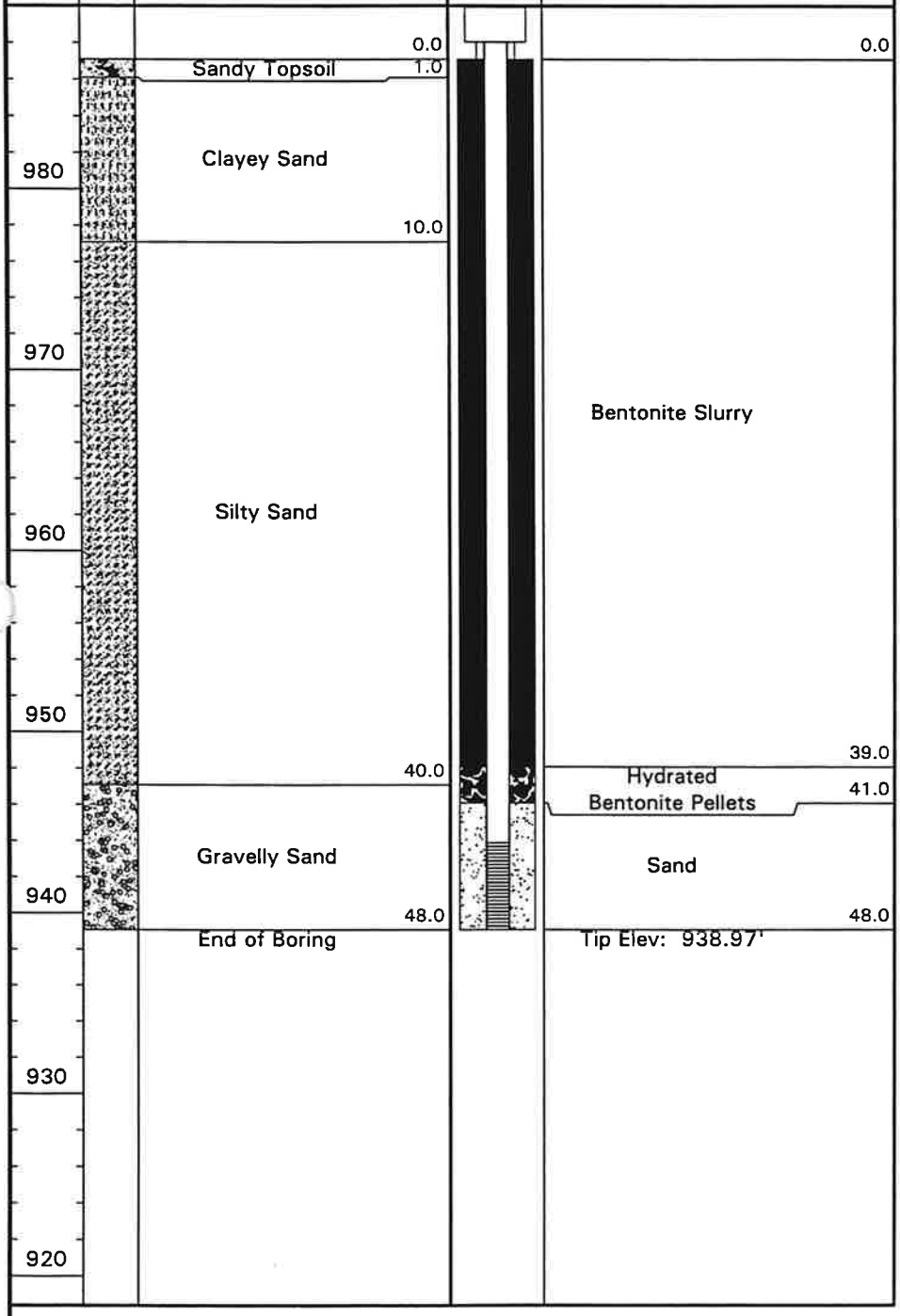
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-13-03	947.81	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-205.

[2] Coordinates: E 4506.28, N 7317.55

Started:	*06/12/03*	Casing Diameter:	*2.0 in*
Completed:	*06/12/03*	Casing Length:	*45.84 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-19

OBSERVATION WELL NO: OW-206

NTH CONSULTANTS, LTD.

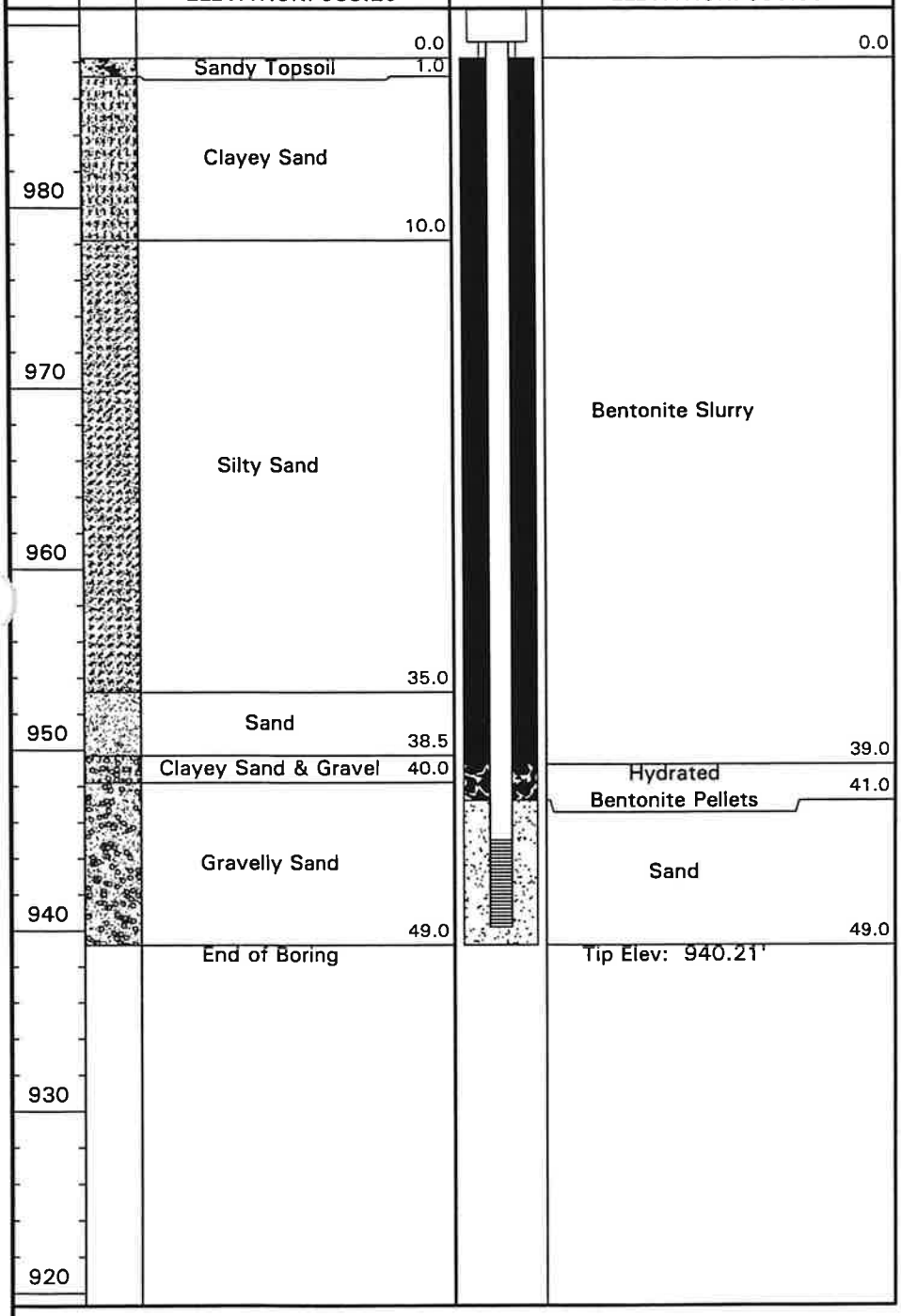
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-15-03	948.53	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-206.

[2] Coordinates: E 4146.34, N 6902.46

Started:	*06/10/03*	Casing Diameter:	*2.0 in*
Completed:	*06/11/03*	Casing Length:	*45.65 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-20

OBSERVATION WELL NO: OW-212S

NTH CONSULTANTS, LTD.

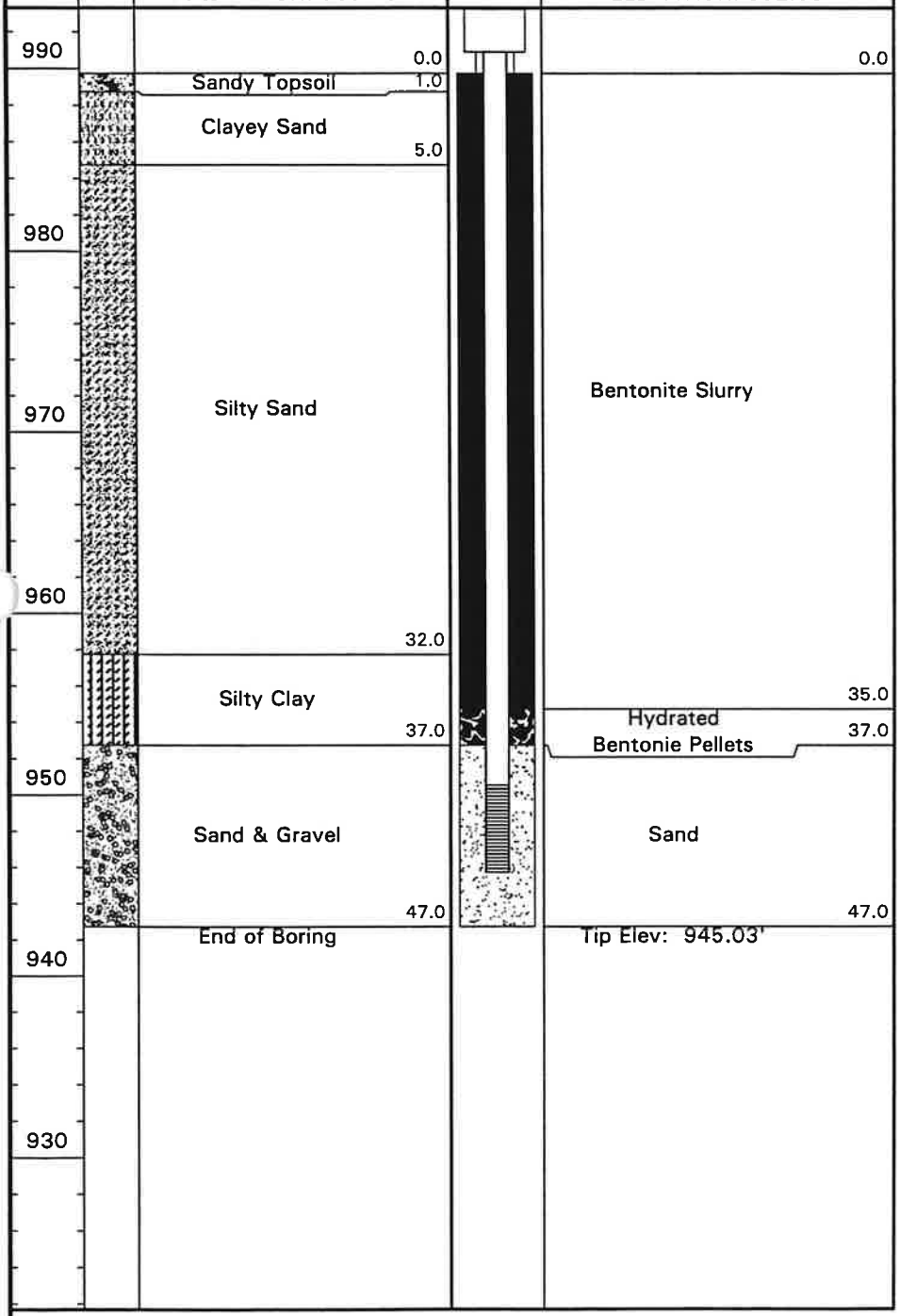
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-15-03	948.34	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-212S.

[2] Coordinates: E 4503.86, N 6913.75

Started:	*06/08/03*	Casing Diameter:	*2.0 in*
Completed:	*06/10/03*	Casing Length:	*42.50 ft*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Rau Drilling co.*	Screen Diameter:	*2.0*
Driller:	*G. Compo*	Screen Length:	*5.0 ft*
Equipment:	*CME-55 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. A-21

OBSERVATION WELL NO: OW-212D

NTH CONSULTANTS, LTD.

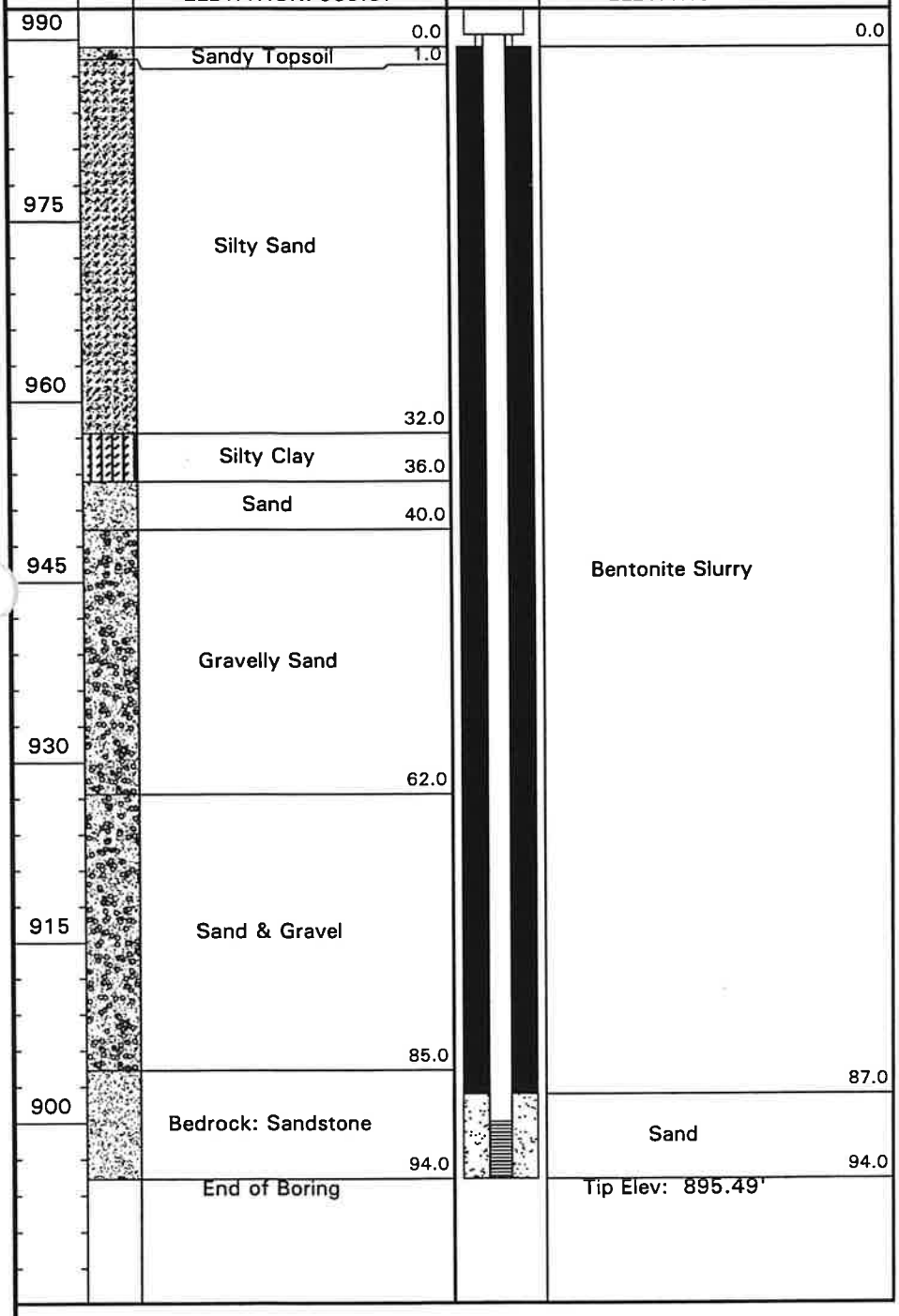
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-030114-02*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
07-10-03	946.95	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-212D.

[2] Coordinates: E 4505.55, N 6907.79

Started:	*06/15/03*
Completed:	*06/17/03*
Inspector:	*S. Pratt*
Contractor:	*Rau Drilling co.*
Driller:	*G. Compo*
Equipment:	*CME-55 Drill Rig*
Well Type:	*Observation*

Casing Diameter:	*2.0 in*
Casing Length:	*92.05 ft*
Casing Type:	*PVC*
Screen Diameter:	*2.0*
Screen Length:	*5.0 ft*
Screen Mesh:	*0.010 in*
Screen Type:	*PVC*

FIGURE NO. A-22

APPENDIX B

SUMMARY OF SOIL LABORATORY RESULTS

PROJECT NO. 13-030114-02 | NTH CONSULTANTS, LTD. | SHEET 1 OF 2

TABULATION OF LABORATORY TEST DATA

BORING / TEST PIT / PROBE DESIGNATION	SAMPLE NUMBER	DEPTH OF SAMPLE TIP (FT)	ELEVATION OF SAMPLE TIP (FT)	UNCONFINED COMPRESSIVE STRENGTH (PSF)	FAILURE STRAIN (%)	NATURAL WATER CONTENT (% OF DRY WEIGHT)	IN-PLACE DRY DENSITY (LBS/CU.FT)	PERMEABILITY (CM/SEC)	PARTICLE SIZE DISTRIBUTION (%)							ATTERBERG LIMITS (%)			APPARENT SPECIFIC GRAVITY	LOSS ON IGNITION (%)	UNIFIED SOIL CLASSIFICATION
									COLLOIDS	CLAY	SILT	FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX			
TB-201-S	S-1	12.0	926.1	--	--	--	--	-----	←	35.9	→	48.6	8.9	3.4	3.2	--	--	--	--	--	SC
TB-202	S-6	26.0	912.4	--	--	--	--	-----	←	11.4	→	8.3	21.4	29.9	29.0	--	--	--	--	--	SP
TB-204	LS-3	12.0	939.1	--	--	13.5	116.7	-----	←	29.3	→	59.0	9.2	1.8	0.7	--	--	--	--	--	SM
TB-205	LS-2	7.0	979.0	--	--	14.2	110.5	-----	←	44.3	→	52.3	2.4	0.8	0.2	--	--	--	--	--	SC
	LS-4	17.0	969.0	--	--	11.8	130.5	-----	--	--	--	--	--	--	--	--	--	--	--	--	--
	LS-9	42.0	944.0	--	--	--	--	-----	←	17.0	→	12.8	13.2	18.6	38.4	--	--	--	--	--	SP
TB-206	LS-3	12.0	976.2	--	--	11.0	129.7	-----	←	42.6	→	49.7	5.5	1.3	0.9	--	--	--	--	--	SM
	LS-10	47.0	941.2	--	--	--	--	-----	←	9.7	→	10.1	22.6	29.2	28.4	--	--	--	--	--	SP
TB-207	S-4	17.0	935.2	--	--	--	--	-----	←	12	26	38	11	5	8	16	12	4	--	--	CL-ML
	S-5	22.0	930.2	--	--	--	--	-----	←	49.3	→	41.5	5.3	1.1	2.8	--	--	--	--	--	SM
TB-208A	LS-4	8.0	954.7	--	--	21.2	105.7	-----	←	22	45	31	2	0	0	29	16	13	--	--	CL
	LS-12	23.0	939.7	--	--	--	--	-----	←	2.9	→	93.5	3.6	0.0	0.0	--	--	--	--	--	SM
TB-209	LS-1	3.0	958.1	--	--	14.8	116.2	-----	←	47.7	→	41.7	6.4	2.9	1.3	--	--	--	--	--	SC
	LS-3	12.0	949.1	--	--	--	--	-----	←	47.3	→	38.0	5.4	1.9	7.4	--	--	--	--	--	SM
	LS-6	27.0	934.1	--	--	--	--	-----	←	30.7	→	61.5	6.2	0.9	0.7	--	--	--	--	--	SM
	LS-9	45.0	916.1	--	--	--	--	-----	←	22.6	→	43.0	17.8	6.2	10.4	--	--	--	--	--	GC
TB-210	LS-2	10.5	961.0	--	--	17.6	113.6	-----	←	47.6	→	48.3	3.5	0.6	0.0	--	--	--	--	--	SM
	LS-6	31.0	940.5	3360	15.0	10.3	135.1	-----	←	20	33	27	11	4	5	18	12	6	--	--	CL-ML
	LS-8	46.0	925.5	--	--	--	--	-----	←	10.8	→	9.1	14.9	9.8	55.4	--	--	--	--	--	GC

FIGURE NO. B-1

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PROJECT NO. 13-030114-02 NTH CONSULTANTS, LTD. SHEET 2 OF 2

TABULATION OF LABORATORY TEST DATA

BORING / TEST PIT / PROBE DESIGNATION	SAMPLE NUMBER	DEPTH OF SAMPLE TIP (FT)	ELEVATION OF SAMPLE TIP (FT)	UNCONFINED COMPRESSIVE STRENGTH (PSF)	FAILURE STRAIN (%)	NATURAL WATER CONTENT (% OF DRY WEIGHT)	IN-PLACE DRY DENSITY (LBS/CU.FT)	PERMEABILITY (CM/SEC)	PARTICLE SIZE DISTRIBUTION (%)							ATTERBERG LIMITS (%)			APPARENT SPECIFIC GRAVITY	LOSS ON IGNITION (%)	UNIFIED SOIL CLASSIFICATION
									COLLOIDS	CLAY	SILT	FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX			
TB-211	LS-2	7.0	988.6	--	--	11.0	--	-----	←	38.7	→	48.7	7.2	2.8	2.6	--	--	--	--	--	SC
	LS-3	12.0	983.6	--	--	5.4	--	-----	--	--	--	--	--	--	--	--	--	--	--	--	--
	LS-6	27.0	968.6	--	--	7.1	--	-----	--	--	--	--	--	--	--	--	--	--	--	--	--
	LS-7	32.0	963.6	--	--	7.6	102.6	-----	←	64.2	→	32.9	1.9	1.0	0.0	--	--	--	--	--	SM
	LS-9	40.0	955.6	--	--	8.8	--	-----	--	--	--	--	--	--	--	--	--	--	--	--	--
TB-212D	LS-11	47.0	942.4	--	--	--	--	-----	←	10.9	→	11.7	17.5	15.6	44.3	--	--	--	--	--	SW
	LS-14	62.0	927.4	--	--	--	--	-----	←	19.5	→	16.5	18.4	18.8	26.8	--	--	--	--	--	SW

FIGURE NO. B-1

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NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

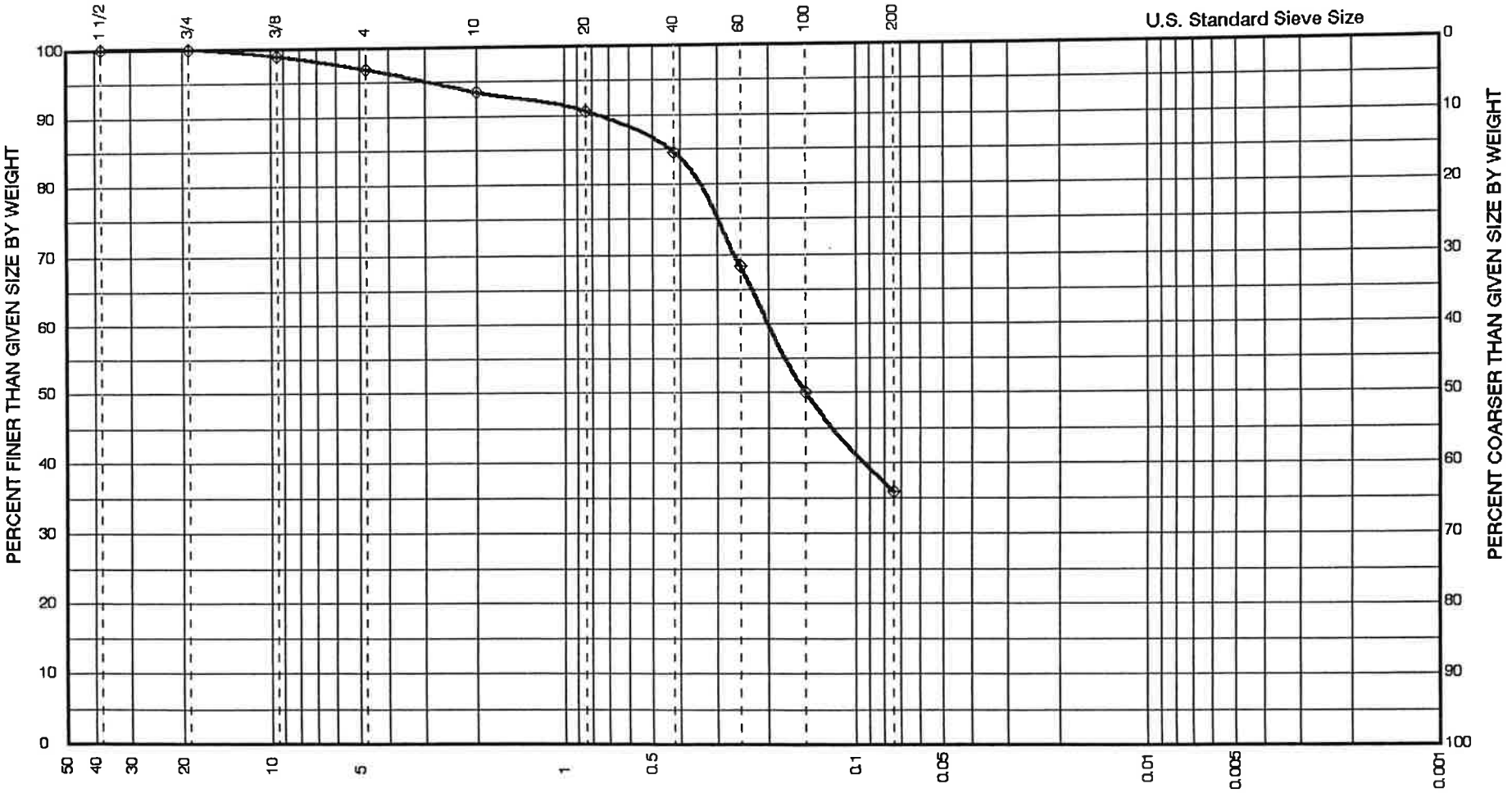
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 201-S Sample No. S-1 Sample Depth 12.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-2

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

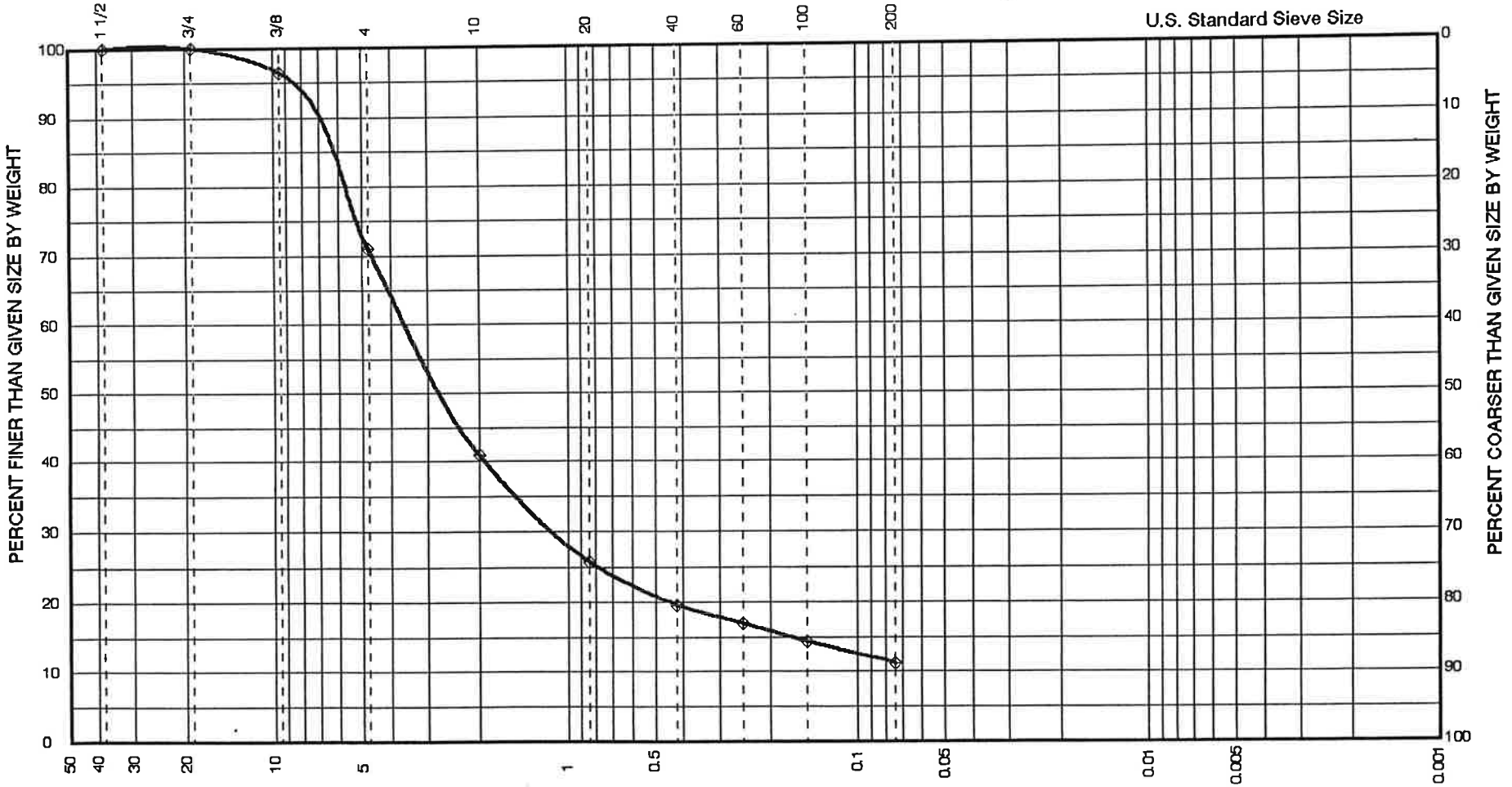
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 202 Sample No. S-6 Sample Depth 26.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-3

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

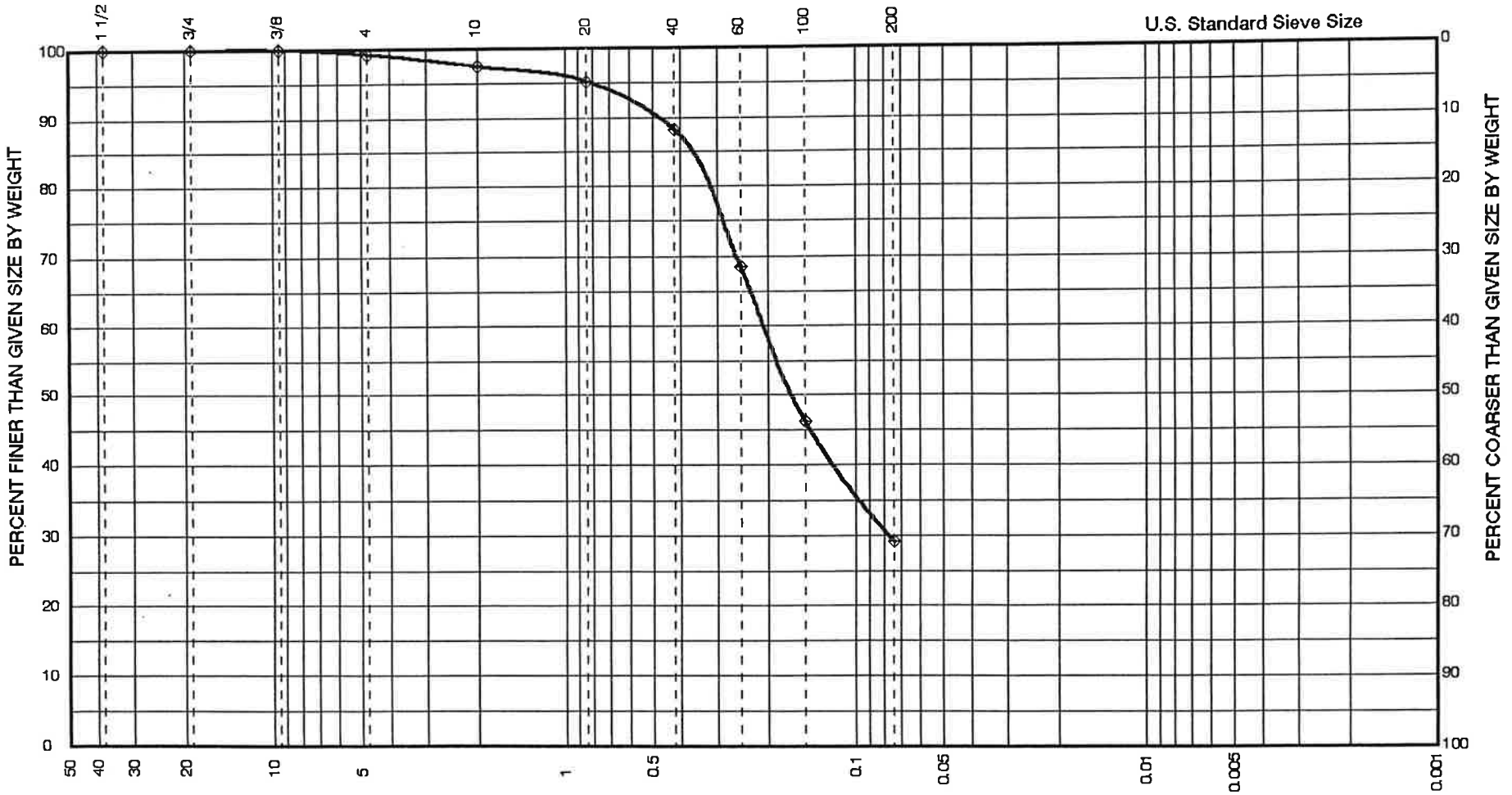
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 204 Sample No. LS-3 Sample Depth 12.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-4

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

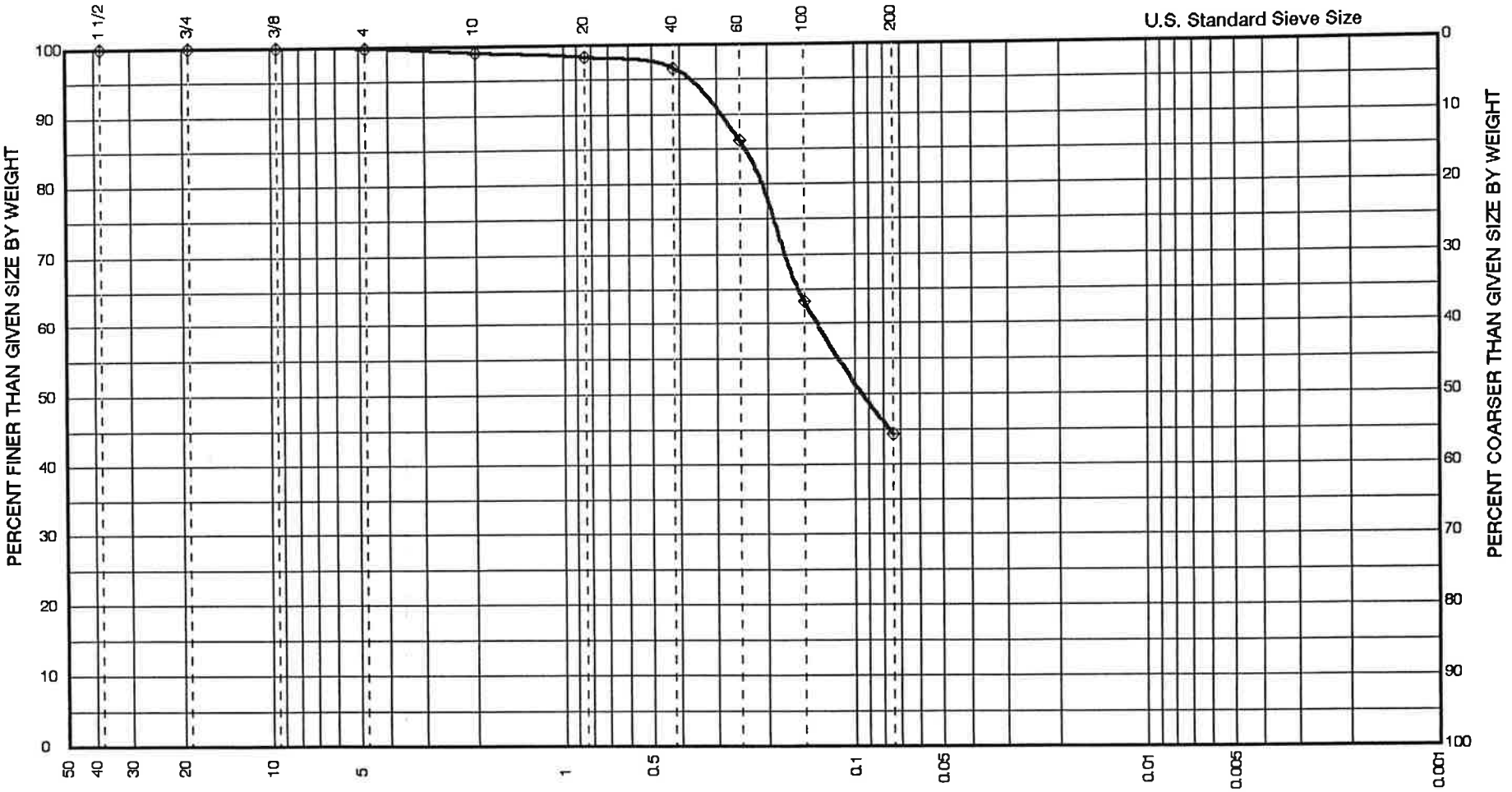
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 205 Sample No. LS-2 Sample Depth 7.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-5

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

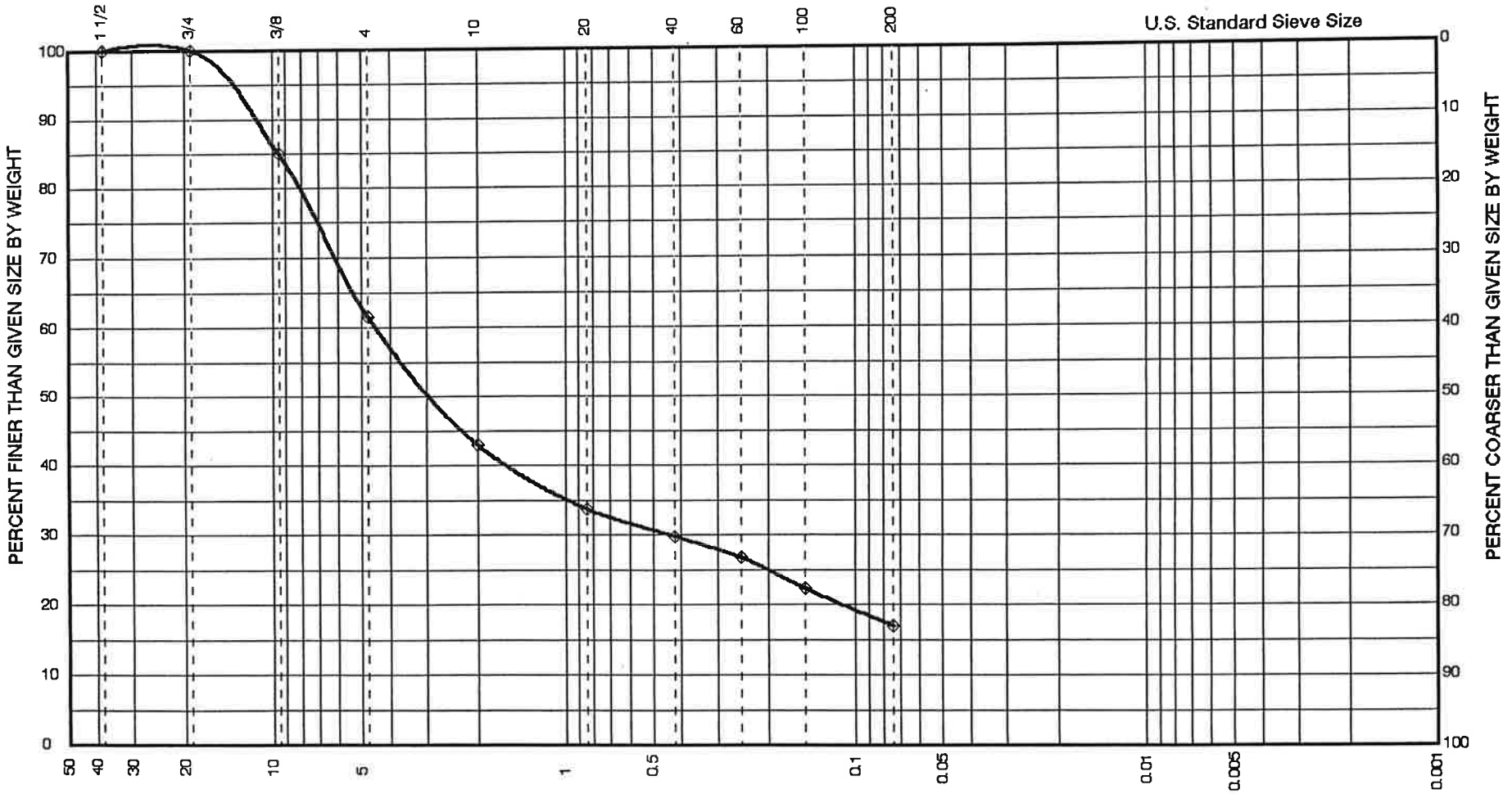
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 205 Sample No. LS-9 Sample Depth 42.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-6

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 206 Sample No. LS-3 Sample Depth 12.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03

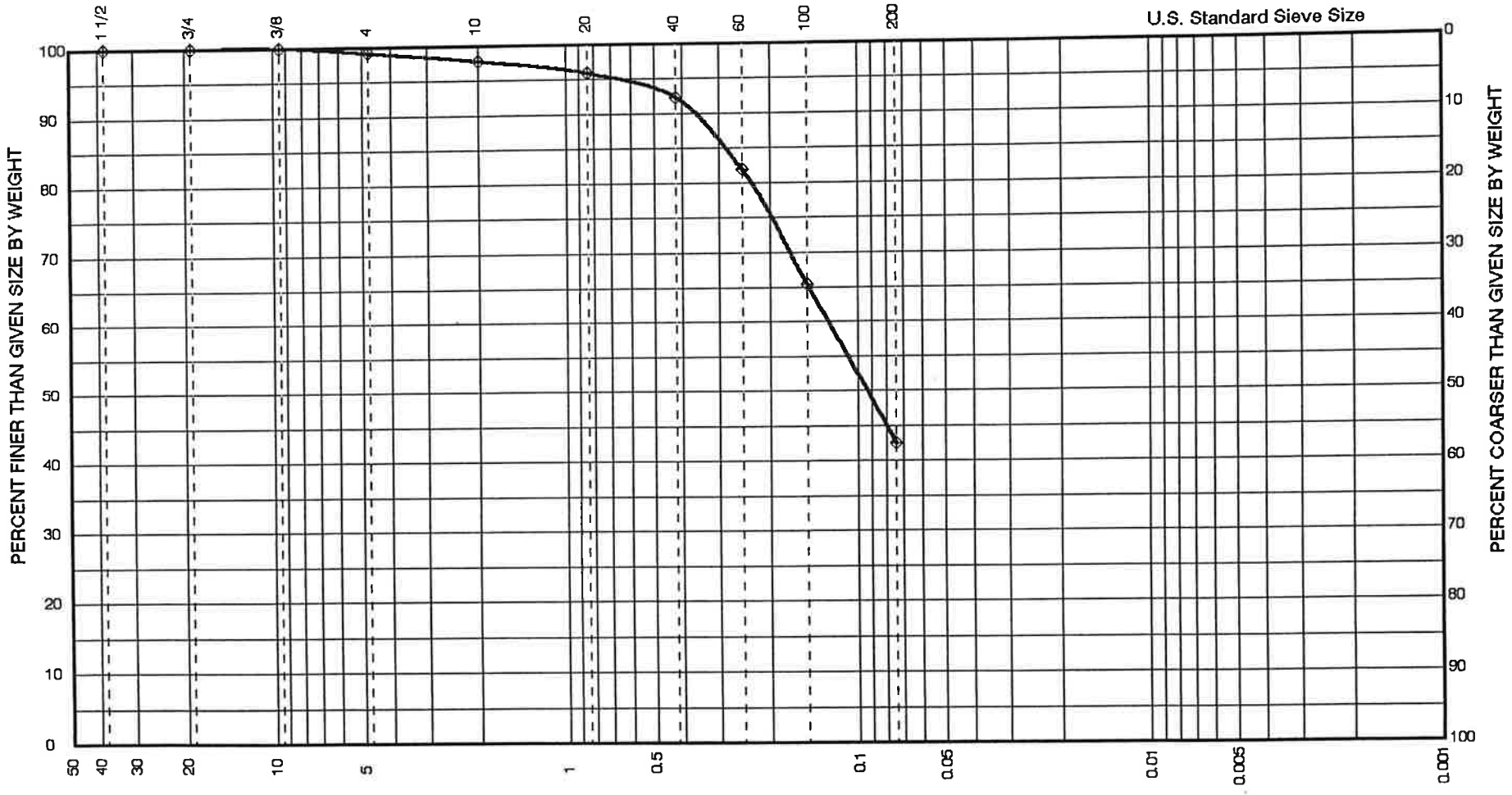


FIGURE NO. B-7

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

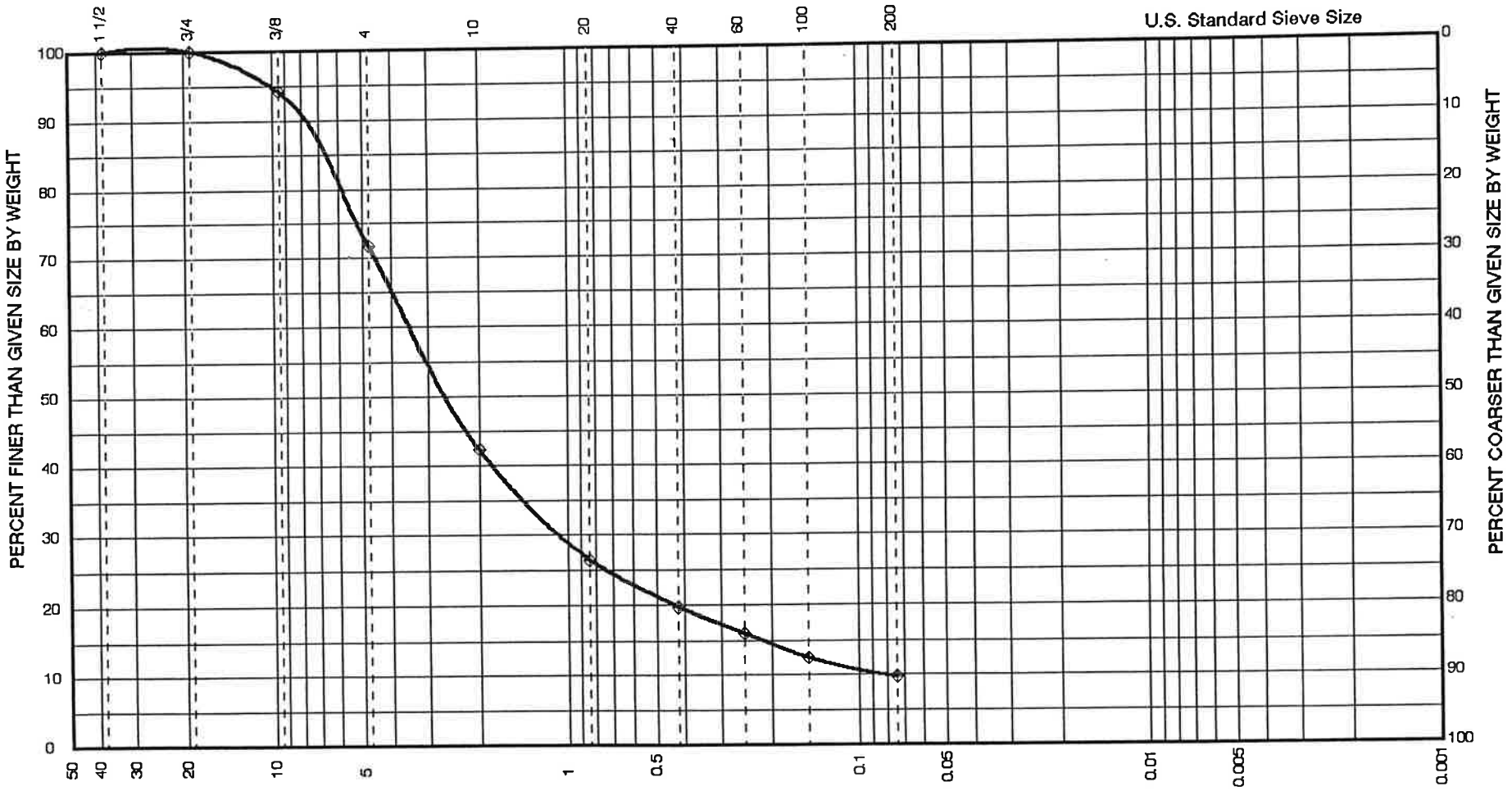
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 206 Sample No. LS-10 Sample Depth 47.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-8

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

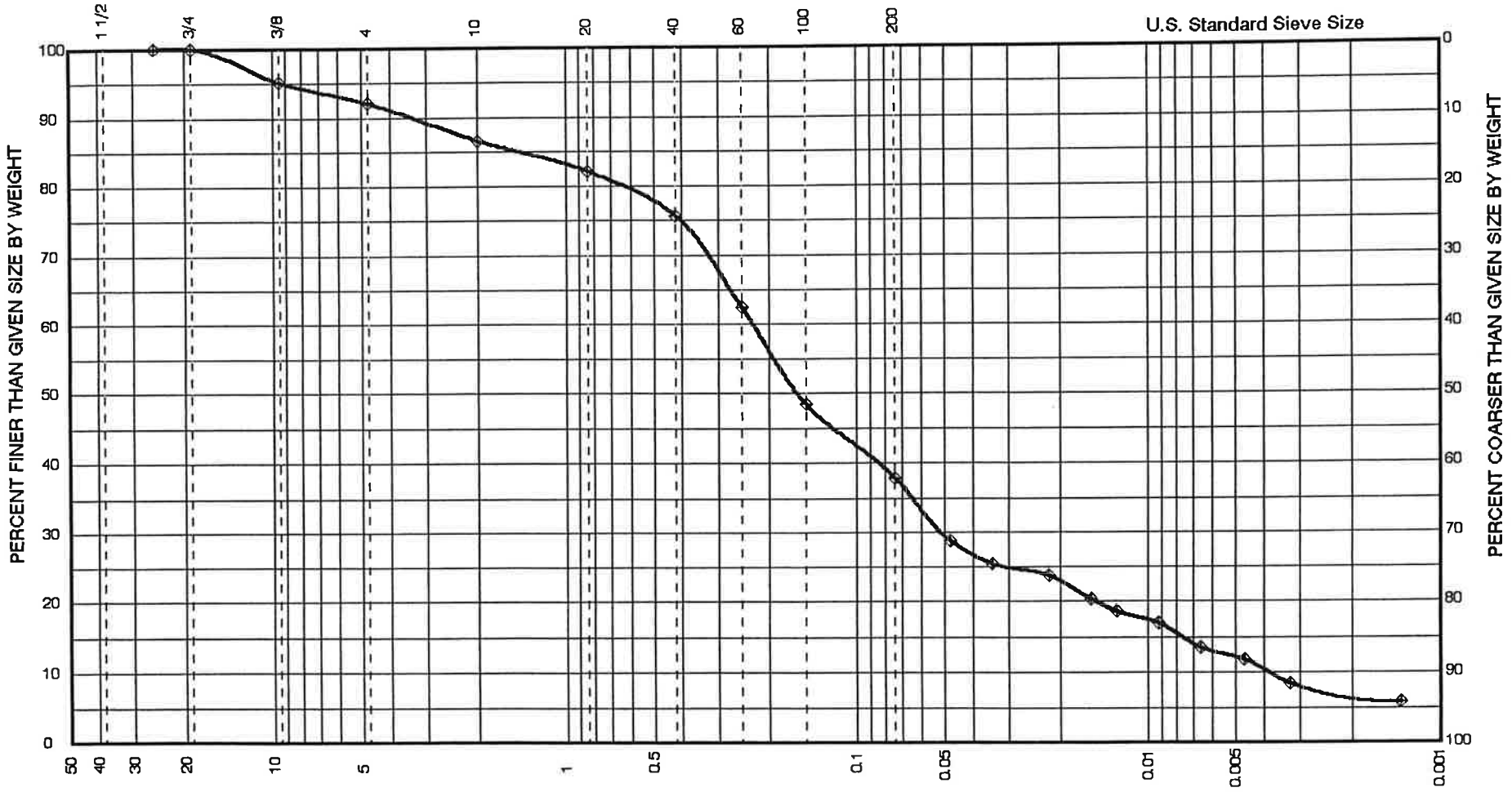
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 207 Sample No. S-4 Sample Depth 17.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SBG Date 6-28-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-9

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

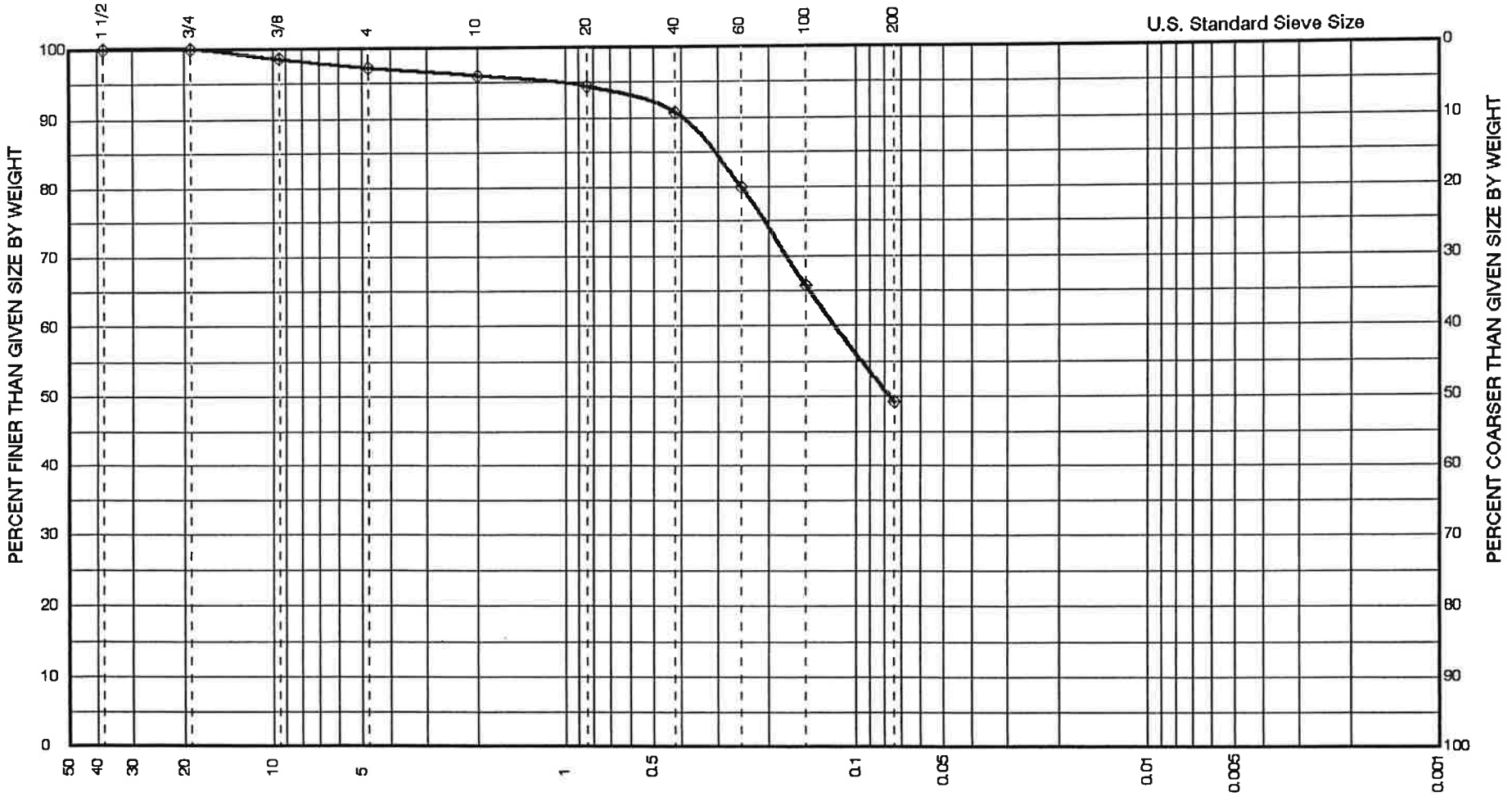
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 207 Sample No. S-5 Sample Depth 22.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-10

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

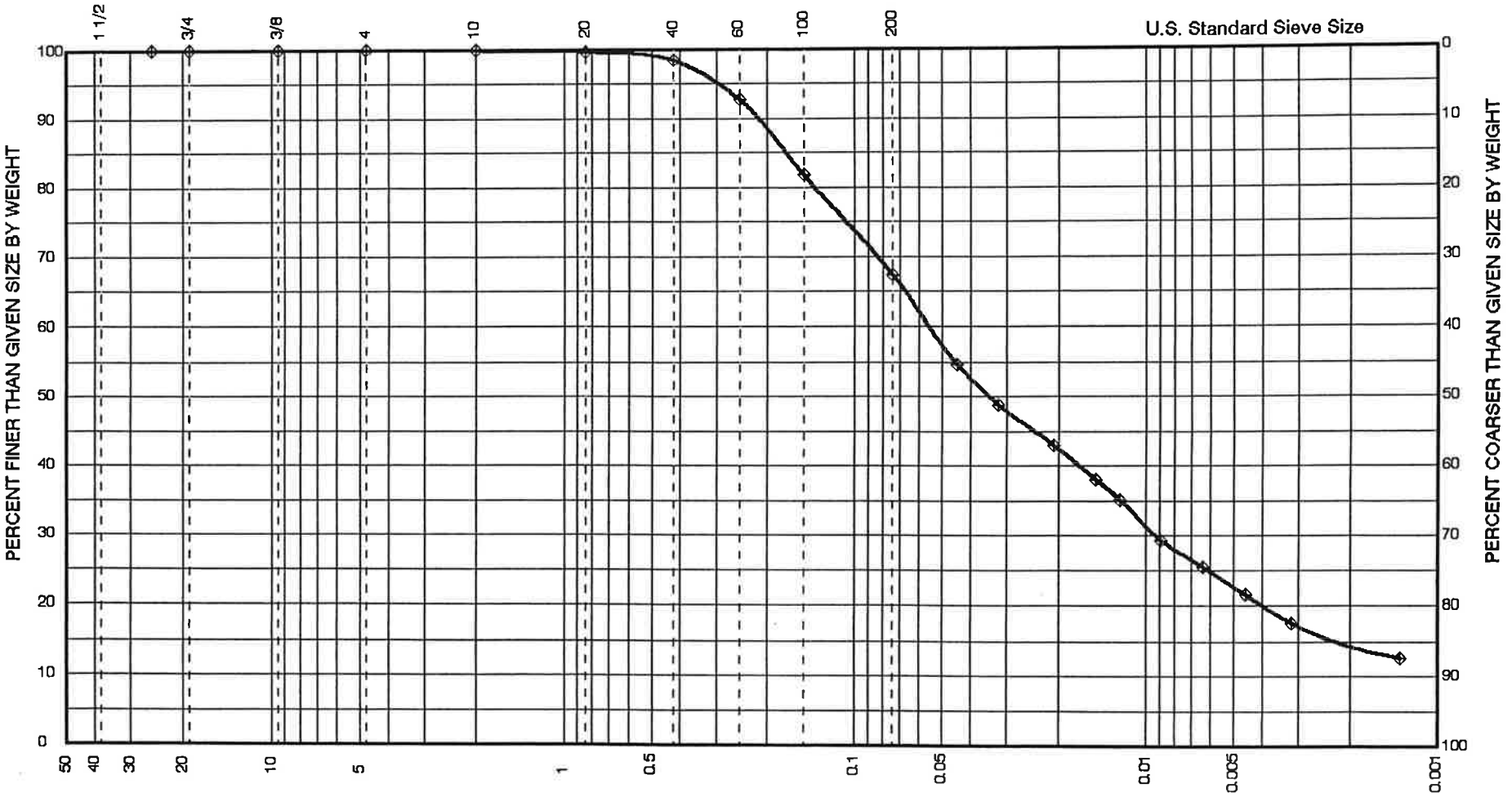
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 208-A Sample No. LS-4 Sample Depth 8.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SBG Date 6-28-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-11

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

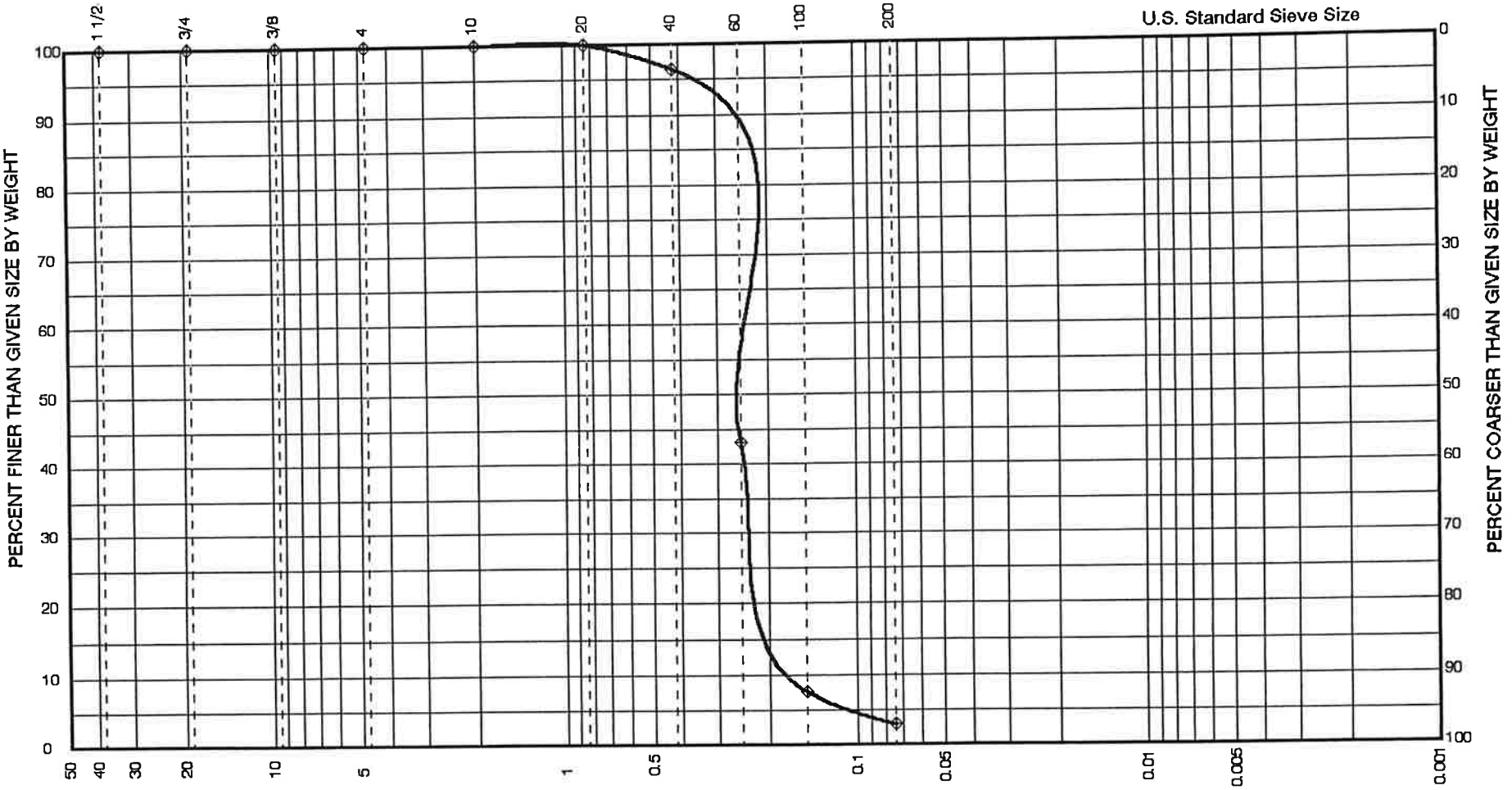
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 208-A Sample No. LS-12 Sample Depth 23.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-12

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

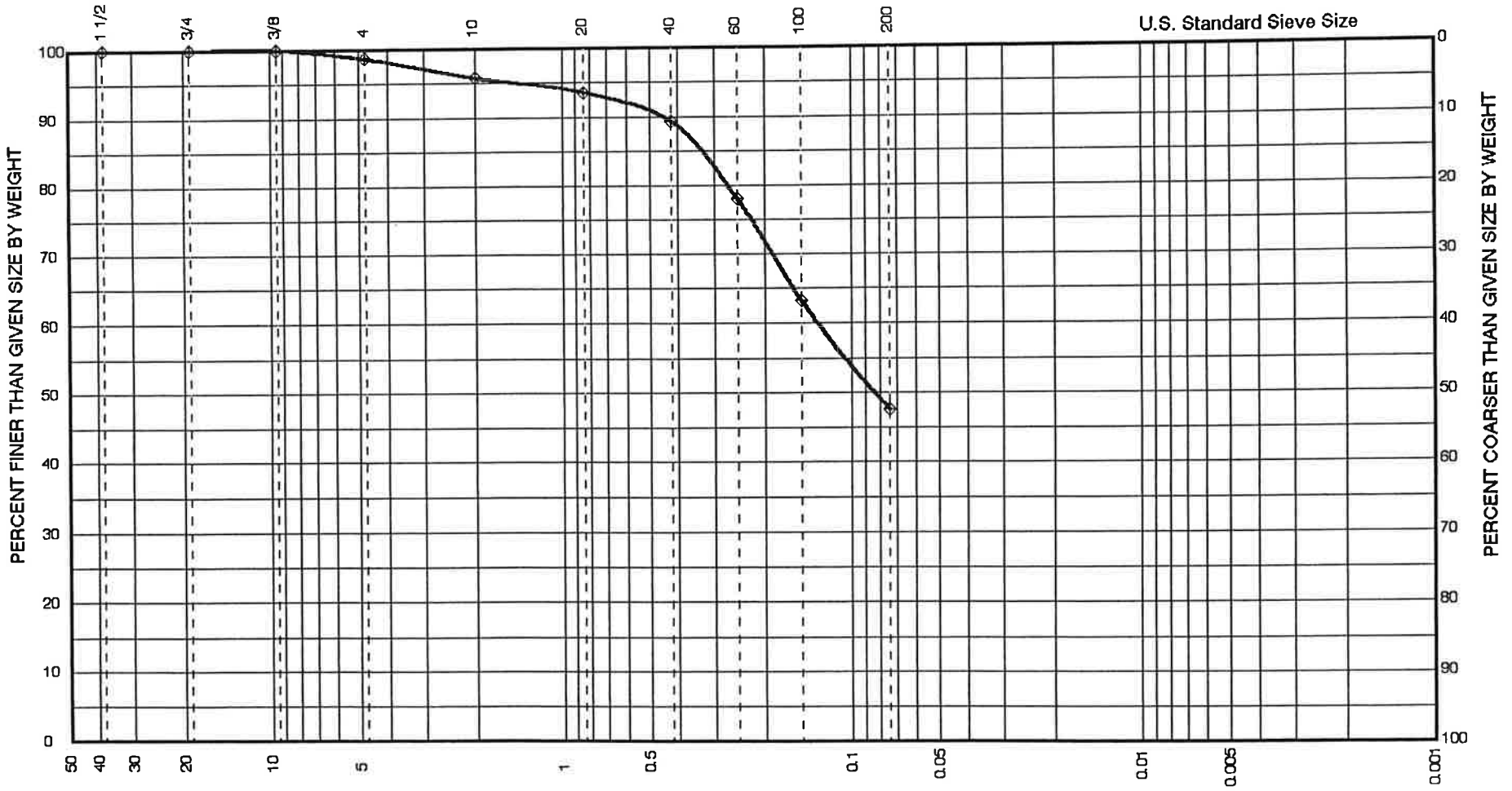
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 209 Sample No. LS-1 Sample Depth 3.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-13

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

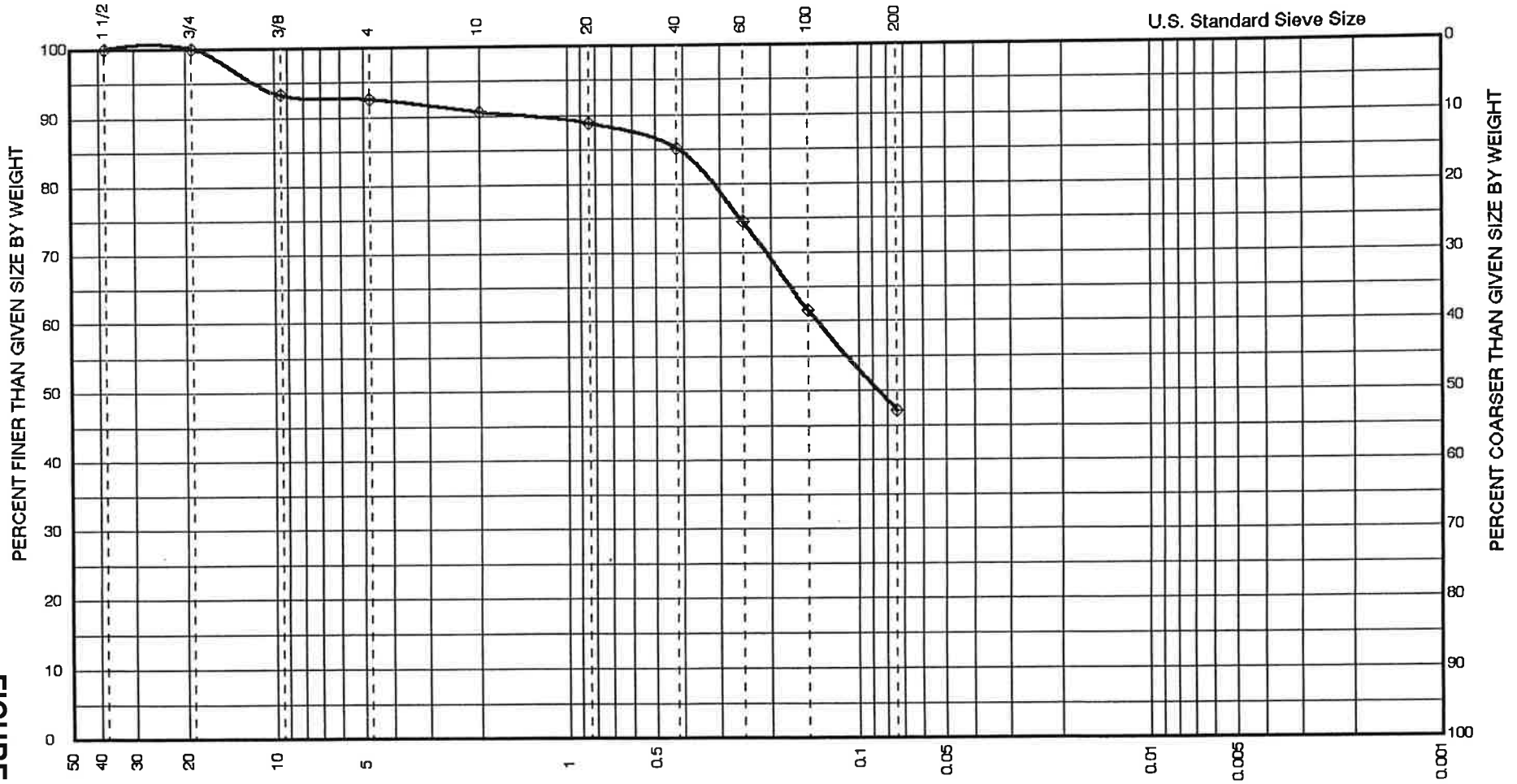
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 209 Sample No. LS-3 Sample Depth 12.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-14

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

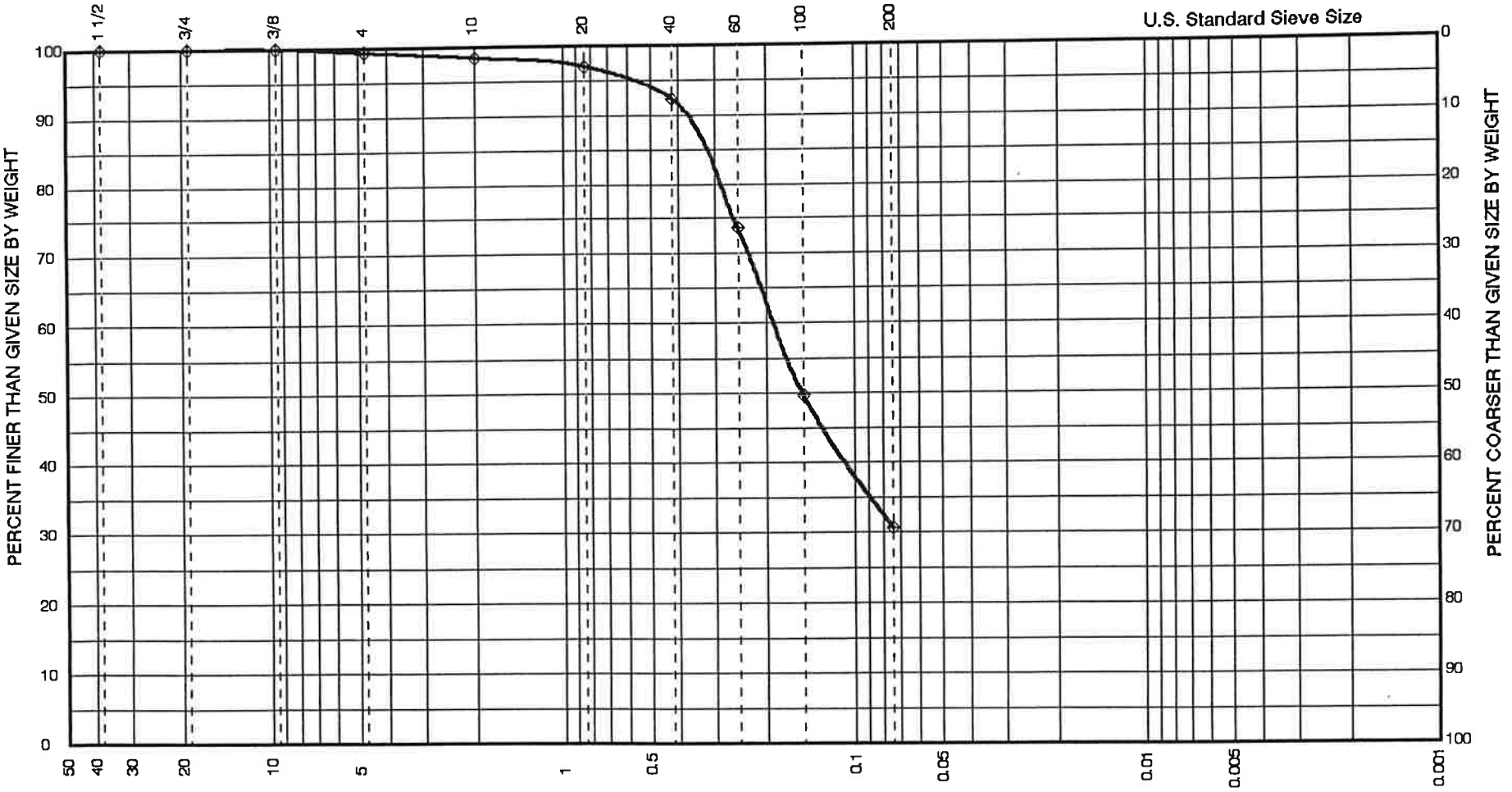
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 209 Sample No. LS-6 Sample Depth 27.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-15

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

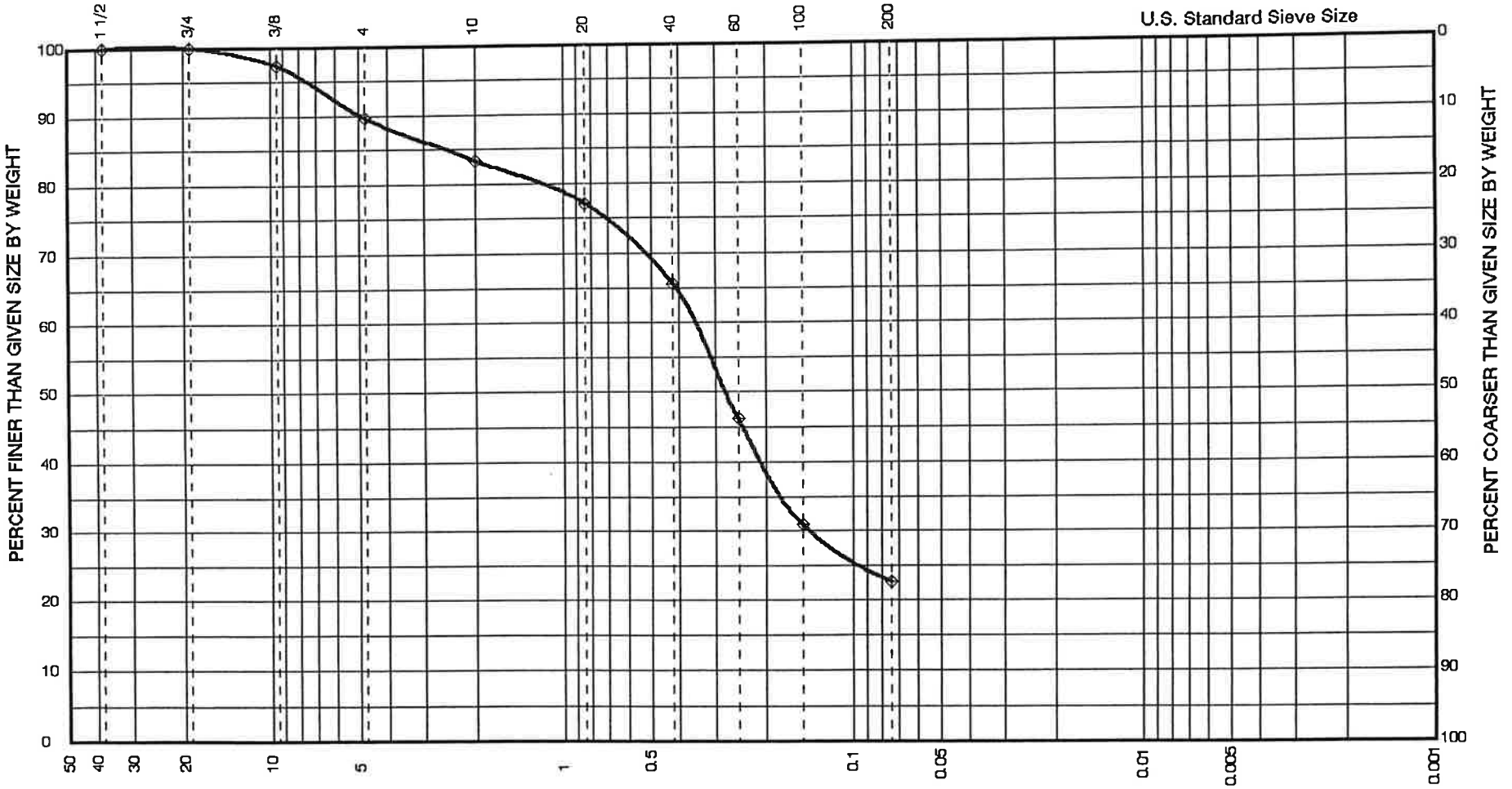
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 209 Sample No. LS-9 Sample Depth 45.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-16

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

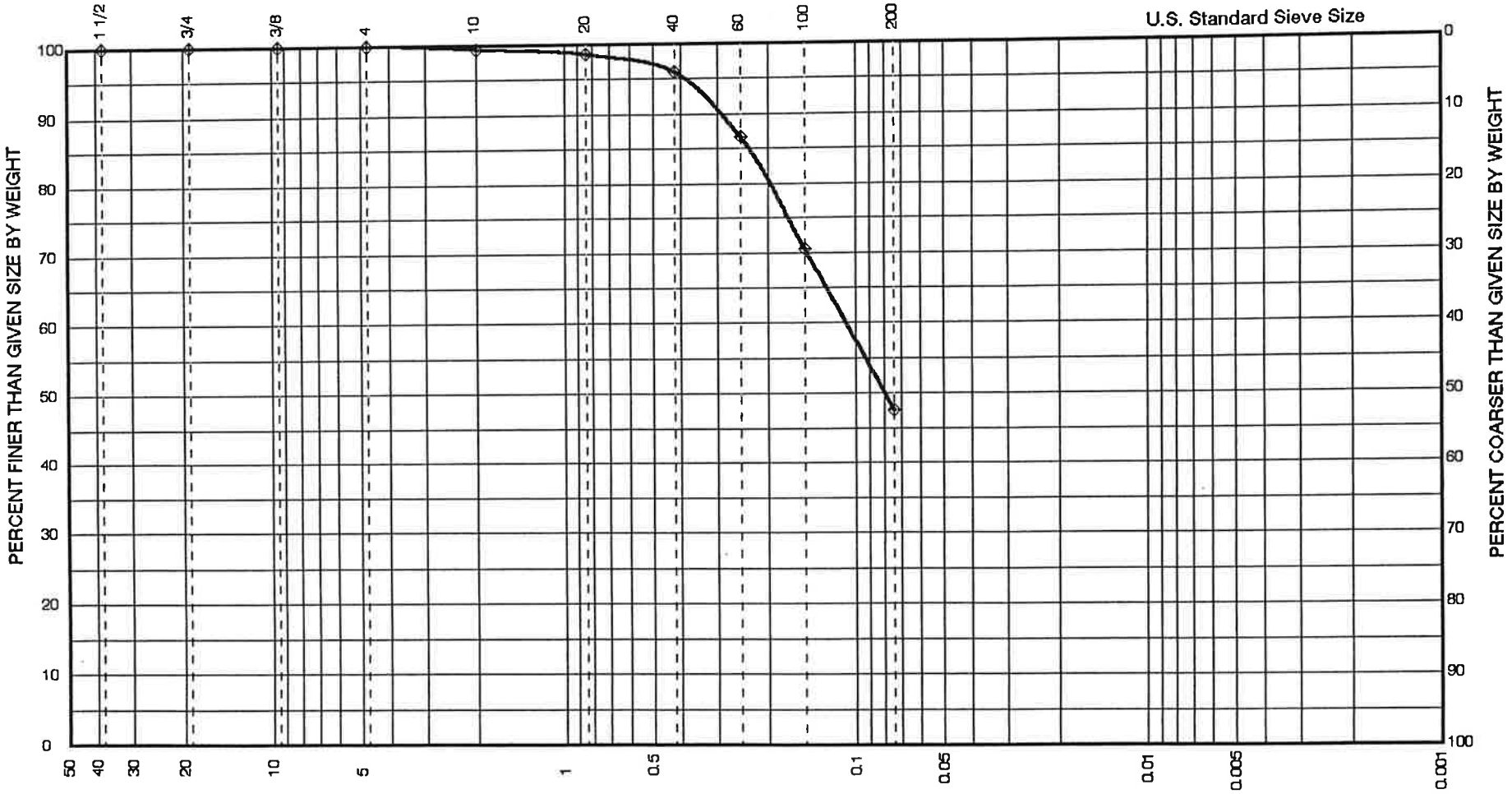
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 210 Sample No. LS-2 Sample Depth 10.5 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-17

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

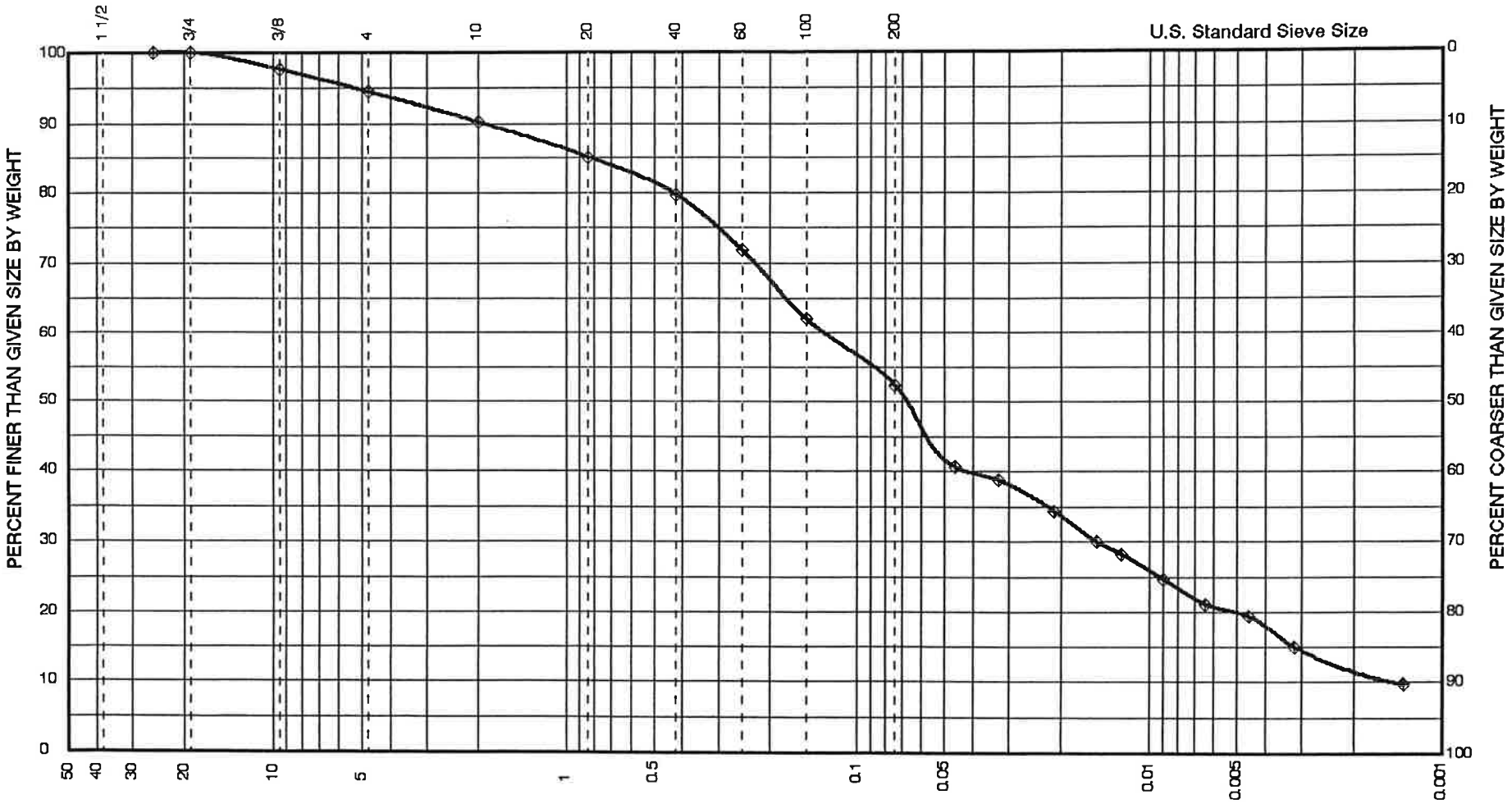
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 210 Sample No. LS-6 Sample Depth 31.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SBG Date 6-28-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-18

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

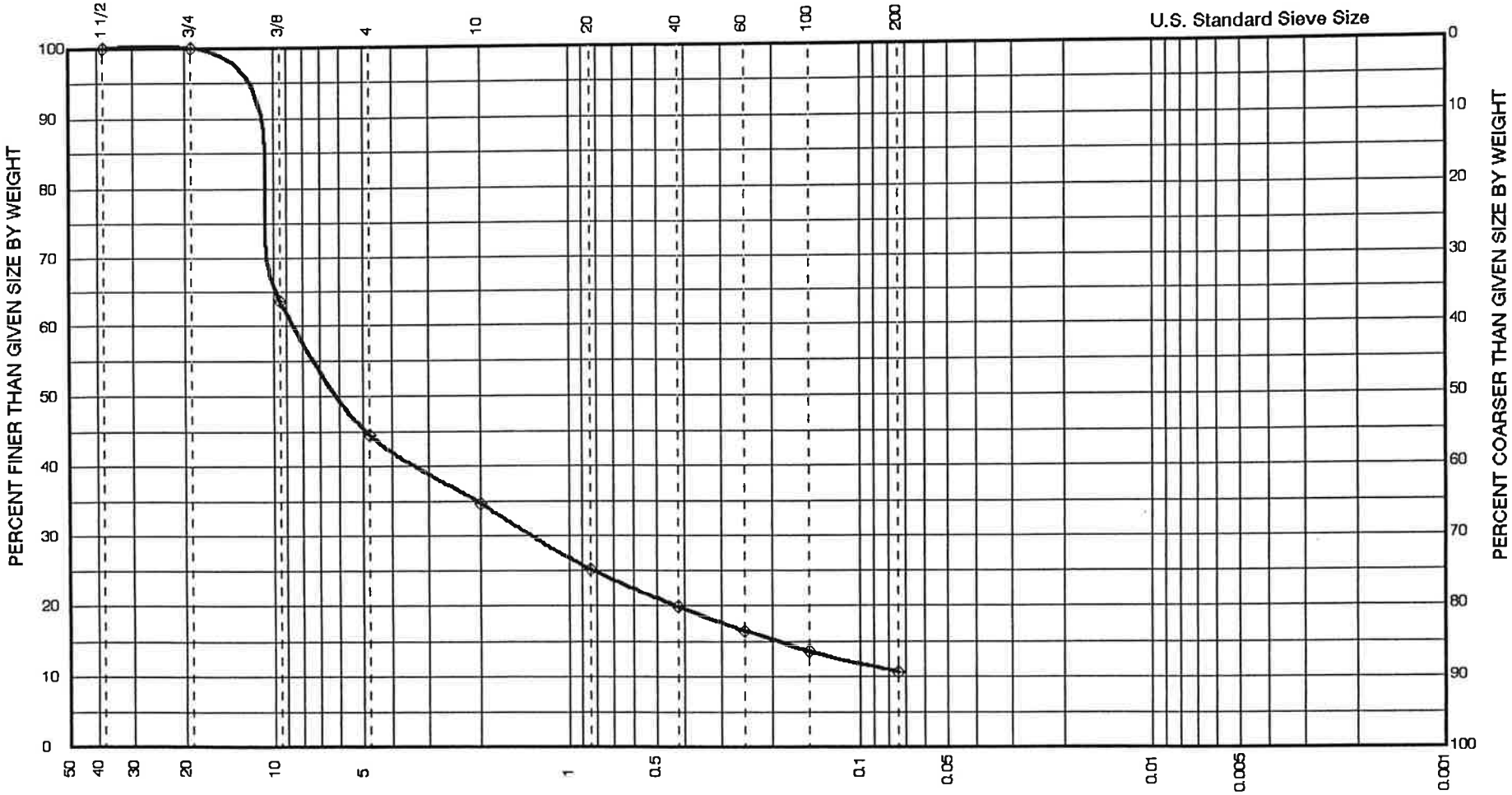
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 210 Sample No. LS-8 Sample Depth 46.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-19

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

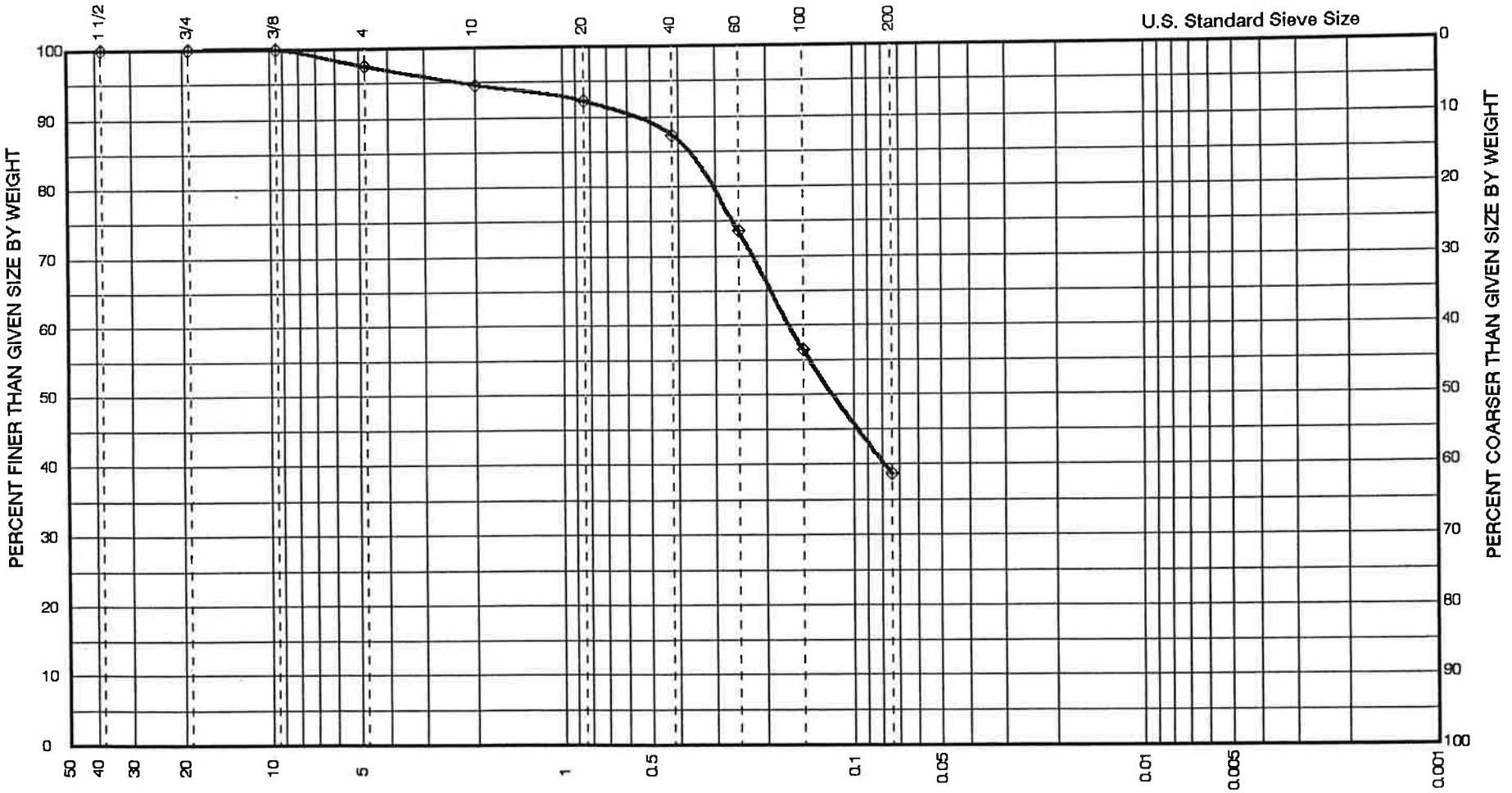
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 211 Sample No. LS-2 Sample Depth 7.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-20

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

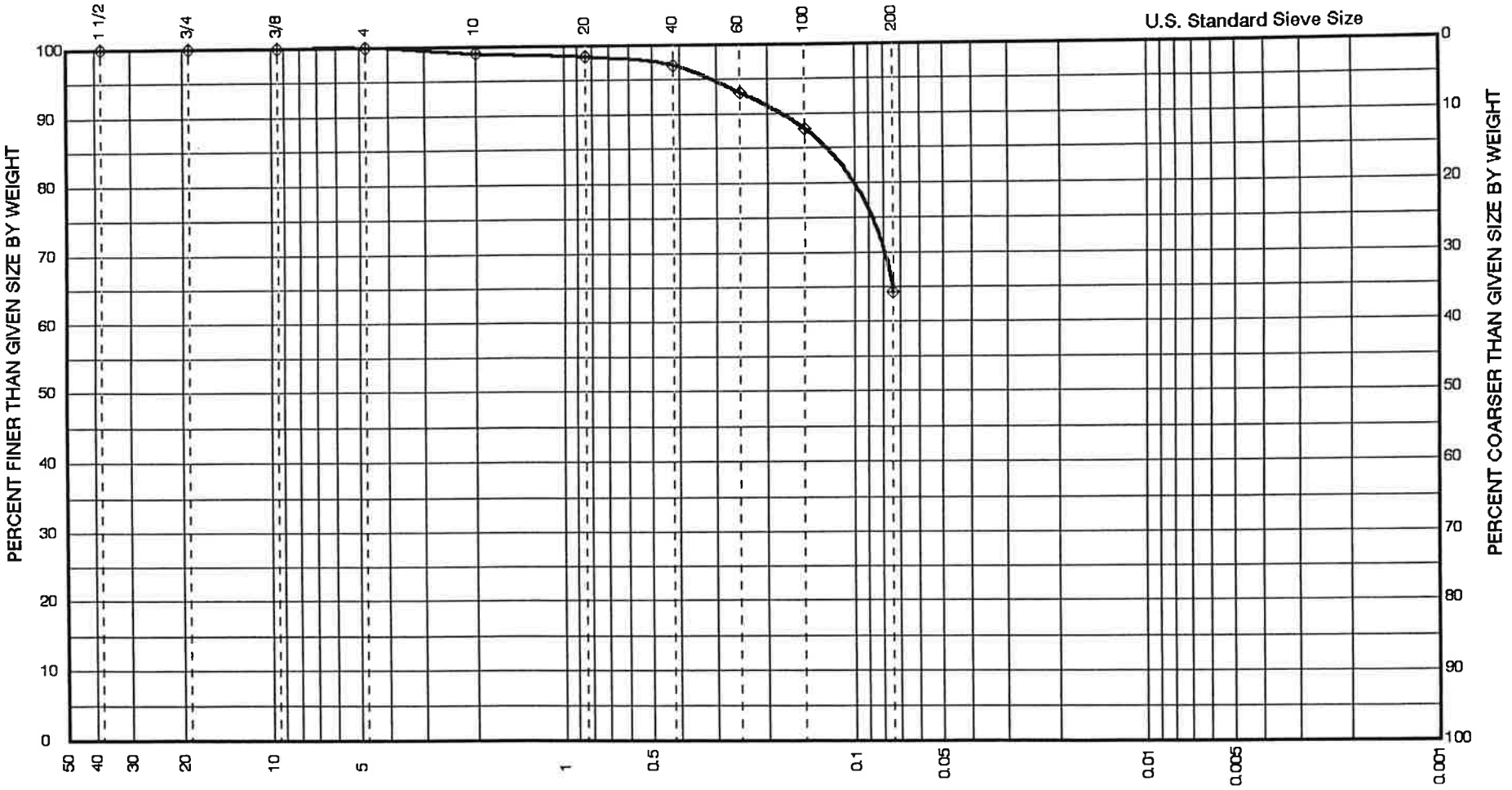
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 211 Sample No. LS-7 Sample Depth 32.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-21

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

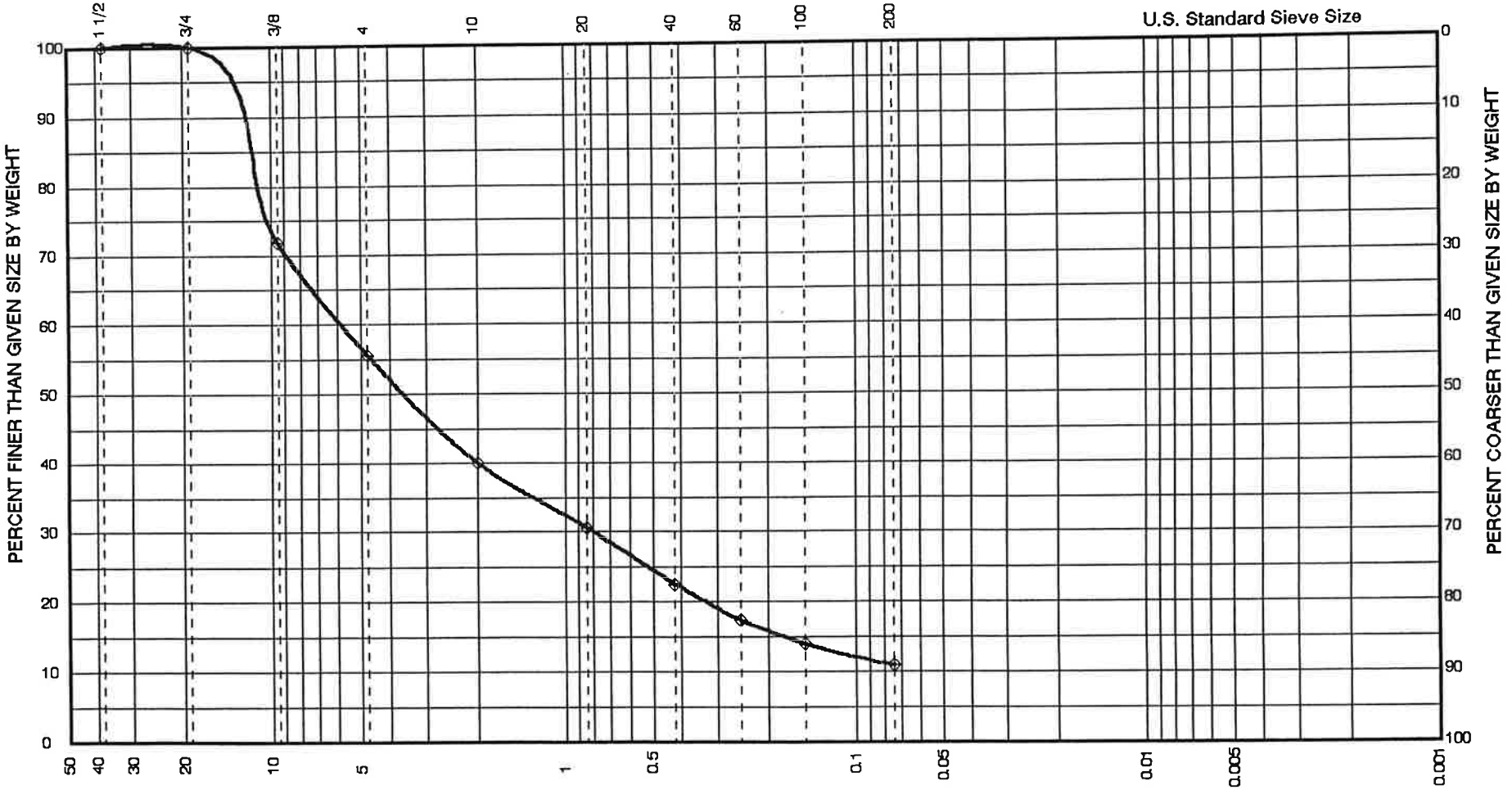
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 212 Sample No. LS-11 Sample Depth 47.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-22

NTH Consultants, Ltd.

GRAIN SIZE DISTRIBUTION CURVE

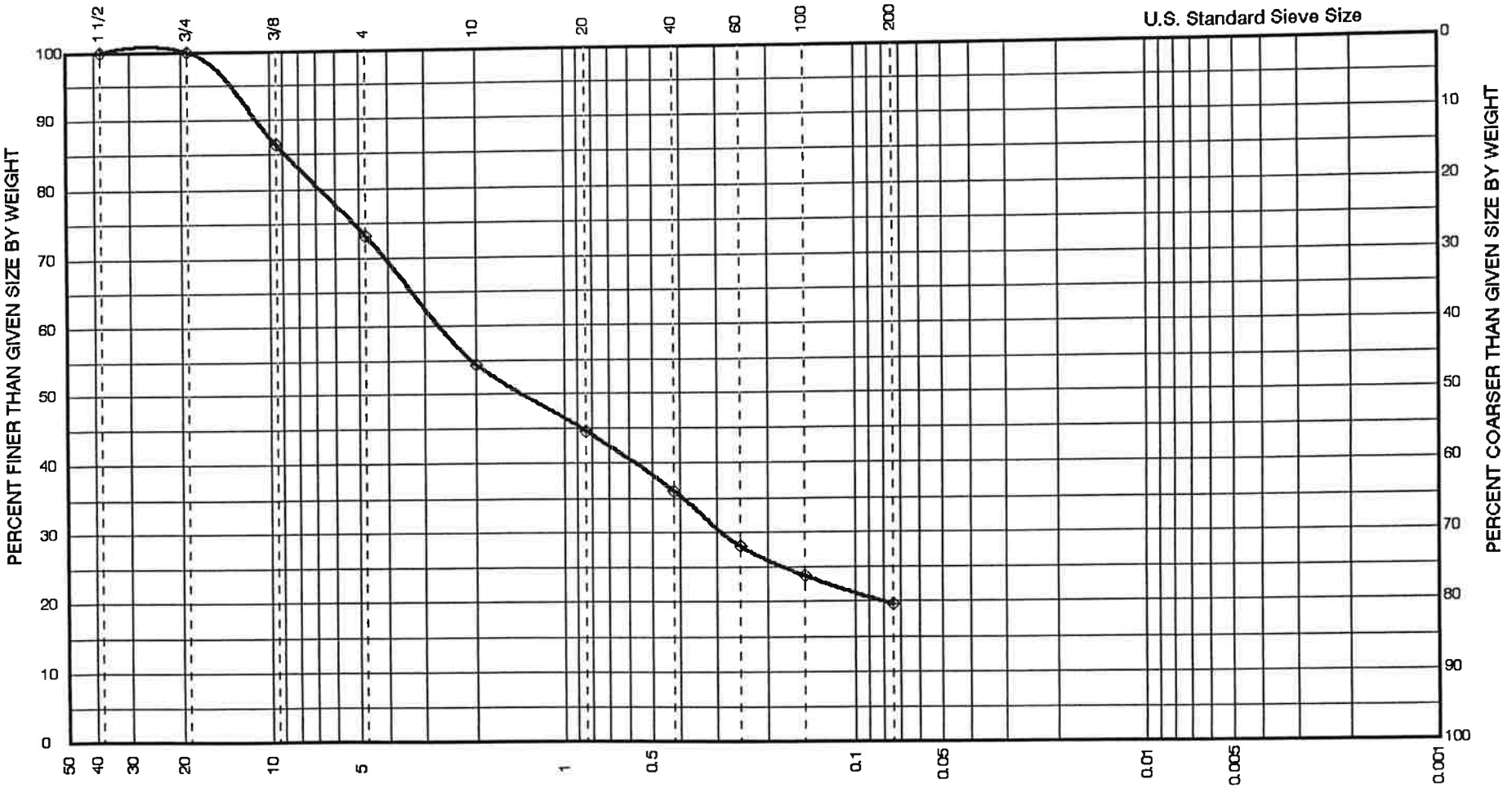
Project No. 3-0114 02 Project Name McGill Road Landfill - Eastern Expansion

Project Location Jackson, Michigan Source

LWO No. Boring No. 212 Sample No. LS-14 Sample Depth 62.0 Sample Elev. (Tip)

Sample Description

Sampled By Date Tested By SG Date 6-27-03



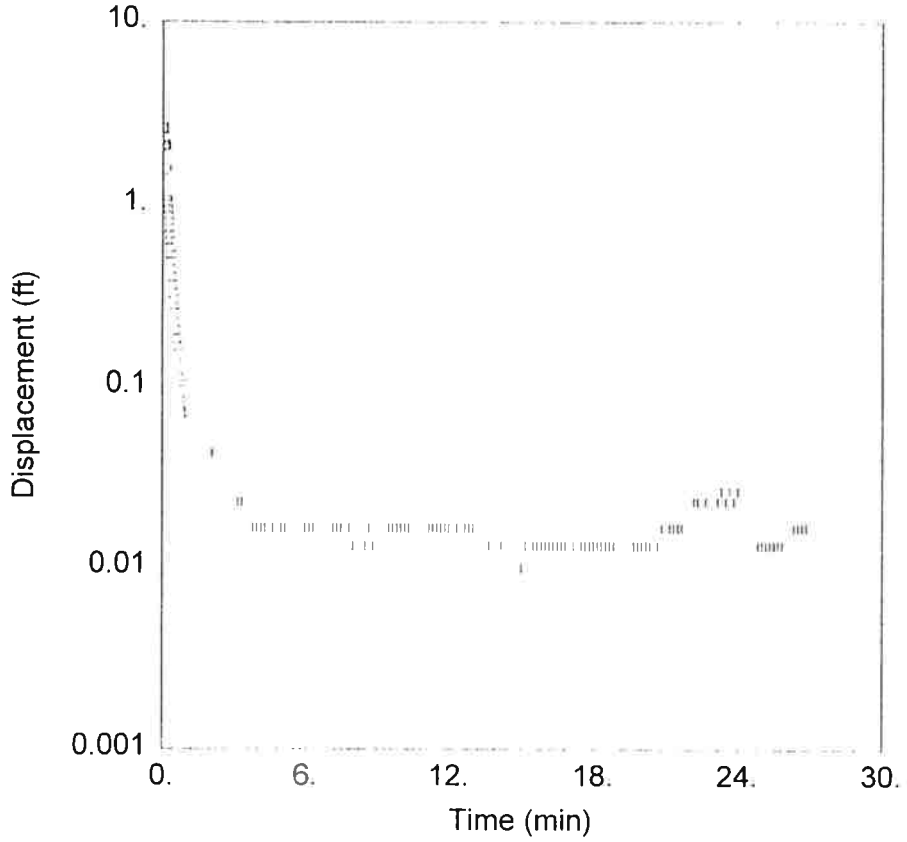
Grain Size in MM.

Gravel		Sand			Fines		
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	Colloids

FIGURE NO. B-23

APPENDIX C

AQUIFER PERFORMANCE TESTING



OW-204 SLUG IN

Data Set: S:\WASTE\HOHNER\MCGILL~1\204IN.AQT
Date: 07/17/03 Time: 10:52:50

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-204
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0004552 cm/sec
y0 = 2.567 ft

AQUIFER DATA

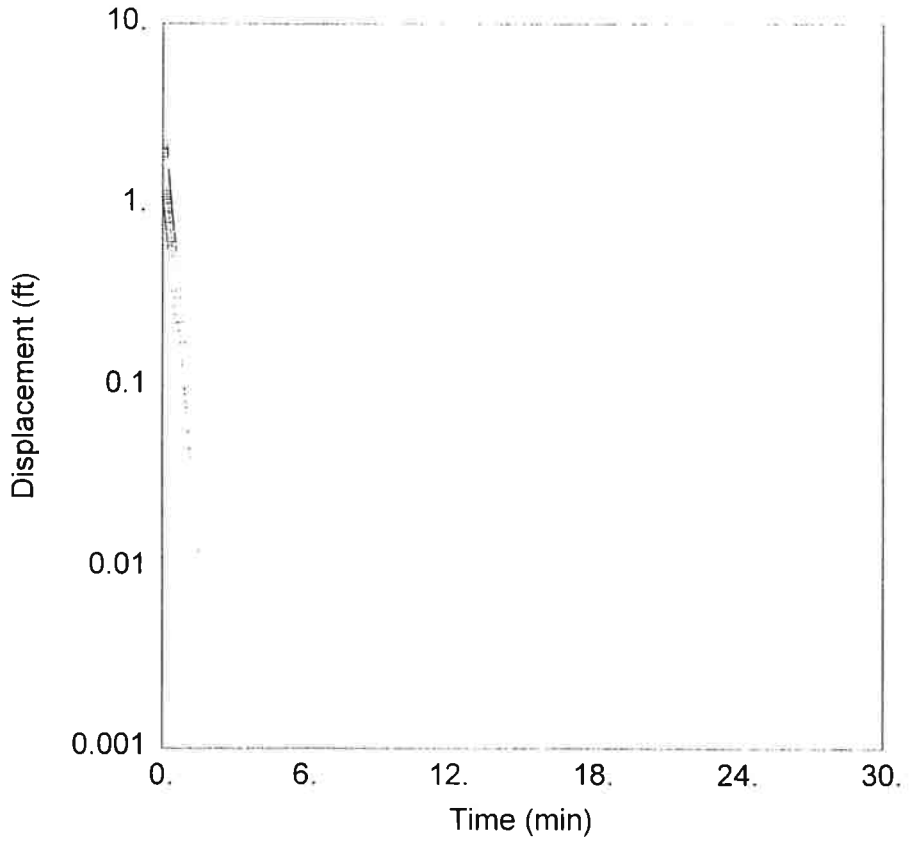
Saturated Thickness: 2.65 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.641 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-204 SLUG OUT

Data Set: S:\WASTE\HOHNER\MCGILL~1\204OUT.AQT
Date: 07/17/03 Time: 11:46:45

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-204
Test Date: 7/11/03

SOLUTION

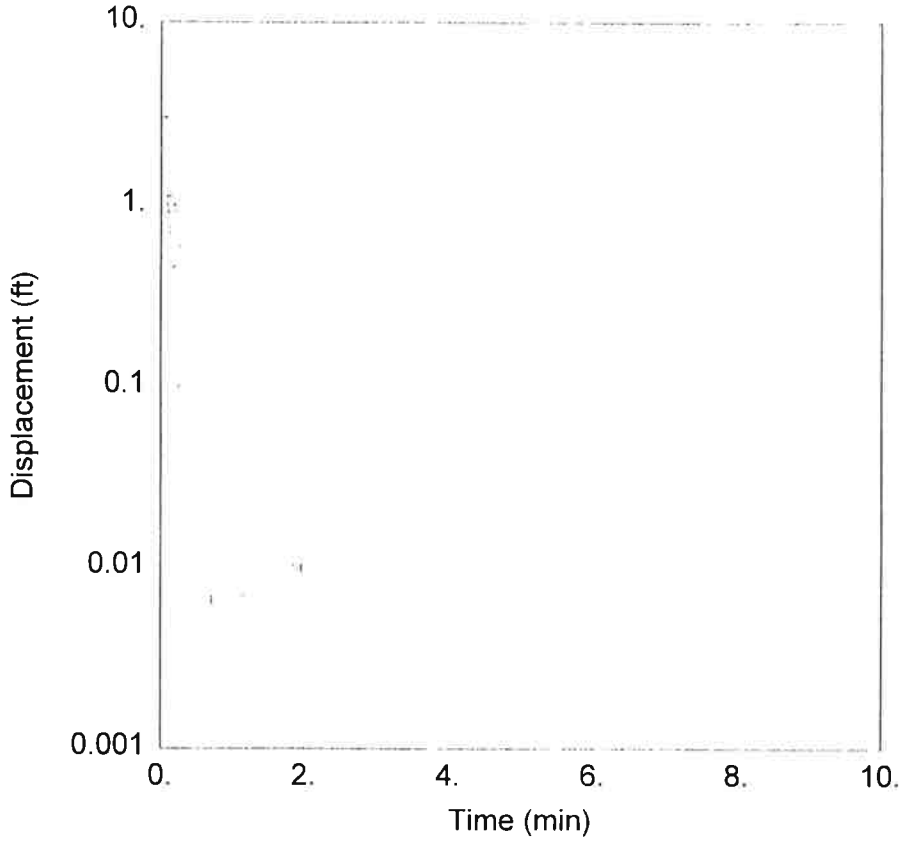
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004054 cm/sec
y0 = 2.093 ft

AQUIFER DATA

Saturated Thickness: 2.12 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.12 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft
Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-201D SLUG IN

Data Set: S:\WASTE\HOHNER\MCGILL~1\201DIN.AQT
Date: 07/17/03 Time: 12:18:46

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-201D
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0004552 cm/sec
y0 = 2.567 ft

AQUIFER DATA

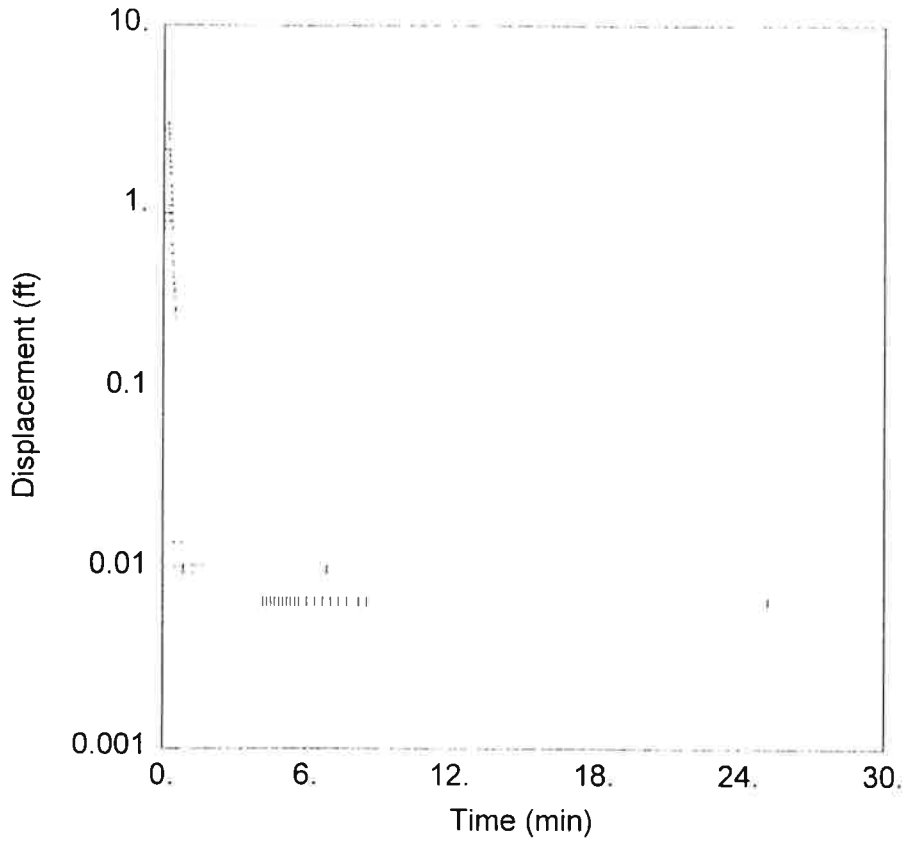
Saturated Thickness: 2.927 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.927 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-201D SLUG OUT

Data Set: S:\WASTE\HOHNER\MCGILL~1\201DOUT.AQT
Date: 07/17/03 Time: 12:19:44

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-201D
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.000541 cm/sec
y0 = 2.706 ft

AQUIFER DATA

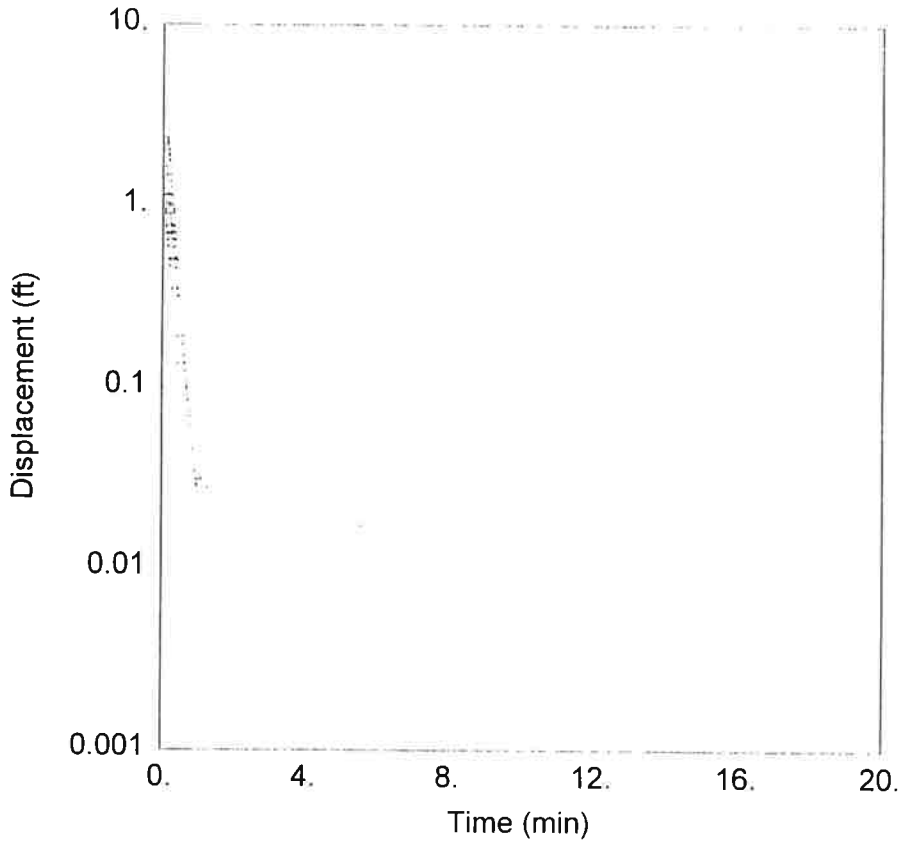
Saturated Thickness: 3.23 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.23 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-201S SLUG IN

Data Set: S:\WASTE\HOHNER\MCGILL~1\201SIN.AQT
Date: 07/17/03 Time: 12:20:15

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-201S
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.000541 cm/sec
y0 = 2.244 ft

AQUIFER DATA

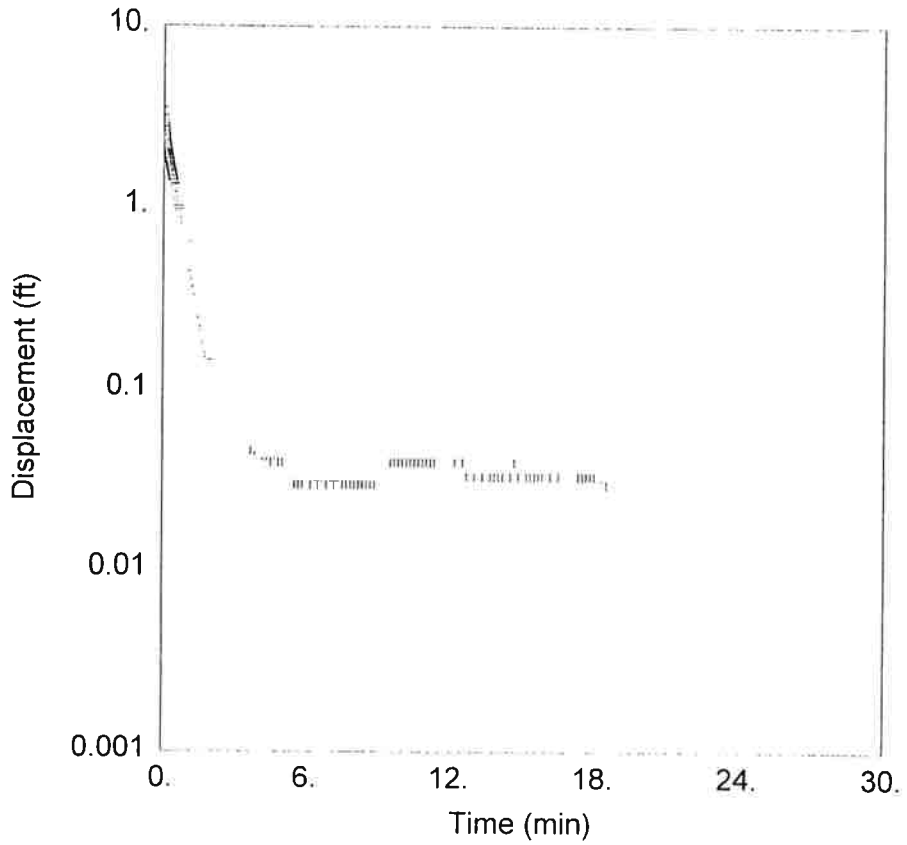
Saturated Thickness: 2.23 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.23 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-201S SLUG OUT

Data Set: S:\WASTE\HOHNER\MCGILL~1\201SOUT.AQT
Date: 07/17/03 Time: 12:20:59

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-201S
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.000197 cm/sec
y0 = 2.762 ft

AQUIFER DATA

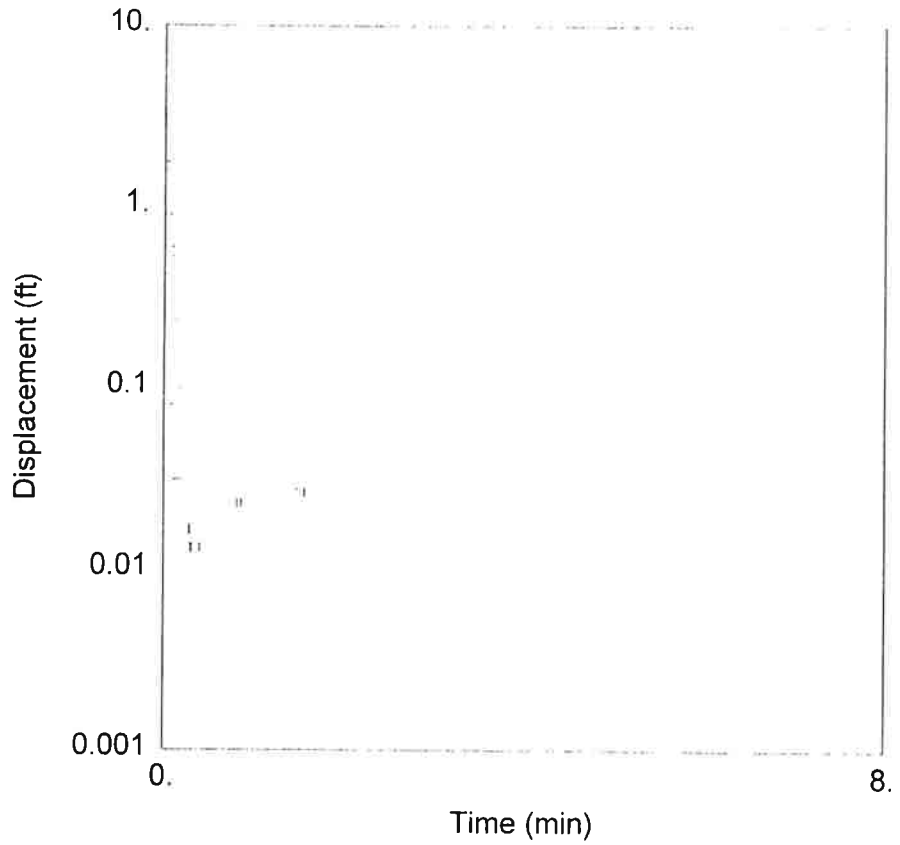
Saturated Thickness: 3.37 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.37 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-206 SLUG IN

Data Set: S:\WASTE\HOHNER\MCGILL~1\206IN.AQT
Date: 07/17/03 Time: 12:21:54

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-206
Test Date: 7/11/03

SOLUTION

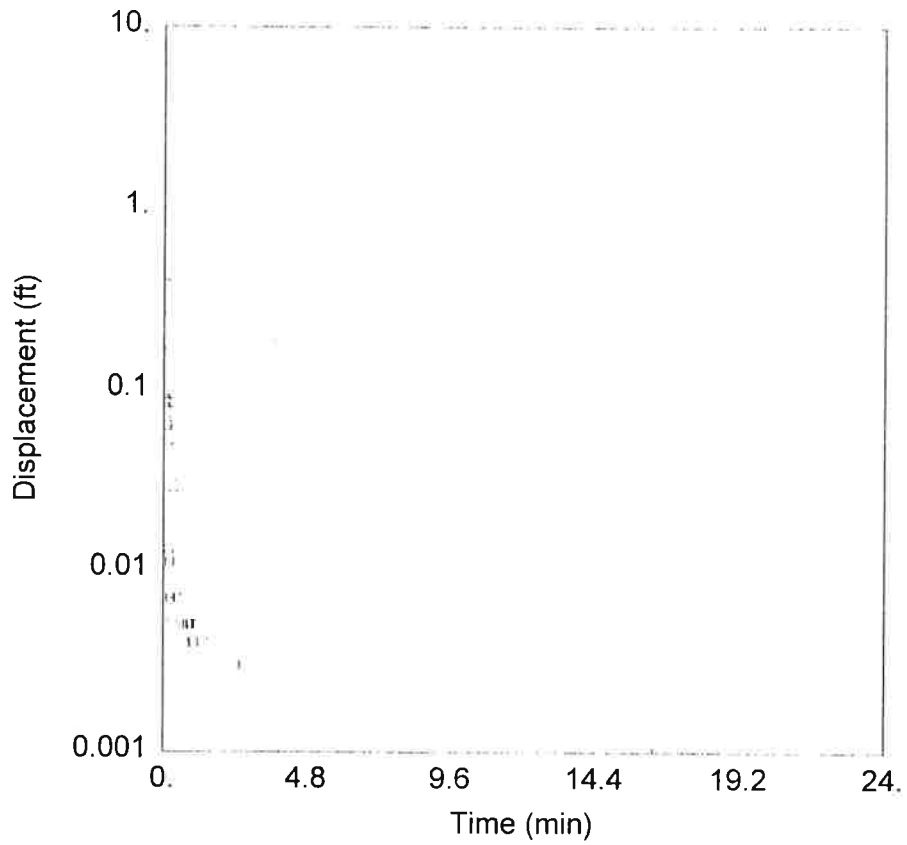
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002195 cm/sec
y0 = 3.131 ft

AQUIFER DATA

Saturated Thickness: 1.63 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 1.63 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft
Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-206 SLUG OUT

Data Set: S:\WASTE\HOHNER\MCGILL~1\206OUT.AQT
Date: 07/17/03 Time: 12:11:39

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-206
Test Date: 7/11/03

SOLUTION

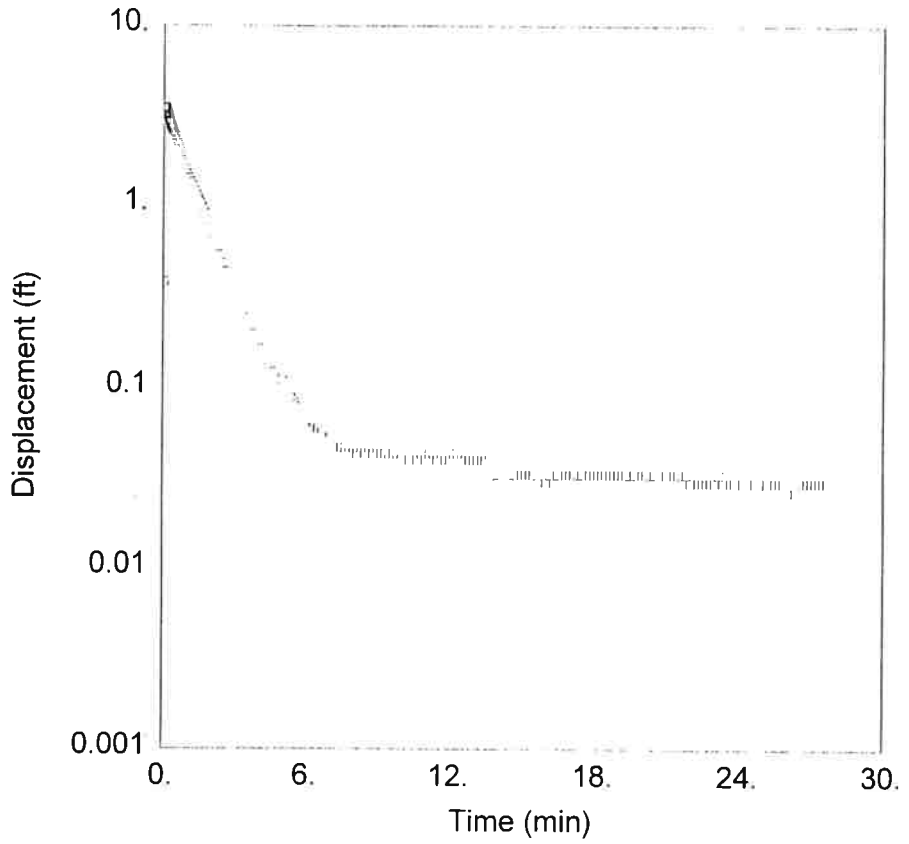
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.000541 cm/sec
y0 = 0.1713 ft

AQUIFER DATA

Saturated Thickness: 0.45 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 0.45 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft
Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-212D SLUG IN

Data Set: S:\WASTE\HOHNER\MCGILL~1\212DIN.AQT
Date: 07/17/03 Time: 12:23:06

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-212D
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 7.481E-05 cm/sec
y0 = 3.062 ft

AQUIFER DATA

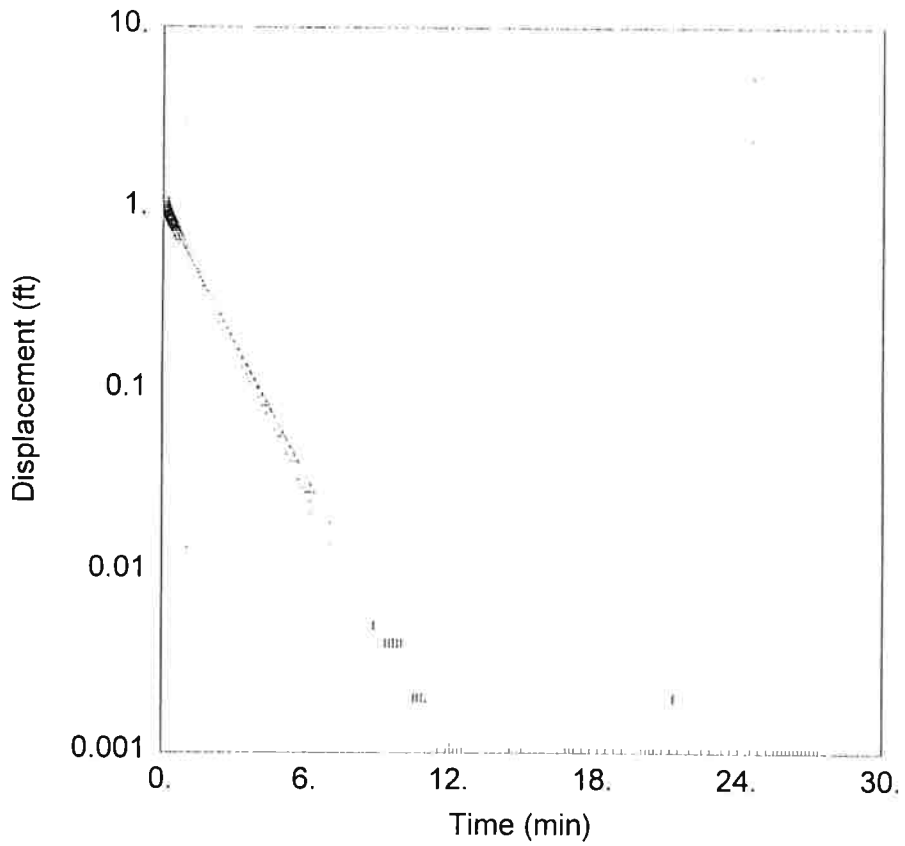
Saturated Thickness: 3.5 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.5 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft

Water Column Height: 1. ft
Wellbore Radius: 0.667 ft



OW-212D SLUG OUT

Data Set: S:\WASTE\HOHNER\MCGILL~1\212DOUT.AQT
Date: 07/17/03 Time: 12:16:22

PROJECT INFORMATION

Company: McGill Road Landfill
Project: 13-030114
Test Location: Jackson, MI
Test Well: OW-212D
Test Date: 7/11/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.785E-05 cm/sec
y0 = 1.013 ft

AQUIFER DATA

Saturated Thickness: 1.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 1.6 ft
Casing Radius: 0.0833 ft
Screen Length: 5. ft
Water Column Height: 1. ft
Wellbore Radius: 0.667 ft

APPENDIX D

GROUNDWATER QUALITY LABORATORY REPORT

SEVERN TRENT STL

1/78

ANALYTICAL REPORT

Job#: A03-6617, A03-6632

STL Project#: NY5A5835.3
SDG#: 0703QD
Site Name: McGill Road Landfill
Task: Special Event GW's

Paul Mazanec
Waste Management
5900 Hannan Road
Wayne, MI 48184

CC: Dawn Prell

STL Buffalo

Ronald M. Mazur
Project Manager

08/15/2003

Severn Trent Laboratories, Inc.
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A part of Severn Trent plc

SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLED DATE	SAMPLED TIME	RECEIVED DATE	RECEIVED TIME
A3663201	OW-201D	07/10/2003	15:05	07/11/2003	10:15
A3661701	OW-201S	07/10/2003	15:45	07/11/2003	10:15
A3661702	OW-202	07/10/2003	10:00	07/11/2003	10:15
A3661703	OW-204	07/10/2003	16:50	07/11/2003	10:15
A3663202	OW-205	07/10/2003	13:30	07/11/2003	10:15
A3663203	OW-206	07/10/2003	12:20	07/11/2003	10:15
A3663204	OW-212D	07/10/2003	10:45	07/11/2003	10:15
A3663205	OW-212S	07/10/2003	11:20	07/11/2003	10:15
A3663206	TRIP BLANK	07/10/2003		07/11/2003	10:15

METHODS SUMMARY

Job#: A03-6617,A03-6632

STL Project#: NY5A5835.3
SDG#: 0703QD
Site Name: McGill Road Landfill

PARAMETER	ANALYTICAL METHOD
METHOD 8260	SW8463 8260
Antimony - Soluble	SW8463 6020
Arsenic - Soluble	SW8463 6020
Barium - Soluble	SW8463 6010
Beryllium - Soluble	SW8463 6010
Boron - Soluble	SW8463 6010
Cadmium - Soluble	SW8463 6020
Chromium - Soluble	SW8463 6020
Cobalt - Soluble	SW8463 6010
Copper - Soluble	SW8463 6020
Iron - Soluble	SW8463 6010
Lead - Soluble	SW8463 6020
Magnesium - Soluble	SW8463 6010
Manganese - Soluble	SW8463 6010
Nickel - Soluble	SW8463 6010
Potassium - Soluble	SW8463 6010
Selenium - Soluble	SW8463 6020
Silver - Soluble	SW8463 6020
Sodium - Soluble	SW8463 6010
Thallium - Soluble	SW8463 6020
Vanadium - Soluble	SW8463 6010
Zinc - Soluble	SW8463 6020
Bicarbonate Alkalinity	CFR136 310.2
Carbonate Alkalinity	CFR136 310.2
Chemical Oxygen Demand	CFR136 410.4
Chloride	SW8463 9251
Cyanide - Total	SW8463 9012
Sulfate	SW8463 9038
Total Dissolved Solids	CFR136 160.1
Total Inorganic Nitrogen	CFR136 NH+NO2+NO3
Total Organic Carbon	SW8463 9060
Total Recoverable Phenolics	SW8463 9066

References:

CFR136 Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, and Appendix A-C; 40 CFR Part 136, USEPA Office of Water.

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A03-6617,A03-6632

STL Project#: NY5A5835.3
SDG#: 0703QD
Site Name: McGill Road Landfill

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A03-6617
Sample Cooler(s) were received at the following temperature(s); 2.0 °C
ME: Lab to filter and preserve Dissolved Metals volume.
A03-6632
Sample Cooler(s) were received at the following temperature(s); 6.0 °C

The volume provided for analysis of Total Recoverable Phenolics by Method 9066 on Sample OW-212D was received broken. The client was notified and a re-sampling event will not be scheduled at this time.

S B is to be filtered and preserved in metals digestion.

GC/MS Volatile Data

Sample OW-202 exhibited a pH greater than 2 at the time of analysis. The analysis was performed within 7 days of sampling, therefore there is no impact on data usability.

The sample OW-212S exhibited a pH greater than 2 at the time of analysis. The analysis was performed within 7 days of sampling, therefore there is no impact on data usability.

Metals Data

All dissloved samples for Boron were filtered (Lot # 01180960) and preserved with nitric acid (Lot # 020-MDL-3) in the laboratory.

All samples for dissolved Boron were filtered (Lot # 01180960) and perserved with nitric acid (Lot # 020-MDL-3) in the laboratory.

Wet Chemistry Data

The values reported for the LCS and Method Blanks for Carbonate Alkalinity do not represent actual values obtained as a result of an analytical procedure. The concentration of Carbonate Alkalinity in a sample with a pH less than 8.3 is zero. Thus, the LCS and Method Blank have values of zero. The values do not adversely affect any analytical results.

The field parameter measurements were supplied by a non-Nelac agent of the client.

The values reported for the LCS and Method Blanks for Carbonate Alkalinity do not represent actual values obtained as a result of an analytical procedure. The concentration of Carbonate Alkalinity in a sample with a pH less than 8.3 is zero. Thus, the LCS and Method Blank have values of zero. The values do not adversely affect any analytical results.

The field parameter measurements were supplied by a non-Nelac agent of the client.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
1	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Dilution Log w/Code Information
For Project NY5A5835.3, Task 42, SDG 0703QD

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
OW-201S	A3661701	Sulfate	2.00	008
OW-202	A3661702	Chemical Oxygen Demand	2.00	008
OW-202	A3661702	Sulfate	2.00	008
OW-204	A3661703	Sulfate	2.00	008
OW-205	A3663202	Sulfate	2.00	008
OW-206	A3663203	Sulfate	5.00	002
OW-212D	A3663204	Sulfate	2.00	002
OW-212S	A3663205	Sulfate	5.00	002

Dilution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

Sample Data Package

Sample ID: OW-201D
Lab Sample ID: A3663201
Date Collected: 07/10/2003
Time Collected: 15:05

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 18:48	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 18:48	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 18:48	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 18:48	JRW
...als Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:30	SW

Sample ID: OW-201D
Lab Sample ID: A3663201
Date Collected: 07/10/2003
Time Collected: 15:05

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0024		0.0010	MG/L	6020	07/16/2003 16:30	SW
Barium, Dissolved	0.038		0.0050	MG/L	6010	07/17/2003 03:21	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/17/2003 03:21	TRB
Boron, Dissolved	0.20		0.020	MG/L	6010	07/16/2003 16:27	BKL
Cadmium, Dissolved	0.00020		0.00020	MG/L	6020	07/16/2003 16:30	SW
Calcium, Dissolved	60.5		1.0	MG/L	6010	07/17/2003 03:21	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:30	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/17/2003 03:21	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:30	SW
Iron, Dissolved	0.080		0.050	MG/L	6010	07/17/2003 03:21	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 16:30	SW
Magnesium, Dissolved	19.9		1.0	MG/L	6010	07/17/2003 03:21	TRB
Manganese, Dissolved	0.036		0.020	MG/L	6010	07/17/2003 03:21	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:21	TRB
Potassium, Dissolved	3.1		0.10	MG/L	6010	07/17/2003 03:21	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:30	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 16:30	SW
Sodium, Dissolved	18.5		1.0	MG/L	6010	07/17/2003 03:21	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:30	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/17/2003 03:21	TRB
Zinc, Dissolved	0.025		0.0040	MG/L	6020	07/16/2003 16:30	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	265		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	28.0		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	8.3		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	654		1.0	UMHOS/CM	120.1	07/10/2003	SP
pH (Field)	7.75		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/15/2003 06:00	NAP
Sulfate	15.9		2.0	MG/L	9038	07/14/2003 12:00	MJ
Temperature (Field Test)	11.9		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	287		20.0	MG/L	160.1	07/15/2003 12:00	KEG
Total Inorganic Nitrogen	ND		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	2.0		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-201S
Lab Sample ID: A3661701
Date Collected: 07/10/2003
Time Collected: 15:45

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
2-Hexanone	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Acetone	ND		25	UG/L	8260	07/16/2003 05:49	CDC
Acrylonitrile	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Benzene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Bromochloromethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Bromoform	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Bromomethane	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Carbon Disulfide	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Chlorobenzene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Chloroethane	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Chloroform	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Chloromethane	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Dibromochloromethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Dibromomethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Dichlorobromomethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Ethylbenzene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Iodomethane	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Methylene chloride	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Styrene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Tetrachloroethene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Toluene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Total Xylenes	ND		3.0	UG/L	8260	07/16/2003 05:49	CDC
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Trichloroethene	ND		1.0	UG/L	8260	07/16/2003 05:49	CDC
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Vinyl chloride	ND		5.0	UG/L	8260	07/16/2003 05:49	CDC
Metals Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:18	SW

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Sample ID: OW-201S
Lab Sample ID: A3661701
Date Collected: 07/10/2003
Time Collected: 15:45

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0026		0.0010	MG/L	6020	07/16/2003 15:18	SW
Barium, Dissolved	0.041		0.0050	MG/L	6010	07/16/2003 20:33	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/16/2003 20:33	TRB
Boron, Dissolved	ND		0.020	MG/L	6010	07/16/2003 16:15	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 15:18	SW
Calcium, Dissolved	82.7		1.0	MG/L	6010	07/16/2003 20:33	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:18	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/16/2003 20:33	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:18	SW
Iron, Dissolved	0.23		0.050	MG/L	6010	07/16/2003 20:33	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 15:18	SW
Magnesium, Dissolved	26.2		1.0	MG/L	6010	07/16/2003 20:33	TRB
Manganese, Dissolved	0.056		0.020	MG/L	6010	07/16/2003 20:33	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/16/2003 20:33	TRB
Potassium, Dissolved	1.3		0.10	MG/L	6010	07/16/2003 20:33	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:18	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 15:18	SW
Sodium, Dissolved	4.6		1.0	MG/L	6010	07/16/2003 20:33	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:18	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/16/2003 20:33	TRB
Zinc, Dissolved	ND		0.0040	MG/L	6020	07/16/2003 15:18	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	289		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	28.7		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	4.7		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	550		0	UMHOS/CM	120.1	07/10/2003	SG
pH (Field)	7.83		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/14/2003 18:29	JMS
Sulfate	37.4		4.0	MG/L	9038	07/14/2003 12:00	MJ
Temperature (Field Test)	11.6		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	500		20.0	MG/L	160.1	07/15/2003 12:00	KEG
Total Inorganic Nitrogen	0.12		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	1.3		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-202
Lab Sample ID: A3661702
Date Collected: 07/10/2003
Time Collected: 10:00

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
2-Hexanone	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Acetone	ND		25	UG/L	8260	07/16/2003 06:21	CDC
Acrylonitrile	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Benzene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Bromochloromethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Bromoform	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Bromomethane	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Carbon Disulfide	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Chlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Chloroethane	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Chloroform	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Chloromethane	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Dibromochloromethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Dibromomethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Dichlorobromomethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Ethylbenzene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Iodomethane	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Methylene chloride	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Styrene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Tetrachloroethene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Toluene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Total Xylenes	ND		3.0	UG/L	8260	07/16/2003 06:21	CDC
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Trichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:21	CDC
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Vinyl chloride	ND		5.0	UG/L	8260	07/16/2003 06:21	CDC
Metals Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:22	SW

Sample ID: OW-202
Lab Sample ID: A3661702
Date Collected: 07/10/2003
Time Collected: 10:00

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0034		0.0010	MG/L	6020	07/16/2003 15:22	SW
Barium, Dissolved	0.060		0.0050	MG/L	6010	07/16/2003 20:38	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/16/2003 20:38	TRB
Boron, Dissolved	ND		0.020	MG/L	6010	07/16/2003 16:19	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 15:22	SW
Calcium, Dissolved	86.3		1.0	MG/L	6010	07/16/2003 20:38	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:22	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/16/2003 20:38	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:22	SW
Iron, Dissolved	0.53		0.050	MG/L	6010	07/16/2003 20:38	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 15:22	SW
Magnesium, Dissolved	28.2		1.0	MG/L	6010	07/16/2003 20:38	TRB
Manganese, Dissolved	0.10		0.020	MG/L	6010	07/16/2003 20:38	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/16/2003 20:38	TRB
Potassium, Dissolved	0.95		0.10	MG/L	6010	07/16/2003 20:38	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:22	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 15:22	SW
Sodium, Dissolved	4.7		1.0	MG/L	6010	07/16/2003 20:38	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:22	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/16/2003 20:38	TR
Zinc, Dissolved	0.0061		0.0040	MG/L	6020	07/16/2003 15:22	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	298		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	489		10	MG/L	410.4	07/17/2003 16:00	RP
Chloride	6.8		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	501		0	UMHOS/CM	120.1	07/10/2003	SG
pH (Field)	7.83		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/14/2003 18:29	JMS
Sulfate	34.6		4.0	MG/L	9038	07/14/2003 12:00	MJ
Temperature (Field Test)	11.8		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	660		20.0	MG/L	160.1	07/17/2003 08:00	KAM
Total Inorganic Nitrogen	0.17		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	2.6		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-204
Lab Sample ID: A3661703
Date Collected: 07/10/2003
Time Collected: 16:50

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
2-Hexanone	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Acetone	ND		25	UG/L	8260	07/16/2003 06:52	CDC
Acrylonitrile	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Benzene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Bromochloromethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Bromoform	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Bromomethane	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Carbon Disulfide	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Chlorobenzene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Chloroethane	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Chloroform	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Chloromethane	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Dibromochloromethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Dibromomethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Dichlorobromomethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Ethylbenzene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Iodomethane	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Methylene chloride	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Styrene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Tetrachloroethene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Toluene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Total Xylenes	ND		3.0	UG/L	8260	07/16/2003 06:52	CDC
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Trichloroethene	ND		1.0	UG/L	8260	07/16/2003 06:52	CDC
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Vinyl chloride	ND		5.0	UG/L	8260	07/16/2003 06:52	CDC
Metals Analysis							
Antimony, Dissolved	0.0030		0.0020	MG/L	6020	07/16/2003 15:26	SW

Sample ID: OW-204
Lab Sample ID: A3661703
Date Collected: 07/10/2003
Time Collected: 16:50

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Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0018		0.0010	MG/L	6020	07/16/2003 15:26	SW
Barium, Dissolved	0.038		0.0050	MG/L	6010	07/16/2003 20:43	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/16/2003 20:43	TRB
Boron, Dissolved	ND		0.020	MG/L	6010	07/16/2003 16:23	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 15:26	SW
Calcium, Dissolved	70.7		1.0	MG/L	6010	07/16/2003 20:43	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:26	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/16/2003 20:43	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:26	SW
Iron, Dissolved	ND		0.050	MG/L	6010	07/16/2003 20:43	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 15:26	SW
Magnesium, Dissolved	22.9		1.0	MG/L	6010	07/16/2003 20:43	TRB
Manganese, Dissolved	0.24		0.020	MG/L	6010	07/16/2003 20:43	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/16/2003 20:43	TRB
Potassium, Dissolved	1.6		0.10	MG/L	6010	07/16/2003 20:43	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:26	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 15:26	SW
Sodium, Dissolved	12.4		1.0	MG/L	6010	07/16/2003 20:43	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 15:26	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/16/2003 20:43	TR
Zinc, Dissolved	0.0056		0.0040	MG/L	6020	07/16/2003 15:26	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	257		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	15.3		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	2.4		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	528		0	UMHOS/CM	120.1	07/10/2003	SG
pH (Field)	7.91		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	0.035		0.010	MG/L	9066	07/14/2003 18:29	JMS
Sulfate	30.2		4.0	MG/L	9038	07/14/2003 12:00	MJ
Temperature (Field Test)	12.0		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	334		20.0	MG/L	160.1	07/15/2003 12:00	KEG
Total Inorganic Nitrogen	0.72		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	0.78		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-205
Lab Sample ID: A3663202
Date Collected: 07/10/2003
Time Collected: 13:30

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 19:19	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 19:19	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:19	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 19:19	JRW
Metals Analysis							
Antimony, Dissolved	0.0035		0.0020	MG/L	6020	07/16/2003 16:35	SW

Sample ID: OW-205
Lab Sample ID: A3663202
Date Collected: 07/10/2003
Time Collected: 13:30

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0027		0.0010	MG/L	6020	07/16/2003 16:35	SW
Barium, Dissolved	0.11		0.0050	MG/L	6010	07/17/2003 03:27	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/17/2003 03:27	TRB
Boron, Dissolved	ND		0.020	MG/L	6010	07/16/2003 16:32	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 16:35	SW
Calcium, Dissolved	89.2		1.0	MG/L	6010	07/17/2003 03:27	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:35	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/17/2003 03:27	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:35	SW
Iron, Dissolved	0.56		0.050	MG/L	6010	07/17/2003 03:27	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 16:35	SW
Magnesium, Dissolved	29.5		1.0	MG/L	6010	07/17/2003 03:27	TRB
Manganese, Dissolved	0.14		0.020	MG/L	6010	07/17/2003 03:27	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:27	TRB
Potassium, Dissolved	1.2		0.10	MG/L	6010	07/17/2003 03:27	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:35	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 16:35	SW
Sodium, Dissolved	8.6		1.0	MG/L	6010	07/17/2003 03:27	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:35	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/17/2003 03:27	TRB
Zinc, Dissolved	0.0043		0.0040	MG/L	6020	07/16/2003 16:35	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	289		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	51.5		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	9.8		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	624		1.0	UMHOS/CM	120.1	07/10/2003	SP
pH (Field)	7.60		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/15/2003 06:00	NAP
Sulfate	65.2		4.0	MG/L	9038	07/14/2003 12:00	MJ
Temperature (Field Test)	13.2		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	384		20.0	MG/L	160.1	07/15/2003 12:00	KEG
Total Inorganic Nitrogen	ND		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	0.61		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-206
Lab Sample ID: A3663203
Date Collected: 07/10/2003
Time Collected: 12:20

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 19:51	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 19:51	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 19:51	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 19:51	JRW
Metals Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:39	SW

Sample ID: OW-206
Lab Sample ID: A3663203
Date Collected: 07/10/2003
Time Collected: 12:20

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0030		0.0010	MG/L	6020	07/16/2003 16:39	SW
Barium, Dissolved	0.13		0.0050	MG/L	6010	07/17/2003 03:32	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/17/2003 03:32	TRB
Boron, Dissolved	0.021		0.020	MG/L	6010	07/16/2003 16:36	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 16:39	SW
Calcium, Dissolved	81.1		1.0	MG/L	6010	07/17/2003 03:32	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:39	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/17/2003 03:32	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:39	SW
Iron, Dissolved	0.54		0.050	MG/L	6010	07/17/2003 03:32	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 16:39	SW
Magnesium, Dissolved	25.7		1.0	MG/L	6010	07/17/2003 03:32	TRB
Manganese, Dissolved	0.077		0.020	MG/L	6010	07/17/2003 03:32	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:32	TRB
Potassium, Dissolved	1.6		0.10	MG/L	6010	07/17/2003 03:32	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:39	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 16:39	SW
Sodium, Dissolved	6.9		1.0	MG/L	6010	07/17/2003 03:32	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:39	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/17/2003 03:32	TR
Zinc, Dissolved	0.0056		0.0040	MG/L	6020	07/16/2003 16:39	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	251		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	34.3		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	8.5		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	545		1.0	UMHOS/CM	120.1	07/10/2003	SP
pH (Field)	7.61		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/15/2003 06:00	NAP
Sulfate	100		10	MG/L	9038	07/15/2003 15:15	LRM
Temperature (Field Test)	14.1		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	390		20.0	MG/L	160.1	07/15/2003 12:00	KEG
Total Inorganic Nitrogen	0.058		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	0.86		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-212D
Lab Sample ID: A3663204
Date Collected: 07/10/2003
Time Collected: 10:45

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 20:22	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 20:22	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:22	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 20:22	JRW
tals Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:43	SW

Sample ID: OW-212D
Lab Sample ID: A3663204
Date Collected: 07/10/2003
Time Collected: 10:45

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0021		0.0010	MG/L	6020	07/16/2003 16:43	SW
Barium, Dissolved	0.20		0.0050	MG/L	6010	07/17/2003 03:37	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/17/2003 03:37	TRB
Boron, Dissolved	0.025		0.020	MG/L	6010	07/16/2003 16:40	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 16:43	SW
Calcium, Dissolved	92.1		1.0	MG/L	6010	07/17/2003 03:37	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:43	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/17/2003 03:37	TRB
Copper, Dissolved	0.0058		0.0020	MG/L	6020	07/16/2003 16:43	SW
Iron, Dissolved	0.64		0.050	MG/L	6010	07/17/2003 03:37	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 16:43	SW
Magnesium, Dissolved	28.4		1.0	MG/L	6010	07/17/2003 03:37	TRB
Manganese, Dissolved	0.068		0.020	MG/L	6010	07/17/2003 03:37	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:37	TRB
Potassium, Dissolved	1.8		0.10	MG/L	6010	07/17/2003 03:37	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:43	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 16:43	SW
Sodium, Dissolved	15.0		1.0	MG/L	6010	07/17/2003 03:37	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:43	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/17/2003 03:37	TR
Zinc, Dissolved	ND		0.0040	MG/L	6020	07/16/2003 16:43	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	322		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	15.3		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	31.2		1.0	MG/L	9251	07/15/2003 13:36	LRM
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	638		1.0	UMHOS/CM	120.1	07/10/2003	SP
pH (Field)	7.39		0.00000	S.U.	150.1	07/10/2003	SP
Sulfate	61.7		4.0	MG/L	9038	07/15/2003 15:15	LRM
Temperature (Field Test)	13.5		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	404		20.0	MG/L	160.1	07/17/2003 08:00	KAM
Total Inorganic Nitrogen	0.10		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	1.5		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: OW-212S
Lab Sample ID: A3663205
Date Collected: 07/10/2003
Time Collected: 11:20

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 20:53	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 20:53	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 20:53	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 20:53	JRW
Metals Analysis							
Antimony, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:56	SW

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Sample ID: OW-212S
Lab Sample ID: A3663205
Date Collected: 07/10/2003
Time Collected: 11:20

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Arsenic, Dissolved	0.0020		0.0010	MG/L	6020	07/16/2003 16:56	SW
Barium, Dissolved	0.073		0.0050	MG/L	6010	07/17/2003 03:42	TRB
Beryllium, Dissolved	ND		0.0010	MG/L	6010	07/17/2003 03:42	TRB
Boron, Dissolved	ND		0.020	MG/L	6010	07/16/2003 16:53	BKL
Cadmium, Dissolved	ND		0.00020	MG/L	6020	07/16/2003 16:56	SW
Calcium, Dissolved	95.5		1.0	MG/L	6010	07/17/2003 03:42	TRB
Chromium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:56	SW
Cobalt, Dissolved	ND		0.015	MG/L	6010	07/17/2003 03:42	TRB
Copper, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:56	SW
Iron, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:42	TRB
Lead, Dissolved	ND		0.0010	MG/L	6020	07/16/2003 16:56	SW
Magnesium, Dissolved	32.5		1.0	MG/L	6010	07/17/2003 03:42	TRB
Manganese, Dissolved	0.14		0.020	MG/L	6010	07/17/2003 03:42	TRB
Nickel, Dissolved	ND		0.050	MG/L	6010	07/17/2003 03:42	TRB
Potassium, Dissolved	1.7		0.10	MG/L	6010	07/17/2003 03:42	TRB
Selenium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:56	SW
Silver, Dissolved	ND		0.00050	MG/L	6020	07/16/2003 16:56	SW
Sodium, Dissolved	6.0		1.0	MG/L	6010	07/17/2003 03:42	TRB
Thallium, Dissolved	ND		0.0020	MG/L	6020	07/16/2003 16:56	SW
Vanadium, Dissolved	ND		0.010	MG/L	6010	07/17/2003 03:42	TR
Zinc, Dissolved	ND		0.0040	MG/L	6020	07/16/2003 16:56	SW
Wet Chemistry Analysis							
Alkalinity, Bicarbonate (As CaCO3)	315		10	MG/L	310.2	07/14/2003 13:06	LRM
Alkalinity, Carbonate (As CaCO3)	ND		10	MG/L	310.2	07/14/2003 13:06	LRM
Chemical Oxygen Demand (COD)	24.6		5.0	MG/L	410.4	07/14/2003 14:30	KS
Chloride	14.7		1.0	MG/L	9251	07/21/2003 08:05	NAP
Cyanide, Total	ND		0.0050	MG/L	9012	07/15/2003 17:35	JMS
Electrical Conductance (Field)	655		1.0	UMHOS/CM	120.1	07/10/2003	SP
pH (Field)	7.51		0.00000	S.U.	150.1	07/10/2003	SP
Phenolics, Total	ND		0.010	MG/L	9066	07/15/2003 06:00	NAP
Sulfate	61.4		10	MG/L	9038	07/15/2003 15:15	LRM
Temperature (Field Test)	14.4		0	°C	TEMP	07/10/2003	SP
Total Dissolved Solids (TDS)	402		20.0	MG/L	160.1	07/17/2003 08:00	KAM
Total Inorganic Nitrogen	0.095		0.020	MG/L-N	NH+NO2+NO3	07/15/2003 15:30	KAM
Total Organic Carbon (TOC)	1.8		0.50	MG/L	9060	07/21/2003 12:44	SS

Sample ID: TRIP BLANK
Lab Sample ID: A3663206
Date Collected: 07/10/2003
Time Collected:

Date Received: 07/11/2003
Project No: NY5A5835.3
Client No: L10923
Site No: MI11

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8260 VOAS-MCGILL ROAD							
1,1,1,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,1,1-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,1,2,2-Tetrachloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,1,2-Trichloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,1-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,1-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,2,3-Trichloropropane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,2-Dibromo-3-Chloropropane DBCP	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
1,2-Dibromoethane (EDB)	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,2-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,2-Dichloroethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,2-Dichloropropane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
1,4-Dichlorobenzene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
2-Hexanone	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Acetone	ND		25	UG/L	8260	07/15/2003 12:33	JRW
Acrylonitrile	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Benzene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Bromochloromethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Bromoform	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Bromomethane	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Carbon Disulfide	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Carbon Tetrachloride	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Chlorobenzene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Chloroethane	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Chloroform	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Chloromethane	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
cis-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
cis-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Dibromochloromethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Dibromomethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Dichlorobromomethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Ethylbenzene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Iodomethane	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Methyl Ethyl Ketone	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Methyl Isobutyl Ketone	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Methylene chloride	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Styrene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Tetrachloroethene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Toluene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Total Xylenes	ND		3.0	UG/L	8260	07/15/2003 12:33	JRW
trans-1,2-Dichloroethene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
trans-1,3-Dichloropropene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
trans-1,4-Dichloro-2-butene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Trichloroethene	ND		1.0	UG/L	8260	07/15/2003 12:33	JRW
Trichlorofluoromethane	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW
Vinyl chloride	ND		5.0	UG/L	8260	07/15/2003 12:33	JRW

Chronology and QC Summary Package

Date: 07/29/2003
Time: 11:29:26

McGill Road Landfill
Special Event GW's
METHOD 8260

Rept: AN1247

Client ID		VBLK44		VBLK80					
Job No	Lab ID	A03-6617	A3661704	A03-6632	A3663207				
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Dichlorobromomethane	UG/L	ND	1.0	ND	1.0	NA		NA	
Bromoform	UG/L	ND	1.0	ND	1.0	NA		NA	
Carbon Tetrachloride	UG/L	ND	1.0	ND	1.0	NA		NA	
Chlorobenzene	UG/L	ND	1.0	ND	1.0	NA		NA	
Chloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloroform	UG/L	ND	1.0	ND	1.0	NA		NA	
Dibromochloromethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,2-Dichlorobenzene	UG/L	ND	1.0	ND	1.0	NA		NA	
1,4-Dichlorobenzene	UG/L	ND	1.0	ND	1.0	NA		NA	
1,1-Dichloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,2-Dichloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,1-Dichloroethene	UG/L	ND	1.0	ND	1.0	NA		NA	
cis-1,2-Dichloroethene	UG/L	ND	1.0	ND	1.0	NA		NA	
trans-1,2-Dichloroethene	UG/L	ND	1.0	ND	1.0	NA		NA	
1,2-Dichloropropane	UG/L	ND	1.0	ND	1.0	NA		NA	
cis-1,3-Dichloropropene	UG/L	ND	1.0	ND	1.0	NA		NA	
trans-1,3-Dichloropropene	UG/L	ND	1.0	ND	1.0	NA		NA	
Bromomethane	UG/L	ND	1.0	ND	1.0	NA		NA	
Chloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Dibromomethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Methylene chloride	UG/L	ND	1.0	ND	1.0	NA		NA	
Iodomethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,1,2-Tetrachloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
Tetrachloroethene	UG/L	ND	1.0	ND	1.0	NA		NA	
1,1,1-Trichloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,1,2-Trichloroethane	UG/L	ND	1.0	ND	1.0	NA		NA	
Trichloroethene	UG/L	ND	1.0	ND	1.0	NA		NA	
Trichlorofluoromethane	UG/L	ND	1.0	ND	1.0	NA		NA	
1,2,3-Trichloropropane	UG/L	ND	5.0	ND	5.0	NA		NA	
Vinyl chloride	UG/L	ND	1.0	ND	1.0	NA		NA	
Benzene	UG/L	ND	5.0	ND	5.0	NA		NA	
Ethylbenzene	UG/L	ND	1.0	ND	1.0	NA		NA	
Styrene	UG/L	ND	1.0	ND	1.0	NA		NA	
Toluene	UG/L	ND	1.0	ND	1.0	NA		NA	
Total Xylenes	UG/L	ND	1.0	ND	1.0	NA		NA	
Acetone	UG/L	ND	3.0	ND	3.0	NA		NA	
Acrylonitrile	UG/L	ND	25	ND	25	NA		NA	
Bromochloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Carbon Disulfide	UG/L	ND	1.0	ND	1.0	NA		NA	
1,2-Dibromo-3-Chloropropane DB	UG/L	ND	5.0	ND	5.0	NA		NA	
1,2-Dibromoethane (EDB)	UG/L	ND	5.0	ND	5.0	NA		NA	
Methyl Ethyl Ketone	UG/L	ND	1.0	ND	1.0	NA		NA	
		ND	5.0	ND	5.0	NA		NA	

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NA = Not Applicable ND = Not Detected

STL Buffalo

Client ID		VBLK44		VBLK80					
Job No	Lab ID	A03-6617	A3661704	A03-6632	A3663207				
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Methyl Isobutyl Ketone	UG/L	ND	5.0	ND	5.0	NA		NA	
trans-1,4-Dichloro-2-butene	UG/L	ND	1.0	ND	1.0	NA		NA	
2-Hexanone	UG/L	ND	5.0	ND	5.0	NA		NA	
======IS/SURROGATE(S)======									
Chlorobenzene-D5	%	92	50-200	92	50-200	NA		NA	
1,4-Difluorobenzene	%	92	50-200	92	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	74	50-200	85	50-200	NA		NA	
Toluene-D8	%	86	76-116	89	76-116	NA		NA	
p-Bromofluorobenzene	%	89	73-117	92	73-117	NA		NA	
1,2-Dichloroethane-D4	%	103	72-143	79	72-143	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 07/29/2003
Time: 11:29:38

McGill Road Landfill
Special Event GW's
D-M: SB,AS,CD,PB,SE,AG,ZN,TL,CU,CR

Rept: AN1247

Client ID Job No Sample Date	Lab ID	Method Blank A03-6617	A3B0770902	Method Blank A03-6632	A3B0771002				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Antimony, Dissolved	MG/L	ND	0.0020	ND	0.0020	NA		NA	
Arsenic, Dissolved	MG/L	ND	0.0010	ND	0.0010	NA		NA	
Cadmium, Dissolved	MG/L	ND	0.00020	ND	0.00020	NA		NA	
Chromium, Dissolved	MG/L	ND	0.0020	ND	0.0020	NA		NA	
Copper, Dissolved	MG/L	ND	0.0020	ND	0.0020	NA		NA	
Lead, Dissolved	MG/L	ND	0.0010	ND	0.0010	NA		NA	
Selenium, Dissolved	MG/L	ND	0.0020	ND	0.0020	NA		NA	
Silver, Dissolved	MG/L	ND	0.00050	ND	0.00050	NA		NA	
Thallium, Dissolved	MG/L	ND	0.0020	ND	0.0020	NA		NA	
Zinc, Dissolved	MG/L	ND	0.0040	ND	0.0040	NA		NA	

29/78

NA = Not Applicable ND = Not Detected

STL Buffalo

Date: 07/27/2003
Time: 11:29:38

McGill Road Landfill
Special Event GW's
D-M: BA,BE,CO,NI,V)

Rept: AN1247

Client ID Job No Lab ID Sample Date		Method Blank A03-6617 A3B0767002		Method Blank A03-6632 A3B0767402					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Barium, Dissolved	MG/L	ND	0.0050	ND	0.0050	NA		NA	
Beryllium, Dissolved	MG/L	ND	0.0010	ND	0.0010	NA		NA	
Cobalt, Dissolved	MG/L	ND	0.015	ND	0.015	NA		NA	
Nickel, Dissolved	MG/L	ND	0.050	ND	0.050	NA		NA	
Vanadium, Dissolved	MG/L	ND	0.010	ND	0.010	NA		NA	

30/78

NA = Not Applicable ND = Not Detected

STL Buffalo

Date: 07/29/2003
Time: 11:29:38

McGill Road Landfill
Special Event GW's
D-M: NA,K,MN,MG

Rept: AN1247

Client ID Job No / Lab ID Sample Date		Method Blank A03-6617 / A3B0767002		Method Blank A03-6632 / A3B0767402					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Magnesium, Dissolved	MG/L	ND	1.0	ND	1.0	NA		NA	
Manganese, Dissolved	MG/L	ND	0.020	ND	0.020	NA		NA	
Potassium, Dissolved	MG/L	ND	0.10	ND	0.10	NA		NA	
Sodium, Dissolved	MG/L	ND	1.0	ND	1.0	NA		NA	

NA = Not Applicable ND = Not Detected

STL Buffalo

Date: 07/ .003
Time: 11:29:38

McGill[illegible]ad Landfill
Special Event GW's
SOLUBLE METALS

Rept: AN1247

Client ID Job No Sample Date	Lab ID	Method Blank A03-6617	A3B0767002	Method Blank A03-6632	A3B0767402	Method Blank A03-6617	A3B0769402		
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Iron, Dissolved	MG/L	ND	0.050	ND	0.050	NA		NA	
Boron, Dissolved	MG/L	NA		NA		ND	0.020	NA	

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NA = Not Applicable ND = Not Detected

STL Buffalo

Date: 07/29/2003
Time: 11:29:43

McGill Road Landfill
Special Event GW's
WET CHEMISTRY ANALYSIS

Rept: AN1247

Client ID		Method Blank		Method Blank		Method Blank		Method Blank	
Job No / Lab ID		A03-6632	A3B0762702	A03-6632	A3B0764302	A03-6632	A3B0764502	A03-6617	A3B0764602
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Alkalinity, Bicarbonate (As Ca	MG/L	ND	10	NA		NA		NA	
Cyanide, Total	MG/L	NA		ND	0.0050	NA		NA	
Sulfate	MG/L	NA		NA		ND	2.0	NA	
Phenolics, Total	MG/L	NA		NA		NA		ND	0.010
Alkalinity, Carbonate (As CaCO	MG/L	ND	10	NA		NA		NA	

Client ID		Method Blank		Method Blank		Method Blank		Method Blank	
Job No / Lab ID		A03-6632	A3B0764902	A03-6632	A3B0765402	A03-6617	A3B0769302	A03-6617	A3B0770702
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Chemical Oxygen Demand (COD)	MG/L	ND	5.0	NA		NA		NA	
Phenolics, Total	MG/L	NA		ND	0.010	NA		NA	
Total Dissolved Solids (TDS)	MG/L	NA		NA		ND	20.0	NA	
Chloride	MG/L	NA		NA		NA		ND	1.0

Client ID		Method Blank		Method Blank		Method Blank		Method Blank	
Job No / Lab ID		A03-6632	A3B0771502	A03-6617	A3B0784302	A03-6617	A3B0785502	A03-6632	A3B0795402
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Sulfate	MG/L	ND	2.0	NA		NA		NA	
Total Dissolved Solids (TDS)	MG/L	NA		ND	20.0	NA		NA	
Chemical Oxygen Demand (COD)	MG/L	NA		NA		ND	5.0	NA	
Chloride	MG/L	NA		NA		NA		ND	1.0

Client ID		Method Blank							
Job No / Lab ID		A03-6617	A3B0800102						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Total Organic Carbon (TOC)	MG/L	ND	0.50	NA		NA		NA	

NA = Not Applicable ND = Not Detected

STL Buffalo

SDG: 0703QD
Client Sample ID: VBLK44 MSB44
Lab Sample ID: A3661704 A3661705

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260					
1,1-Dichloroethene	UG/L	10.5	10.0	106	65-138
Trichloroethene	UG/L	10.4	10.0	104	71-123
Benzene	UG/L	10.7	10.0	107	71-124
Toluene	UG/L	10.9	10.0	109	70-122
Chlorobenzene	UG/L	10.7	10.0	108	72-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: VBLK80 MSB80
Lab Sample ID: A3663207 A3663208

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260					
1,1-Dichloroethene	UG/L	9.75	10.0	98	65-138
Trichloroethene	UG/L	8.90	10.0	89	71-123
Benzene	UG/L	8.46	10.0	85	71-124
Toluene	UG/L	9.64	10.0	96	70-122
Chlorobenzene	UG/L	10.0	10.0	101	72-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LFB
Lab Sample ID: A3B0767002 A3B0767001

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
D-M: BA,BE,CO,NI,V)					
6010 - DISSOLVED COBALT - RL=0.015 MG/	MG/L	0.197	0.200	99	80-120
6010 - DISSOLVED VANADIUM - RL=0.010 M	MG/L	0.196	0.200	98	80-120
6010 - SOLUBLE NICKEL - RL= 0.05 MG/L	MG/L	0.198	0.200	99	80-120
SOLUBLE BARIUM	MG/L	0.210	0.200	105	80-120
SOLUBLE BERYLLIUM	MG/L	0.200	0.200	100	80-120
D-M: NA,K,MN,MG					
6010 - SOLUBLE POTASSIUM - RL= 0.100 M	MG/L	10.40	10.0	104	80-120
6010 - SOLUBLE SODIUM - RL= 1.0 MG/L	MG/L	10.01	10.0	99	80-120
SOLUBLE MAGNESIUM	MG/L	9.78	10.0	98	80-120
SOLUBLE MANGANESE	MG/L	0.198	0.200	99	80-120
SOLUBLE METALS ANALYSIS					
6010 - DISSOLVED IRON - RL=6010	MG/L	0.401	0.400	98	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LFB
Lab Sample ID: A3B0767402 A3B0767401

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
D-M: BA,BE,CO,NI,V)					
6010 - DISSOLVED COBALT - RL=0.015 MG/	MG/L	0.201	0.200	100	80-120
6010 - DISSOLVED VANADIUM - RL=0.010 M	MG/L	0.201	0.200	101	80-120
6010 - SOLUBLE NICKEL - RL= 0.05 MG/L	MG/L	0.202	0.200	101	80-120
SOLUBLE BARIUM	MG/L	0.200	0.200	100	80-120
SOLUBLE BERYLLIUM	MG/L	0.205	0.200	103	80-120
D-M: NA,K,MN,MG					
6010 - SOLUBLE POTASSIUM - RL= 0.100 M	MG/L	10.17	10.0	101	80-120
6010 - SOLUBLE SODIUM - RL= 1.0 MG/L	MG/L	10.10	10.0	98	80-120
SOLUBLE MAGNESIUM	MG/L	10.11	10.0	101	80-120
SOLUBLE MANGANESE	MG/L	0.201	0.200	101	80-120
SOLUBLE METALS ANALYSIS					
6010 - DISSOLVED IRON - RL=6010	MG/L	0.422	0.400	100	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LFB
Lab Sample ID: A3B0769402 A3B0769401

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
SOLUBLE METALS ANALYSIS SOLUBLE BORON	MG/L	0.205	0.200	101	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LFB
Lab Sample ID: A3B0770902 A3B0770901

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
D-M: SB,AS,CD,PB,SE,AG,ZN,TL,CU,CR					
6020 - DISSOLVED ANTIMONY - RL=0.002 M	MG/L	0.0216	0.0200	108	80-120
6020 - DISSOLVED COPPER - RL=0.002 MG/	MG/L	0.0219	0.0200	108	80-120
6020 - DISSOLVED SELENIUM	MG/L	0.0209	0.0200	105	80-120
6020 DISSOLVED ZINC	MG/L	0.0235	0.0200	109	80-120
SOLUBLE ARSENIC	MG/L	0.0218	0.0200	109	80-120
SOLUBLE CADMIUM	MG/L	0.0214	0.0200	107	80-120
SOLUBLE CHROMIUM	MG/L	0.0217	0.0200	108	80-120
SOLUBLE LEAD	MG/L	0.0216	0.0200	108	80-120
SOLUBLE SILVER	MG/L	0.0214	0.0200	107	80-120
SOLUBLE THALLIUM	MG/L	0.0216	0.0200	108	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LFB
Lab Sample ID: A3B0771002 A3B0771001

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
D-M: SB,AS,CD,PB,SE,AG,ZN,TL,CU,CR					
6020 - DISSOLVED ANTIMONY - RL=0.002 M	MG/L	0.0205	0.0200	103	80-120
6020 - DISSOLVED COPPER - RL=0.002 MG/	MG/L	0.0214	0.0200	106	80-120
6020 - DISSOLVED SELENIUM	MG/L	0.0195	0.0200	98	80-120
6020 DISSOLVED ZINC	MG/L	0.0215	0.0200	104	80-120
SOLUBLE ARSENIC	MG/L	0.0204	0.0200	102	80-120
SOLUBLE CADMIUM	MG/L	0.0200	0.0200	100	80-120
SOLUBLE CHROMIUM	MG/L	0.0213	0.0200	105	80-120
SOLUBLE LEAD	MG/L	0.0199	0.0200	100	80-120
SOLUBLE SILVER	MG/L	0.0201	0.0200	101	80-120
SOLUBLE THALLIUM	MG/L	0.0204	0.0200	102	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LCS
Lab Sample ID: A3B0762702 A3B0762701

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS					
METHOD 310.2 - BICARBONATE, ALKALINITY	MG/L	104.6	100.0	99	90-110
METHOD 310.2- CARBONATE ALKALINITY RL=	MG/L	0	100.0	0 *	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LCS
Lab Sample ID: A3B0764302 A3B0764301

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9012 - TOTAL CYANIDE 0.005 MG/L	MG/L	0.386	0.400	96	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank
Lab Sample ID: A3B0764502

LCS
A3B0764501

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9038 - SULFATE - 2.0 MG/L	MG/L	18.10	20.00	90	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank — LCS
Lab Sample ID: A3B0764602 — A3B0764601

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9066 - PHENOLS/LR	MG/L	0.0495	0.0500	99	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LCS
Lab Sample ID: A3B0764902 A3B0764901

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS 410.4 - CHEMICAL OXYGEN DEMAND - 5.0MG	MG/L	80.20	75.00	107	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank — LCS
Lab Sample ID: A3B0765402 — A3B0765401

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9066 - PHENOLS/LR	MG/L	0.0520	0.0500	104	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank
Lab Sample ID: A3B0769302

LCS
A3B0769301

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 160.1 - TOTAL DISSOLVED SOLIDS	MG/L	514.0	500.0	103	85-115

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank — LCS
Lab Sample ID: A3B0770702 — A3B0770701

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9251 - CHLORIDE	MG/L	26.41	25.00	104	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank
Lab Sample ID: A3B0771502

LCS
A3B0771501

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9038 - SULFATE - 2.0 MG/L	MG/L	20.33	20.00	102	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LCS
Lab Sample ID: A3B0784302 A3B0784301

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 160.1 - TOTAL DISSOLVED SOLIDS	MG/L	488.0	500.0	98	85-115

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* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank
Lab Sample ID: A3B0785502

LCS
A3B0785501

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS 410.4 - CHEMICAL OXYGEN DEMAND - 5.0MG	MG/L	809.0	800.0	101	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank LCS
Lab Sample ID: A3B0795402 A3B0795401

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 9251 - CHLORIDE	MG/L	24.99	25.00	100	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 0703QD
Client Sample ID: Method Blank
Lab Sample ID: A3B0800102

LCS
A3B0800101

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS TOTAL ORGANIC CARBON	MG/L	63.60	60.00	106	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

METHOD 8260

Client Sample ID Job No & Lab Sample ID	OW-201D A03-6632 A3663201	OW-201S A03-6617 A3661701	OW-202 A03-6617 · A3661702	OW-204 A03-6617 A3661703	OW-205 A03-6632 A3663202
Sample Date	07/10/2003 15:05	07/10/2003 15:45	07/10/2003 10:00	07/10/2003 16:50	07/10/2003 13:30
Received Date	07/11/2003 10:15	07/11/2003 10:15	07/11/2003 10:15	07/11/2003 10:15	07/11/2003 10:15
Extraction Date					
Analysis Date	07/15/2003 18:48	07/16/2003 05:49	07/16/2003 06:21	07/16/2003 06:52	07/15/2003 19:19
Extraction HT Met?	-	-	-	-	-
Analytical HT Met?	YES	YES	YES	YES	YES
Sample Matrix	GW	GW	GW	GW	GW
Dilution Factor	1.0	1.0	1.0	1.0	1.0
Sample wt/vol	0.025 LITERS	0.025 LITERS	0.025 LITERS	0.025 LITERS	0.025 LITERS
% Dry					

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NA = Not Applicable

METHOD 8260

Client Sample ID Job No & Lab Sample ID	OW-206 A03-6632 A3663203	OW-212D A03-6632 A3663204	OW-212S A03-6632 A3663205		
Sample Date	07/10/2003 12:20	07/10/2003 10:45	07/10/2003 11:20		
Received Date	07/11/2003 10:15	07/11/2003 10:15	07/11/2003 10:15		
Extraction Date					
Analysis Date	07/15/2003 19:51	07/15/2003 20:22	07/15/2003 20:53		
Extraction HT Met?	-	-	-		
Analytical HT Met?	YES	YES	YES		
Sample Matrix	GW	GW	GW		
Dilution Factor	1.0	1.0	1.0		
Sample wt/vol	0.025 LITERS	0.025 LITERS	0.025 LITERS		
% Dry					

55/78

NA = Not Applicable

METHOD 8260

Client Sample ID Job No & Lab Sample ID	TRIP BLANK A03-6632 A3663206				
Sample Date	07/10/2003				
Received Date	07/11/2003 10:15				
Extraction Date					
Analysis Date	07/15/2003 12:33				
Extraction HT Met?	-				
Analytical HT Met?	YES				
Sample Matrix	WATER				
Dilution Factor	1.0				
Sample wt/vol	0.025 LITERS				
% Dry					

NA = Not Applicable

METHOD 8260

Client Sample ID Job No & Lab Sample ID	VBLK44 A03-6617 A3661704	VBLK80 A03-6632 A3663207			
Sample Date					
Received Date					
Extraction Date					
Analysis Date	07/15/2003 21:59	07/15/2003 11:00			
Extraction HT Met?	-	-			
Analytical HT Met?	-	-			
Sample Matrix	WATER	WATER			
Dilution Factor	1.0	1.0			
Sample wt/vol	0.025 LITERS	0.025 LITERS			
% Dry					

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NA = Not Applicable

Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3663201	OW-201D	RECNY	Thallium, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05 L	07/10/03 15:05	07/11 10:15	NA		07/17	TRB	Y	GW
A3661701	OW-201S	RECNY	Thallium, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05 L	07/10/03 15:45	07/11 10:15	NA		07/16	TRB	Y	GW
A3661702	OW-202	RECNY	Thallium, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05 L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW

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NA = Not Applicable

ANL INI = Analyst Initials
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Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol	g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3661702	OW-202	RECNY	Zinc, Dissolved	6020	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05	L	07/10/03 10:00	07/11 10:15	NA		07/16	TRB	Y	GW
A3661703	OW-204	RECNY	Thallium, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05	L	07/10/03 16:50	07/11 10:15	NA		07/16	TRB	Y	GW
A3663202	OW-205	RECNY	Thallium, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW

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NA = Not Applicable

ANL INI = Analyst Initials
DF = Dilution Factor

Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3663202	OW-205	RECNY	Cobalt, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05 L	07/10/03 13:30	07/11 10:15	NA		07/17	TRB	Y	GW
A3663203	OW-206	RECNY	Thallium, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05 L	07/10/03 12:20	07/11 10:15	NA		07/17	TRB	Y	GW
A3663204	OW-212D	RECNY	Thallium, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	BKL	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05 L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW

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Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol	g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3663204	OW-212D	RECNY	Manganese, Dissolved	6010	1.0	0.05	L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	07/10/03 10:45	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05	L	07/10/03 10:45	07/11 10:15	NA		07/16	BKL	Y	GW
A3663205	OW-212S	RECNY	Thallium, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Arsenic, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Cadmium, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Lead, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Copper, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Silver, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Zinc, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Barium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	SW	Y	GW
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Cobalt, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Nickel, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Vanadium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Magnesium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Sodium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Potassium, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Manganese, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/17	TRB	Y	GW
		RECNY	Boron, Dissolved	6010	1.0	0.05	L	07/10/03 11:20	07/11 10:15	NA		07/16	BKL	Y	GW

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AH = Analysis Holding Time Met
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NA = Not Applicable

ANL INI = Analyst Initials
DF = Dilution Factor

Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol	g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3B0767002	Method Blank	RECNY	Barium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Cobalt, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Nickel, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Vanadium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Magnesium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Sodium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Potassium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Manganese, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	TRB	Y	WATER
A3B0767402	Method Blank	RECNY	Barium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Beryllium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Cobalt, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Nickel, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Vanadium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Magnesium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Sodium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Potassium, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Manganese, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Iron, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
A3B0769402	Method Blank	RECNY	Boron, Dissolved	6010	1.0	0.05	L	-	-	NA		07/17	TRB	Y	WATER
		RECNY	Boron, Dissolved	6010	1.0	0.05	L	-	-	NA		07/16	BKL	Y	WATER
A3B0770902	Method Blank	RECNY	Thallium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	BKL	Y	WATER
		RECNY	Arsenic, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Cadmium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Lead, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Copper, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Silver, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Zinc, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
A3B0771002	Method Blank	RECNY	Thallium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Arsenic, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Cadmium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Lead, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Copper, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Silver, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Zinc, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Antimony, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Chromium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER
		RECNY	Selenium, Dissolved	6020	1.0	0.05	L	-	-	NA		07/16	SW	Y	WATER

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Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3663201	OW-201D	RECNY	pH (Field)	150.1	1.0		07/10/03 15:05	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 15:05	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 15:05	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 15:05	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 15:05	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	1.0		07/10/03 15:05	07/11 10:15	NA		07/14	MJ	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 15:05	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 15:05	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 15:05	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 15:05	07/11 10:15	NA		07/15	KEG	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 15:05	07/11 10:15	NA		07/15	NAP	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 15:05	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 15:05	07/11 10:15	NA		07/10	SP	Y	GW
A3661701	OW-201S	RECNY	pH (Field)	150.1	1.0		07/10/03 15:45	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 15:45	07/11 10:15	NA		07/10	SG	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 15:45	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 15:45	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 15:45	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	2.0		07/10/03 15:45	07/11 10:15	NA		07/14	MJ	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 15:45	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 15:45	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 15:45	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 15:45	07/11 10:15	NA		07/15	KEG	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 15:45	07/11 10:15	NA		07/14	JMS	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 15:45	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 15:45	07/11 10:15	NA		07/10	SP	Y	GW
A3661702	OW-202	RECNY	pH (Field)	150.1	1.0		07/10/03 10:00	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 10:00	07/11 10:15	NA		07/10	SG	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 10:00	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 10:00	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 10:00	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	2.0		07/10/03 10:00	07/11 10:15	NA		07/14	MJ	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 10:00	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	2.0		07/10/03 10:00	07/11 10:15	NA		07/17	RP	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 10:00	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 10:00	07/11 10:15	NA		07/17	KAM	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 10:00	07/11 10:15	NA		07/14	JMS	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 10:00	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 10:00	07/11 10:15	NA		07/10	SP	Y	GW
A3661703	OW-204	RECNY	pH (Field)	150.1	1.0		07/10/03 16:50	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 16:50	07/11 10:15	NA		07/10	SG	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 16:50	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 16:50	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 16:50	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	2.0		07/10/03 16:50	07/11 10:15	NA		07/14	MJ	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 16:50	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 16:50	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 16:50	07/11 10:15	NA		07/15	KAM	Y	GW

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Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3661703	OW-204	RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 16:50	07/11 10:15	NA		07/15	KEG	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 16:50	07/11 10:15	NA		07/14	JMS	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 16:50	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 16:50	07/11 10:15	NA		07/10	SP	Y	GW
A3663202	OW-205	RECNY	pH (Field)	150.1	1.0		07/10/03 13:30	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 13:30	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 13:30	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 13:30	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 13:30	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	2.0		07/10/03 13:30	07/11 10:15	NA		07/14	MJ	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 13:30	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 13:30	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 13:30	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 13:30	07/11 10:15	NA		07/15	KEG	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 13:30	07/11 10:15	NA		07/15	NAP	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 13:30	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 13:30	07/11 10:15	NA		07/10	SP	Y	GW
A3663203	OW-206	RECNY	pH (Field)	150.1	1.0		07/10/03 12:20	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 12:20	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 12:20	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 12:20	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 12:20	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	5.0		07/10/03 12:20	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 12:20	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 12:20	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 12:20	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 12:20	07/11 10:15	NA		07/15	KEG	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 12:20	07/11 10:15	NA		07/15	NAP	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 12:20	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 12:20	07/11 10:15	NA		07/10	SP	Y	GW
A3663204	OW-212D	RECNY	pH (Field)	150.1	1.0		07/10/03 10:45	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 10:45	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 10:45	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 10:45	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 10:45	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	2.0		07/10/03 10:45	07/11 10:15	NA		07/15	LRM	Y	GW
		RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 10:45	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 10:45	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 10:45	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 10:45	07/11 10:15	NA		07/17	KAM	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 10:45	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 10:45	07/11 10:15	NA		07/10	SP	Y	GW
A3663205	OW-212S	RECNY	pH (Field)	150.1	1.0		07/10/03 11:20	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Electrical Conductance (Field)	120.1	1.0		07/10/03 11:20	07/11 10:15	NA		07/10	SP	Y	GW
		RECNY	Chloride	9251	1.0		07/10/03 11:20	07/11 10:15	NA		07/21	NAP	Y	GW
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		07/10/03 11:20	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		07/10/03 11:20	07/11 10:15	NA		07/14	LRM	Y	GW
		RECNY	Sulfate	9038	5.0		07/10/03 11:20	07/11 10:15	NA		07/15	LRM	Y	GW

AH = Analysis Holding Time Met
TH = TCLP Holding Time Met
NA = Not Applicable

ANL INI = Analyst Initials
DF = Dilution Factor

Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3663205	OW-212S	RECNY	Total Organic Carbon (TOC)	9060	1.0		07/10/03 11:20	07/11 10:15	NA		07/21	SS	Y	GW
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		07/10/03 11:20	07/11 10:15	NA		07/14	KS	Y	GW
		RECNY	Total Inorganic Nitrogen	NH+NO2+	1.0		07/10/03 11:20	07/11 10:15	NA		07/15	KAM	Y	GW
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		07/10/03 11:20	07/11 10:15	NA		07/17	KAM	Y	GW
		RECNY	Phenolics, Total	9066	1.0		07/10/03 11:20	07/11 10:15	NA		07/15	NAP	Y	GW
		RECNY	Cyanide, Total	9012	1.0		07/10/03 11:20	07/11 10:15	NA		07/15	JMS	Y	GW
		RECNY	Temperature (Field Test)	TEMP	1.0		07/10/03 11:20	07/11 10:15	NA		07/10	SP	Y	GW

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AH = Analysis Holding Time Met
TH = TCLP Holding Time Met
NA = Not Applicable

ANL INI = Analyst Initials
DF = Dilution Factor

Lab ID	Sample ID	Lab	Analyte	Method	DF	Sample wt/vol g/L	Sample Date	Receive Date	TCLP Date	TH	Analysis Date	ANL INI	AH	Matrix
A3B0762702	Method Blank	RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		-	-	NA		07/14	LRM	Y	WATER
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		-	-	NA		07/14	LRM	Y	WATER
		RECNY	Alkalinity, Carbonate (As CaCO3)	310.2	1.0		-	-	NA		07/14	LRM	Y	WATER
		RECNY	Alkalinity, Bicarbonate (As CaCO3)	310.2	1.0		-	-	NA		07/14	LRM	Y	WATER
A3B0764302	Method Blank	RECNY	Cyanide, Total	9012	1.0		-	-	NA		07/15	JMS	Y	WATER
		RECNY	Cyanide, Total	9012	1.0		-	-	NA		07/15	JMS	Y	WATER
A3B0764502	Method Blank	RECNY	Sulfate	9038	1.0		-	-	NA		07/14	MJ	Y	WATER
		RECNY	Sulfate	9038	1.0		-	-	NA		07/14	MJ	Y	WATER
A3B0764602	Method Blank	RECNY	Phenolics, Total	9066	1.0		-	-	NA		07/14	JMS	Y	WATER
A3B0765402	Method Blank	RECNY	Phenolics, Total	9066	1.0		-	-	NA		07/15	NAP	Y	WATER
A3B0769302	Method Blank	RECNY	Total Dissolved Solids (TDS)	160.1	1.0		-	-	NA		07/15	KEG	Y	WATER
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		-	-	NA		07/15	KEG	Y	WATER
A3B0770702	Method Blank	RECNY	Chloride	9251	1.0		-	-	NA		07/15	LRM	Y	WATER
		RECNY	Chloride	9251	1.0		-	-	NA		07/15	LRM	Y	WATER
A3B0771502	Method Blank	RECNY	Sulfate	9038	1.0		-	-	NA		07/15	LRM	Y	WATER
A3B0784302	Method Blank	RECNY	Total Dissolved Solids (TDS)	160.1	1.0		-	-	NA		07/17	KAM	Y	WATER
		RECNY	Total Dissolved Solids (TDS)	160.1	1.0		-	-	NA		07/17	KAM	Y	WATER
A3B0795402	Method Blank	RECNY	Chloride	9251	1.0		-	-	NA		07/21	NAP	Y	WATER
A3B0764902	Method Blank	RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		-	-	NA		07/14	KS	Y	WATER
		RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		-	-	NA		07/14	KS	Y	WATER
A3B0785502	Method Blank	RECNY	Chemical Oxygen Demand (COD)	410.4	1.0		-	-	NA		07/17	RP	Y	WATER
A3B0800102	Method Blank	RECNY	Total Organic Carbon (TOC)	9060	1.0		-	-	NA		07/21	SS	Y	WATER
		RECNY	Total Organic Carbon (TOC)	9060	1.0		-	-	NA		07/21	SS	Y	WATER

AH = Analysis Holding Time Met
TH = TCLP Holding Time Met
NA = Not Applicable

ANL INI = Analyst Initials
DF = Dilution Factor

Chain of Custody

SEVERN TRENT **STL**

WASTE MANAGEMENT CHAIN OF CUSTODY

Internal Use Only

Sampler Name (Print)	Signature:
Scott Pruitt	
Site Name:	Spec Request: AC 33296
	AC Special -GW
Site Location:	Event Name:
	Special -GW

STL Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	8260VOA	T-METALS	D-METALS	CHLORIDE/SULFATE/NITRATE PH, TSS, TDS	ALK / CARB / BICARB	HARDNESS	NH_3 / COD	TOC	Additional Analysis/Remarks
				INDICATE PRESERVATIVE BY USING KEY BELOW (OPTIONAL)										
				INDICATE # OF CONTAINERS BY USING KEY BELOW										
	GW-2015	7/10	1545	W	G	✓		✓	✓	✓		✓	✓	7.77 12.4 545
	GW-202	7/10	1000	W	G	✓		✓	✓	✓		✓	✓	7.87 11.8 581
	GW-204	7/10	1652	W	G	✓		✓	✓	✓		✓	✓	7.91 12.0 528

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
	MH	7/10	1830		STL	7-11-03	10:15
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

Matrix Key
WW = Wastewater
W = Water/Groundwater
S = Solid
Sl = Sludge
MS = Miscellaneous Solids
Ol = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other

Preservation Key
1. HCl, Cool to 4°
2. H_2SO_4, Cool to 4°
3. HNO_3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS
AC 33296
2.0 °C

Courier:

Bill of Lading:

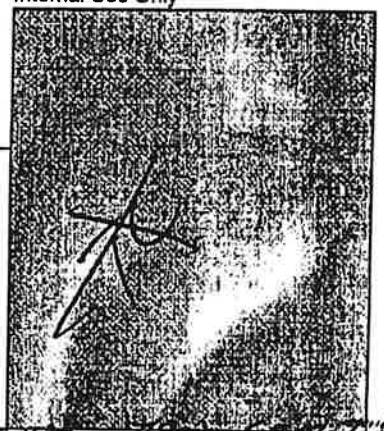
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STL-8219 (1002)

SEVERN TRENT **STL**

WASTE MANAGEMENT CHAIN OF CUSTODY

Internal Use Only



Sampler Name (Print)	Signature:
Scott Bratt	
Site Name: McGuire RD LF	Spec Request: AC
Site Location: Jackson, MI	Event Name: Second - Gw

STL Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	8260VOA	T-METALS	D-METALS	CHLORIDE, SULFATE, NITRATE PH, TSS, TDS	ALK / CARB / BICARB	HARDNESS	NH_3 / COD	TOC	Additional Analysis/Remarks
				INDICATE PRESERVATIVE BY USING KEY BELOW (IF ADDITIONAL)										
				INDICATE CONTAINER BY USING KEY BELOW										
	GW-212D	7/10	1045	W	G	/		/	/	/		/	/	7.57 15.5 C58
	GW-212S	7/10	1120	W	G	/		/	/	/		/	/	7.51 [illegible] C55
	GW-206	7/10	1203	W	G	/		/	/	/		/	/	7.61 [illegible] C43
	GW-205	7/10	1330	W	G	/		/	/	/		/	/	7.60 15.2 C24
	GW-201D	7/10	1505	W	G	/		/	/	/		/	/	7.75 11.9 C54

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
[signature]	WTH	7/10/03	1830	[signature]	FC	7/11/03	1015
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

Matrix Key
WW = Wastewater
W = Water/Groundwater
S = Solid
Sl = Sludge
MS = Miscellaneous Solids
Ol = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other

Preservation Key
1. HCl, Cool to 4°
2. H_2SO_4, Cool to 4°
3. HNO_3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS	Courier:
Request AC 33296	
10.0°C	Bill of Lading:

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STL-8219 (1002)

Field Data

FIELD INFORMATION FORM

WM WASTE MANAGEMENT

Site Name: McCall RD LF

Site No.: ____ Sample Point: GW20I5 (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: ____

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/10/03	1530	:15	17	70	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or N

Purging Device: D

Sampling Device: D

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

X-Other: ____

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Filter Type: A

A-In-line Disposable, B-Pressure, C-Vacuum, X-Other ____

Sample Tube Type: ____

A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: ____

WELL DATA

Well Elevation (at TOC): ____ (ft/msl)

Depth to Water (DTW) (from TOC): 160.50 (ft)

Groundwater Elevation (site datum, from TOC): ____ (ft/msl)

Total Well Depth (from TOC): 200.50 (ft)

Stick Up (from ground elevation): ____ (ft)

Casing ID: 2 (in)

Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1515	1st	7.77	1st 1515	11.29				
1521	2nd	7.80	2nd 1510	11.40				
1524	3rd	7.83	3rd 1508	11.46				
	4th		4th					
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units ____
07/10/03	7.83	1508	11.46				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Gray/Tan/Brn Odor: — Color: Gray Other: ____

Weather Conditions (required daily, or as conditions change): Direction/Speed: Sig at S Outlook: Sunny Precipitation: Y or N

Specific Comments (including purge/well volume calculations if required):

Samples are Turbid

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Pratt	[signature]	CTH

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

STL-8029WM R: 12/00

FIELD INFORMATION FORM

Site Name: McGill Ed CF

Site No.:

Sample Point: MW02 (Sample ID)

This Waste Management Field Information Form is Required. This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID.

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07 10 03	1600	1625	7.74	15.0	1.3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or (N) If No, Describe Below

Purging Device: D

Sampling Device: D

X-Other:

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Device: Y or (N) 0.45 µ or ____ µ (circle or fill in)

Filter Type: A

A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type:

A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): ____ (ft/msl)

Depth to Water (DTW) (from TOC): 9.42 (ft)

Groundwater Elevation (site datum, from TOC): ____ (ft/msl)

Total Well Depth (from TOC): 19.87 (ft)

Stick Up (from ground elevation): ____ (ft)

Casing ID: 2 (in)

Casing Material: ____

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1630	1st	7.87	1st 5011	11.8				
	2nd		2nd					
	3rd		3rd					
	4th		4th					
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	--	--	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units ____
07 10 03	7.83	5011	11.8				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Turbid

Odor: —

Color: Gray

Other: —

Weather Conditions (required daily, or as conditions change):

Direction/Speed: S-5/15KT

Outlook: Cloudy

Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

Sampled and Turbid

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Pratt	SP	WTH

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

STL-8029WM R: 12/00

FIELD INFORMATION FORM

WM WASTE MANAGEMENT

Site Name: McGill Rd L.F.

Site No.:

Sample Point: MW-209 (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/10/03	1415	2:35	20	60	3.0

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or (N) DSP

Filter Device: Y or N (0.45 µ) or _____ µ (circle or fill in)

Purging Device: BLD

Sampling Device: D

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Type: A

A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

X-Other:

Sample Tube Type:

A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (site datum, from TOC)
(ft/msl)	15.80 (ft)	(ft/msl)

Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
27.60 (ft)	(ft)	2 (in)	PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1650	1st	7.01	528	12.0				
	2nd							
	3rd							
	4th							
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional *(i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.*

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: / Units
07/10/03	7.01	528	12.3				

Final Field Readings are required *(i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.*

Sample Appearance: Slightly Turbid Odor: — Color: Light Brn Other: —

Weather Conditions (required daily, or as conditions change): Direction/Speed: S - 5 mph Outlook: Cloudy Precipitation: Y or N

Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

2 gallons pumped & 2 gallons Bailed - well very turbid - ~~sampled~~ Let well recover and sampled at

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Pratt	[signature]	WM

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

STL-8029WM R: 12/00

FIELD INFORMATION FORM

Site Name: McGill Rd CF

Site No.:

Sample Point: OW-20D

Sample ID

This Waste Management Field Information Form is Required

This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory)

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/10/03	1440	1:25	61	125	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or (N)

Purging Device: A

Sampling Device: D

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

X-Other:

Filter Device: (Y) or N, 0.45 µ or ____ µ (circle or fill in)

Filter Type: A

A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): (ft/msl)

Depth to Water (DTW) (from TOC): 152 (ft)

Groundwater Elevation (site datum, from TOC): (ft/msl)

Total Well Depth (from TOC): 470 (ft)

Stick Up (from ground elevation): 10 (ft)

Casing ID: 2 (in)

Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1445	1st	7.10	1st 661	12.7				
1500	2nd	7.15	2nd 650	11.8				
1505	3rd	7.15	3rd 654	11.9				
	4th		4th					
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/10/03	7.15	659	11.9				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Clear

Odor: —

Color: Amber

Other: —

Weather Conditions (required daily, or as conditions change):

Direction/Speed: S - Slight

Outlook: Cloudy

Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

Developed OW-20D

FIELD COMMENTS

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Pratt		CTEC

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

STL-8029WM R: 12/00

FIELD INFORMATION FORM

Site Name: McGill Rd LF
Site No.:
Sample Point: 0 0 2 0 5 (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
0 7 1 0 5	1 2 4 5	1 4 5	1 1 1 4	2 2 5 0	7 3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or N
Purging Device: A
Sampling Device: D
X-Other:

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Device? Y or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type:
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): ____ (ft/msl)
Depth to Water (DTW) (from TOC): 4 2 2 4 (ft)
Groundwater Elevation (site datum, from TOC): ____ (ft/msl)
Total Well Depth (from TOC): 5 0 8 2 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: 2 (in)
Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1300	1"	1 8 5	1" 1 6 2 6	1 5 1				
1305	2nd	7 7 9	2nd 1 6 0 8	1 3 1				
1315	3rd	7 7 6	3rd 1 6 0 2	1 3 5				
1330	4th	7 6 0	4th 1 6 2 4	1 3 2				
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional *(i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.*

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
0 7 1 0 0 3	7 6 0	1 6 2 4	1 3 2				

Final Field Readings are required *(i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.*

Sample Appearance: S. Turbid
Odor: —
Color: Clear
Other: —
Weather Conditions (required daily, or as conditions change):
Direction/Speed: SW 0 to 5
Outlook: Partly
Precipitation: Y or N
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Recharged @ 1305

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Platt		ETC

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

FIELD INFORMATION FORM

Site Name: McGill Ed Landfill

Site No.: ____ Sample Point: b-a/2-0-6 (Sample ID)

This Waste Management Field Information Form is Required. This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: ____

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07 10 03	1140	1:40	14	160	

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or N

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Purging Device: A

Sampling Device: D

A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other ____

X-Other: ____

Sample Tube Type: ____ — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: ____

WELL DATA

Well Elevation (at TOC): ____ (ft/msl)

Depth to Water (DTW) (from TOC): 9247 (ft)

Groundwater Elevation (site datum, from TOC): ____ (ft/msl)

Total Well Depth (from TOC): 5065 (ft)

Stick Up (from ground elevation): ____ (ft)

Casing ID: 2 (in)

Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1205	1"	7.75	1550	15.2				
1210	2"	7.75	1545	14.1				
1215	3"	7.71	1539	14.2				
1220	4"	7.61	1545	14.1				
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07 10 03	7.61	1545	14.1				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Slight turbid — Odor: — — Color: Light Grey — Other: —

Weather Conditions (required daily, or as conditions change): Direction/Speed: S - Slight — Outlook: P. Cloudy — Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

Developed OW-206

FIELD COMMENTS

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Priest		
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

FIELD INFORMATION FORM

WM WASTE MANAGEMENT

Site Name: McGill Rd Ct

Site No.:

Sample Point: OW-2(120) (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/10/03	0745	1100	37	120	

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or N

Purging Device: A — A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device: D

X-Other:

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Filter Type: A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): ____ (ft/msl)

Depth to Water (DTW) (from TOC): 44.59 (ft)

Groundwater Elevation (site datum, from TOC): ____ (ft/msl)

Total Well Depth (from TOC): 97.00 (ft)

Stick Up (from ground elevation): 3.00 (ft)

Casing ID: 2 (in)

Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1020	1"	6.90	1683	15.6				
1025	2nd	7.34	1670	14.5				
1030	3rd	7.31	1627	13.6				
1035	4th	7.15	1625	13.9				
1040		7.39	1658	13.5				
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/10/03	7.39	1658	13.5				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: — — Other: —

Weather Conditions (required daily, or as conditions change): Direction/Speed: Slight - SW — Outlook: Clear day — Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

Developed OW-2(120) w/ Sys. Pump.

Sampled w/ Bailer

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Platt		WTH

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

STL-8029WM R: 12/00

FIELD INFORMATION FORM

Site Name: McCoin Rd LF

Site No.:

Sample Point: GW215

Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hr:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/03/03	1100	1:25	105	125	50

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: [Y] or [N]

Purging Device: D — A- Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device: D

X-Other:

Filter Device: [Y] or [N] — [0.45 µ] or [ ] µ (circle or fill in)

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): (ft/msl)

Depth to Water (DTW) (from TOC): 44.40 (ft)

Groundwater Elevation (site datum, from TOC): (ft/msl)

Total Well Depth (from TOC): 61.50 (ft)

Stick Up (from ground elevation): (ft)

Casing ID: 2 (in)

Casing Material: PVC

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm @ 25 °C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1105	1"	7.52	1667	14.4				
1112	2nd	7.49	1643	14.3				
1125	3rd	7.51	1655	14.4				
	4th							
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional *(i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.*

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: / Units
07/03/03	7.51	1655	14.4				

Final Field Readings are required *(i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.*

FIELD COMMENTS

Sample Appearance: turbid

Odor: —

Color: Brown

Other: —

Weather Conditions (required daily, or as conditions change):

Direction/Speed: S/SW 5

Outlook: overcast

Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/10/03	Scott Pratt		WM

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

APPENDIX E

- **LOCAL WATER WELL RECORDS**
- **LOGS OF TEST BORINGS & MONITORING WELLS FROM EXISTING MRL FACILITY & JACKSON COUNTY LANDFILL NO. 1**

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 000-08-24-226-001-01

1. LOCATION OF WELL

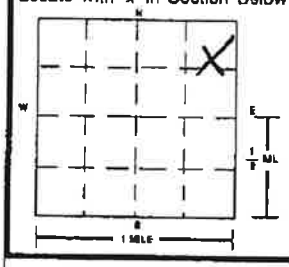
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

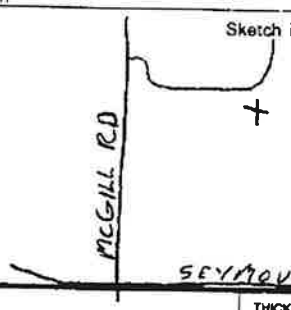
3/10ths North of Seymour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 280 ft. | Date Completed: 12/30/94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☒ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 68 ft. depth
5 in. to 200 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 67 ft. depth
7-7/8 in. to 198'6" depth
Height: Above/Below Surface: 12"/18"
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
61 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
160 ft. After _____ hrs. Pumping at 20 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 199' to surface ft.
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags 38 Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

2. FORMATION DESCRIPTION

	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Topsoil	1	1
Clay / Sand	16	17
Gray Clay	14	31
Sand / Gravel	28	59
Sandstone/Shale/Limestone	102	161
Sandstone	119	280

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USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
5" Production Well

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company (REGISTERED BUSINESS NAME) 1686 (REGISTRATION NO.)
Address 1154 S. Jefferson St. Mason, MI 48854
Signed David D. Hart (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GW-2-228 8/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

Geological Survey No. MICHIGAN WATER WELL AND PUMP RECORD Permit No. 3 6 9 6

1 Location of Well

County	Township Name	Fraction	Section Number	Town Number	Range Number
JACKSON	BLACKMAN	1/4 1/4 1/4	24	2-S N/S	1-W E/W

Distance and Direction From Road Intersection

3895 MCGILL RD.

Street Address and City of Well Location

Sketch Map

3 Owner of Well MCGILL ROAD LANDFILL

Address 3895 MCGILL RD.
JACKSON MI 49202-

Address Same as Well Location? Yes

4 Well Depth (Completed) 220 ft. | Date of Completion 05/18/92 New Well

5 Drilling Method ROTARY

6 Proposed Use DOMESTIC

2 FORMATION DESCRIPTION	Thickness of Stratum	Depth to Bottom of Stratum
SAND	10	10
CLAY	05	15
GRAVEL	10	25
CLAY	10	35
GRAVEL	05	40
SHALE	05	45
GRAVEL	15	60
SHALE	10	70
SANDSTONE	50	120
SHALE	25	145
SANDSTONE	75	220

7 Casing PVC Height Above
5 in. to 109 ft. depth Surface A ft.
in. to ft. depth Weight lbs./ft.
Grouted Drill Hole Diameter
B in. to 109 ft. depth Drive Shoe No
in. to ft. depth

8 Screen Not Installed

9 Static Water Level 70 Ft. Below Land Surface Flow

10 Pumping Level Below Land Surface
220 ft. after 1 hrs. pumping at 20 G.P.M.
ft. after hrs. pumping at G.P.M.

11 Well Head Completion PITLESS ADAPTER

12 Well Grouted Yes From 00 to 109 ft.
BENTONITE
No. of bags of cement Additives

13 Nearest Source of Possible Contamination
Type SEWAGE Distance 50 Direction
Well disinfected upon completion? Yes
Was old well plugged? No

15 Remarks, elevation, source of data, etc.
WELL WAS GROUTED FROM 0-109' WITH BENSEAL.

14 Pump Installed Pump Installation Only? No
Manufacturer's Name GOULD
Model Number HP 1/2 Volts 230
Length of Drop Pipe 100 ft. Capacity 10
Type SUBMERSIBLE Jet
Pressure Tank Name
Pressure Tank Model

Rig Operator's Name

16 WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction, and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME LJT WELL DRILLING, INC.
REGISTRATION NUMBER 23-1077
ADDRESS 4621 THORNTON HWY. DATE 6/10/92
SIGNED _____ (Authorized Representative)

AUTHORITY: Act 368 PA 1978 COMPLETION: Required.
PENALTY: Conviction of a violation of any provision is misdemeanor. IMPORTANT: File with deed.

RECEIVED
Mich. Dept. of Public Health
JUN 10 1992
BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH-GWDS

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005204

Tax No:	Permit No: 10696	County: Jackson	Township: Blackman

Well ID: 38000005204

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 250FT NORTH OF SEYMORE 60FT EAST OF MCGILL

Well Name:

Well Owner: Darcy Sunkle

Well Address:	Owner Address:
3969 MCGILL RD JACKSON MI 49201	3969 MCGILL RD JACKSON MI 49201

Drilling Method: Rotary

Well Depth: 132.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 6/20/2002

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 98.00 ft. depth

Bore Diameter 1: 9.00 in. to 98.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 52.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
70.00 ft. after 1.00 hrs. pumping at 30.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Unscreened Drift Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing
No. of Bags: 7 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 98.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	East

Drilling Machine Operator Name: RICK FREY

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Brown-Clay	20.00	20.00
Sand	10.00	30.00
Brown-Clay-Soft	6.00	36.00
Brown-Clay	5.00	41.00
Gray-Clay	15.00	56.00
Sand	7.00	63.00
Gray-Clay-Soft	7.00	70.00
Unidentified Consolidated Fm-W/Gravel-Broken	10.00	80.00
Sand	10.00	90.00
Unidentified Consolidated Fm-W/Sand-Broken	8.00	98.00
Unidentified Consolidated Fm-Water Bearing	34.00	132.00

(Continued on Page 2)

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

8/13/2002 09:13

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005204

Tax No:	**Permit No**: 10696	**County**: Jackson	**Township**: Blackman

Well ID: 38000005204

Elevation:

Latitude:

Longitude:

Fraction:	**Section**:	**Town/Range**:	**French Claim**:	**WSSN**:
SE¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 250FT NORTH OF SEYMORE 60FT EAST OF MCGILL

Well Name:

Well Owner: Darcy Sunkle

Well Address:	**Owner Address**:
3969 MCGILL RD JACKSON MI 49201	3969 MCGILL RD JACKSON MI 49201

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000004630

Tax No:	Permit No: 10696	County: Jackson	Township: Blackman

Well ID: 38000004630

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 250 ft. North of Seymour Rd. on the East side of McGill

Well Name:

Well Owner: Darcy Synkle

Well Address:	Owner Address:
3969 McGill Rd Jackson MI	3969 McGill Rd Jackson MI

Drilling Method:

Well Depth: ft. **Well Use:** Household

Well Type: New **Date Completed:** 6/20/2002

Casing Type:
Casing Joint:
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height:
Casing Fitting:

Static Water Level:
Yield Test Method:
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:**
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: **Grouting Method:**
No. of Bags: **Additives:**
Grouting Materials:

Well Head Completion: 12 inches above grade, Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	East

Drilling Machine Operator Name: Rick Frey(Katz Well Drilling)

Employment: Subcontractor

Pump Installed: Yes
Pump Installation date: 6/22/2002
Manufacturer: Flint & Walling
Model Number: 4F10G05305
Length of Drop Pipe: 70.00 ft.
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pump Installation only: Yes
HP: 0.05
Pump Type: Submersible
Pump Capacity: 10.00 GPM
Id of Well:

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Champion
Model Number: CM-4202

Formation Description	Thickness	Depth to Bottom

Geology Remarks:

Contractor Type: Pump Installer
Registration Number: 650
Business Name: Murph's Pumps Inc.
Business Address: 4601 Page Ave.

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

6/24/2002 13:12

GEOLOGICAL SURVEY SAMPLE No.

DEC 01 1971

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	SE¼ SW¼ NE¼	24	2 N/S.	1 E/W.

Distance And Direction from Road Intersections: 300 North of Leary Rd on West Side of McGillicuddy

Street address & City of Well Location: Jackson

Locate with "X" in section below (N, W, E, S, 1 MILE, ½ MI.)

Sketch Map:

3 OWNER OF WELL: A. Putnam

Address: Rives Junction

4 WELL DEPTH: (completed) 126 ft. Date of Completion 9-7-71

5 ☑ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☑ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☑ Welded ☐ Diam. 4 in. to 106 ft. Depth; ____ in. to ____ ft. Depth. Height: Above/Below Surface 2 ft. Weight 11 lbs./ft. Drive Shoe? Yes ☑ No ☐

8 SCREEN: Type: ____ Dia.: ____ Slot/Gauze ____ Length ____ Set between ____ ft. and ____ ft. Fittings:

9 STATIC WATER LEVEL 70 ft. below land surface

10 PUMPING LEVEL below land surface 80 ft. after 2 hrs. pumping 30 g.p.m.; ____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ____ Chlorides (Cl) ____ Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☑ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☐ Yes ☑ No ☐ Neat Cement ☐ Bentonite ☐ ____ Depth: From ____ ft. to ____ ft.

14 Nearest Source of possible contamination 40 feet SE Direction septic Type. Well disinfected upon completion ☐ Yes ☐ No

15 PUMP: ☐ Not installed. Manufacturer's Name Deepwell Pump Co. Model Number 5SL8P HP 1 Volts 220. Length of Drop Pipe 80 ft. capacity 12 G.P.M. Type: ☑ Submersible ☐ Jet ☐ Reciprocating

2 FORMATION

FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	55	55
Lime rock	13	68
Sand - gravel	17	85
Soft shale rock	15	100
Lime rock	4	104
Sand rock	20	124

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

ADDED WELL TO SAMPLE ITEM NO

CHECKED BY

SAMPLE SENT

17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Leonard Well Drilling 0404

REGISTERED BUSINESS NAME — REGISTRATION NO.

Address Shepherd

Signed M Leonard — AUTHORIZED REPRESENTATIVE — Date 9-11-71

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 38000000956 Failure to comply is a misdemeanor. **Import ID:** 38720124401

Tax No:	Permit No:	County: Jackson	Township: Blackman

Well ID: 38000000956

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ NE¼ SE¼	24	02S 01W		2066138

Distance and Direction from Road Intersection: 2066138; 1 ST DEMETRIUS

Well Name: 001

Well Owner: St Demetrius

Well Address:	Owner Address:
3043 SEYMOUR JACKSON MI 49201	PO BOX 125 JACKSON MI 49204

Drilling Method: Unknown

Well Depth: 0.00 ft. **Well Use:** Type II public

Well Type: Replacement **Date Completed:**

Casing Type: Unknown
Casing Joint: Unknown
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 0.00 ft. above grade
Casing Fitting: None

Static Water Level: 999.99 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Unknown
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: **Additives:** None
Grouting Materials:
Unknown From 0.00 ft. to 0.00 ft.

Well Head Completion: Unknown

Nearest source of possible contamination:

Type	Distance	Direction
Unknown	0.00 ft.	
Unknown		

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
No Log	0.00	0.00

Geology Remarks: 1. [NO LOG AVAILABLE] [0] [0]

Contractor Type: Unknown
Registration Number:
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks: No Log Available

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:50

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 38000000959 Failure to comply is a misdemeanor. **Import ID:** 38720124404

Tax No:	Permit No:	County: Jackson	Township: Blackman

Well ID: 38000000959

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ NW¼ SE¼	24	02S 01W		2044538

Distance and Direction from Road Intersection: 2044538; 1 SPARROW HAWK GOLF

Well Name: 001

Well Owner: Sparrow Hawk Golf

Well Address:	Owner Address:
2618 SEYMOUR JACKSON MI 49201	2618 SEYMOUR JACKSON MI 49201

Drilling Method: Unknown

Well Depth: 0.00 ft. **Well Use:** Type II public

Well Type: Replacement **Date Completed:**

Casing Type: Unknown
Casing Joint: Unknown
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 0.00 ft. above grade
Casing Fitting: None

Static Water Level: 999.99 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Unknown
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: **Additives:** None
Grouting Materials:
Unknown From 0.00 ft. to 0.00 ft.

Well Head Completion: Unknown

Nearest source of possible contamination:

Type	Distance	Direction
Unknown	0.00 ft.	
Unknown		

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Lithology Unknown	0.00	0.00

Geology Remarks: 1. [NO LITHOLOGY INFO] [0] [0]

Contractor Type: Unknown
Registration Number:
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:
OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:50

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 0198

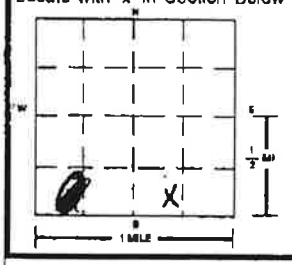
1. LOCATION OF WELL

County: Jackson | Township Name: Blackman | Fraction: SE 1/4 SW 1/4 SE 1/4 | Section No.: 24 | Town No.: 2S | Range No.: 1W

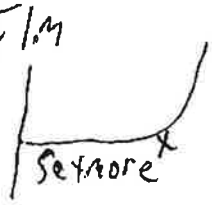
Distance and Direction from Road Intersection: ½ Mi. E of Elm on S. Side of Seymore Rd.

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL: Tim Smart
Address: 2618 Seymore Rd. Jackson Mich
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: ft. | Date Completed: 12/1/94 | ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
BORE HOLE:
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: _____ ft
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☐ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☐ Yes From _____ to _____ ft.
☐ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM

USE A 2ND SHEET IF NEEDED

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name: Flint & Walling
Model Number: 4F10607205 HP: ¾ Volts: 230
Length of Drop Pipe: 43 ft. Capacity: 14 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name: Clayton Mark
Model Number: CM205 Capacity: 32 Gallons: 10

15. ABANDONED WELL PLUGGED? ☐ Yes ☒ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
Was Hooked up to Neighbors Water Well

17. DRILLING MACHINE OPERATOR:
☐ Employee ☐ Subcontractor
Name _____

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Murphy & Matthews Pumps. 0650
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 4601 Page Ave. Mich Center 49254
Signed Mike Murphy Date 12-6-94
AUTHORIZED REPRESENTATIVE

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

URT

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 1815

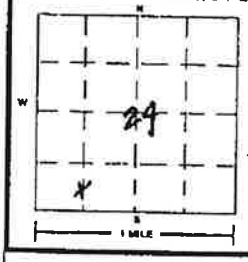
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No
Jackson	Blackman	SW¼ SE¼ SW¼	24	2S	1W

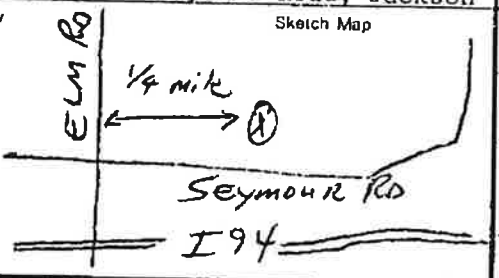
Distance and Direction from Road Intersection: 1/4 mile east of Elm Road on the north side of Seymour Road.

Street Address & City of Well Location: Extreme Dodge 2300 Seymour Road, Jackson

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: O'Harrow Construction, 4575 Ann Arbor Road, Jackson 49202
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: 260 ft. Date Completed 7 / 15 / 96 ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐

6. USE: ☐ Household ☐ Type I Public ☒ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other
Diameter: 4 in. to 83 ft. depth; ___ in. to ___ ft. depth
BORE HOLE: Diameter: ___ in. to ___ ft. depth; 3 7/8 in. to 260 ft. depth
Height: Above/Below Surface: 1 ft
Weight: SDR21 lbs./ft.
☒ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length: ___
Set Between ___ ft. and ___ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check ☐ Blank Above Screen ___ ft. Other ___

9. STATIC WATER LEVEL: 50 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface ___ ft. After ___ hrs. Pumping at 50 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☒ Pitless Adaptor ☒ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 83 ft.
☒ Neat Cement ☐ Bentonite ☐ Other ___
No. of Bags 30 Additives ___

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type Sewer line Distance 91 ft. Direction S
Type ___ Distance ___ ft. Direction ___

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name: Red Jacket
Model Number: 300CN4-8FC HP: 3 Volts: 203/230
Length of Drop Pipe: 75 ft. Capacity: 50 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other ___
PRESSURE TANK:
Manufacturer's Name: 2 - Well Xtrol
Model Number: 350 Capacity: 120 Gallons: 36

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown sand and gravel	16	16
Brown clay with gravel	04	20
Gray clay with gravel	53	73
Limerock	02	75
Green and gray sandrock	10	85
Limerock	08	93
Green sandrock	05	98
Lime with strips of sandrock	39	137
Gray shale with pyrite and sandrock	51	148
Sandrock (white, green and gray)	58	206
Cemented sandrock with lime	11	217
sandrock with traces of lime	36	253
Cemented sandrock with lime	07	260

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags ___ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Kevin Ouellette, Fred, Ron

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME: Dyer Well Drilling & Service, Inc. REGISTRATION NO: 0418
Address: Laingsburg 48848-0370
Signed: Michael Dyer (AUTHORIZED REPRESENTATIVE) Date: 11-13-96

RECEIVED DEC 31 1996 JAN 16 1997 JACKSON COUNTY HEALTH DEPT

GW-2 228 9/93

Authority: Act 368 PA 1978 Completion Required

GEOLOGICAL SURVEY COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 0356

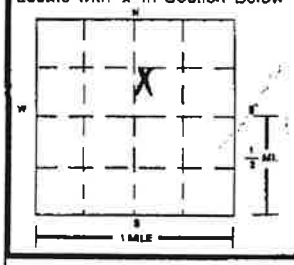
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	NW 1/4 SW 1/4 NE 1/4	24	2 S	1 E

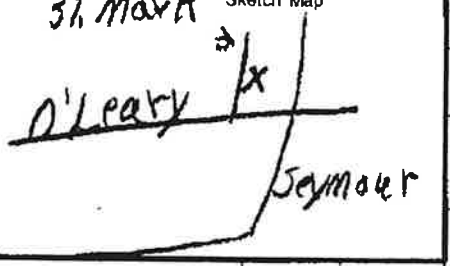
Distance and Direction from Road Intersection: 1/4 mi. W. of Seymour on S. side of St. Mark

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL: Donald Inman
Address: 3705 St Mark, Jackson, MI
Address Same as Well Location: [X] Yes [ ] No

4. WELL DEPTH: 69 ft. Date Completed: 12/13/94 [ ] New Well [X] Replacement Well

5. [ ] Cable Tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow Rod [ ] Auger/Bored [ ] Jetted [ ]

6. USE: [X] Household [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat Pump [ ] Test Well [ ] Type IIb Public [ ]

7. CASING: [ ] Steel [ ] Threaded [X] Plastic [ ] Welded [ ] Other
Diameter: 5 in. to 60 ft. depth; ___ in. to ___ ft. depth
Height: Above/Below Surface: 1 ft
Weight: ___ lbs./ft.
BORE HOLE: Diameter: 7 7/8 in. to 60 ft. depth; ___ in. to ___ ft. depth
[ ] Drive Shoe [X] Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Clay & Stones	20	20
Gray Clay & Stones	23	43
Gravel	5	48
Gray Sandrock	8	56
Green Sandrock - St. Of Lime	13	69

USE A 2ND SHEET IF NEEDED

8. SCREEN: [X] Not Installed [ ] Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length: ___
Set Between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Bremer Check
[ ] Blank Above Screen ___ ft. Other ___

9. STATIC WATER LEVEL: 27 ft. Below Land Surface [ ] Flowing

10. PUMPING LEVEL: Below Land Surface
69 ft. After 2 hrs. Pumping at 50 G.P.M.
[ ] Plunger [ ] Bailer [X] Air [ ] Test Pump

11. WELL HEAD COMPLETION:
[ ] Pitless Adaptor [X] 12" Above Grade
[ ] Basement Offset [ ] Well House

12. WELL GROUTED? [ ] No [X] Yes From 0 to 60 ft.
[ ] Neat Cement [X] Bentonite [X] Other Grout
No. of Bags 8 Additives ___

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type Septic Distance 60 ft. Direction ___
Type ___ Distance ___ ft. Direction ___

14. PUMP: [X] Not Installed [ ] Pump Installation Only
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. Capacity ___ G.P.M.
TYPE: [ ] Submersible [ ] Jet [ ] Other ___
PRESSURE TANK:
Manufacturer's Name ___
Model Number ___ Capacity ___ Gallons ___

15. ABANDONED WELL PLUGGED? [ ] Yes [ ] No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL: [ ] Neat Cement [ ] Bentonite Slurry [ ] Cement/Bentonite Slurry [ ] Concrete Grout [ ] Bentonite Chips
No. of Bags ___ Casing Removed? [ ] Yes [ ] No

16. REMARKS: (Elevation, Source of Data, etc.)
Murph's Set Pump

17. DRILLING MACHINE OPERATOR:
[X] Employee [ ] Subcontractor
Name TERRY

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

REGISTERED BUSINESS NAME: TERRY'S WELL SERVICE REGISTRATION NO. 23-2033
Address: 2120 BELLEVUE HWY. OLIVET, MI 49076
Signed: Terry Cords (AUTHORIZED REPRESENTATIVE) Date: 12-19-94

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 0356

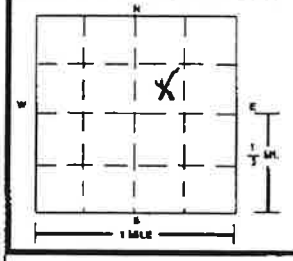
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	N ¼ S ¼ NE ¼	24	2S	1W

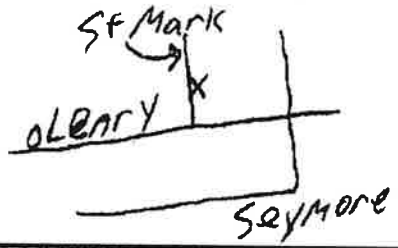
Distance and Direction from Road Intersection: ¼ Mi W of Seymore on E Side of ST Mark

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Donald Inman, 3705 ST Mark, Jackson, MICA
Address Same as Well Location ☒ Yes ☐ No

4. WELL DEPTH: 69 ft. | Date Completed: 12/20/94 | ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: _____ ft
Weight: _____ lbs./ft.
BORE HOLE:
Diameter: _____ in. to _____ ft. depth
_____ in. to _____ ft. depth
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☐ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check ☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☐ Yes From _____ to _____ ft.
☐ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

2. FORMATION DESCRIPTION

	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☒ Yes ☐ No
Casing Diameter 3 in. Depth 27 ft. left
PLUGGING MATERIAL:
☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☒ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

14. PUMP: ☐ Not Installed ☒ Pump Installation Only
Manufacturer's Name Flint + Walling
Model Number 4E10.605-.005 HP ½ Volts 115
Length of Drop Pipe 47 ft. Capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name Clayton Mark DRAW
Model Number CM202 Capacity 40 Gallons 62

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
☐ Employee ☐ Subcontractor
Name _____

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Murphy + Matthews Pumps. 0650
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address 4601 Page Ave. Mich Center 49254

Signed Mike Murphy Date 10-15-94
AUTHORIZED REPRESENTATIVE

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY NO

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NUMBER 70-21

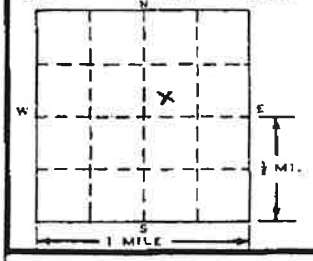
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	Sw¼ Sw¼ NE¼	24	2 N/S	1 E/W

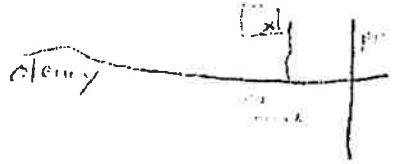
Distance And Direction From Road Intersection

Street Address & City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL:

Address: Orville Pickrel
3668 St. Mark
Jackson, Mi.

Address Same As Well Location? ☒ Yes ☐ No

4 WELL DEPTH: (completed)

60 ft.

Date of Completion: 8-27-84

5

☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Augor ☐ Jetted ☐ ____

6 USE:

☒ Domestic ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat pump
☐ Test Well ☐ Type IIb Public ☐ ____

7 CASING:

Diameter: ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded

____ in. to ____ ft. depth
____ in. to ____ ft. depth

Grouted Drill Hole Diameter
____ in. to ____ ft. depth
____ in. to ____ ft. depth

Height: Above/Below
Surface 1 ft.
Weight ____ lbs./ft.
Drive Shoe ☒ Yes ☐ No

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	40	40
Clay	8	48
Sandstone	12	60

8 SCREEN:

☐ Not Installed

Type ____ Diameter ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen ____ ft. Other ____

9 STATIC WATER LEVEL:

35 ft. below land surface ☐ Flow

10 PUMPING LEVEL: below land surface

60 ft. after 1 hrs. pumping at 25 G.P.M
____ ft. after ____ hrs. pumping at ____ G.P.M

11 WELL HEAD COMPLETION:

☒ Pitless adapter ☐ 12" above grade
☐ Basement offset ☐ Approved pit

12 WELL GROUTED?

☐ No ☒ Yes From ____ to ____ ft.

☐ Neat cement ☒ Bentonite ☐ Other ____

No. of bags of cement ____ Additives ____

13 Nearest source of possible contamination

Type ____ Distance ____ ft. Direction ____

Well disinfected upon completion? ☒ Yes ☐ No

14 PUMP

☐ Not Installed ☐ Pump Installation Only

Manufacturer's name McDonald
Model number ____ HP ½ Volts 230
Length of Drop Pipe 45 ft. capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet ____
PRESSURE TANK:
Manufacturer's name Noland
Model number ____ Capacity 20 Gallons

RECEIVED
Mich. Dept. of Public Health
SEP 18 1984
Bureau of Environmental and Occupational Health - GWQS

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

LJT Well Drilling — 1077
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address R#2 Charlotte, Mi.

Signed Loyd Cords — Date 8-30-84
AUTHORIZED REPRESENTATIVE

D67d 2/84

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY COPY

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005894

Tax No:	Permit No: 11251	County: Jackson	Township: Blackman

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ SW¼ NE¼	24	02S 01W		

Well ID: 38000005894

Elevation:

Latitude:

Longitude:

Distance and Direction from Road Intersection: 1/8 MILE NORTH OF O'LEARY ON EASTSIDE OF ST MARK

Well Name:

Well Owner: Gail Whiting

Well Address:
3711 ST MARK
JACKSON MI 49201

Owner Address:
3711 ST MARK
JACKSON MI 49201

Drilling Method: Rotary

Well Depth: 100.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 10/10/2002

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 65.00 ft. depth

Bore Diameter 1: 9.00 in. to 65.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 45.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
60.00 ft. after 1.00 hrs. pumping at 30.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well: Well being plugged by another driller

Abandoned well ID:

Screen Installed: No **Well Intake:** Unscreened Drift Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing
No. of Bags: 4 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 65.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	East

Drilling Machine Operator Name: RICK FREY

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Brown-Clay-W/Sand	14.00	14.00
Brown-Clay	21.00	35.00
Gray-Clay	10.00	45.00
Sand	5.00	50.00
Sandstone & Limestone-Broken	15.00	65.00
Sand & Stones-Water Bearing	35.00	100.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 1593
Business Name: KATZ WELL DRILLING INC
Business Address: 1479 E MICH AVE BATTLE CREEK 49014

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

12/9/2002 12:35

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005637

Tax No:	Permit No: 11251	County: Jackson	Township: Blackman

Well ID: 38000005637

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 1/8 Mile North of O'Leary on East side of St. Mark

Well Name:

Well Owner: Gail Whiting

Well Address:	Owner Address:
3711 St. Mark Jackson MI 49201	3711 St. Mark Jackson MI 49201

Drilling Method:

Well Depth: ft. | **Well Use:** Household

Well Type: New | **Date Completed:** 10/10/2002

Casing Type:
Casing Joint:
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height:
Casing Fitting:

Static Water Level:
Yield Test Method:
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No | **Well Intake:**
Filter Packed:
Screen Diameter: | **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: | **Grouting Method:**
No. of Bags: | **Additives:**
Grouting Materials:

Well Head Completion: 12 inches above grade, Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	East

Drilling Machine Operator Name: Rick Frey(Katz Well Drilling)

Employment: Subcontractor

Pump Installed: Yes
Pump Installation date: 10/11/2002
Manufacturer: Flint & Walling
Model Number: 4F10G05305
Length of Drop Pipe: 1.00 ft.
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pump Installation only: Yes
HP: 0.05
Pump Type: Submersible
Pump Capacity: 10.00 GPM
Id of Well:

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Pro-Source
Model Number: PT-4202

Formation Description	Thickness	Depth to Bottom

Geology Remarks:

Contractor Type: Pump Installer
Registration Number: 650
Business Name: Murph's Pumps Inc.
Business Address: 4601 Page Ave., Michigan Center, Mi

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

10/29/2002 14:09

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000006060

Tax No:	Permit No: W-10529	County: Jackson	Township: Blackman

Well ID: 38000006060

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 1/8 MILE NORTH OF O'LEARY ON THE EAST SIDE OF ST MARK

Well Name:

Well Owner: Chet Messner

Well Address:	Owner Address:
3655 ST. MARK JACKSON MI 49201	2363 E. BASELINE ROAD STOCKBRIDGE MI 49201

Drilling Method: Rotary

Well Depth: 100.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 1/23/2003

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 54.00 ft. depth

Bore Diameter 1: 8.50 in. to 54.00 ft. depth
Bore Diameter 2: 4.75 in. to 100.00 ft. depth
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: None

Static Water Level: 30.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
100.00 ft. after 1.00 hrs. pumping at 80.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing
No. of Bags: 6 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 54.00 ft.

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	Southwest

Drilling Machine Operator Name: GREG MEAD/TIM WALTZ

Employment: Employee

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: 1/24/2003 **HP:** 0.50
Manufacturer: Sta-Rite **Pump Type:** Submersible
Model Number: 10SP40025 **Pump Capacity:** 12.00 GPM
Length of Drop Pipe: 60.00 ft. **Id of Well:**
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Sta-Rite Signature
Model Number: 202

Formation Description	Thickness	Depth to Bottom
Gravel	15.00	15.00
Gray-Clay & Gravel	21.00	36.00
Boulders	1.00	37.00
Gravel	11.00	48.00
Green-Sandstone-W/Limestone	2.00	50.00
Green-Sandstone	10.00	60.00
Limestone	2.00	62.00
Green-Sandstone-W/Limestone	38.00	100.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2227
Business Name: DYER WELL DRILLING&SERVICE,INC
Business Address: 12520 PEACOCK RD.LAINGSBURG,48848

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

1/27/2003 14:43

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000006133

Tax No:	Permit No: 11568	County: Jackson	Township: Blackman

Well ID: 38000006133

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ SW¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: NE corner of St. Matthews and O'Leary Rd.

Well Name:

Well Owner: Lorene Searcy

Well Address:
3652 St. Matthews St.
Jackson MI 49201

Owner Address:
3652 St. Matthews St.
Jackson MI 49201

Drilling Method: Rotary

Well Depth: 80.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 3/18/2003

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 67.00 ft. depth

Bore Diameter 1: 7.88 in. to 67.00 ft. depth
Bore Diameter 2: 4.50 in. to 80.00 ft. depth
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 26.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
80.00 ft. after 2.00 hrs. pumping at 80.00 GPM

Abandoned Well Plugged: Yes
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe inside casing
No. of Bags: 7 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 67.00 ft.

Well Head Completion: 12 inches above grade, Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	75.00 ft.	West
None	0.00 ft.	

Drilling Machine Operator Name: Billy

Employment: Employee

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:** 0.50
Manufacturer: A.Y. McDonald **Pump Type:** Submersible
Model Number: 21050K2 **Pump Capacity:** 10.00 GPM
Length of Drop Pipe: 45.00 ft. **Id of Well:**
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Well-Rite-Flexcon
Model Number: WR100

Formation Description	Thickness	Depth to Bottom
Brown-Clay & Sand	25.00	25.00
Gray-Clay-W/Gravel-W/Sand	34.00	59.00
Gray-Sandstone-W/Limestone	21.00	80.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2033
Business Name: Terry's Well Service, Inc.
Business Address: 2120 W. Bellevue Hwy. Olivet, MI 49076

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks: plugged old 3 steel well, 37' measured depth, 30' static, 5' below grd., 4 bags cement, 2 bags holeplug

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

3/24/2003 10:29

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000006015

Tax No: 0661002LW06	Permit No: 11381	County: Jackson	Township: Blackman

Well ID: 38000006015

Elevation:

Latitude: 42.28666847

Longitude: -84.37164249

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NE¼ SE¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: 25 FEET EAST OF ST MATHEWS; 3715; 45 FEET SOUTH OF ST BERNARD

Well Name:

Well Owner: Roy & Susan Mccall

Well Address:	Owner Address:
3715 ST MATHEWS JACKSON MI	3715 ST MATHEWS JACKSON MI

Drilling Method: Rotary

Well Depth: 103.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 12/16/2002

Casing Type: PVC plastic
Casing Joint: Unknown
Diameter: 5.00 in. to 76.00 ft. depth

Bore Diameter 1: 8.75 in. to 74.00 ft. depth
Bore Diameter 2: 4.50 in. to 103.00 ft. depth
Bore Diameter 3:
Height: 2.00 ft. above grade
Casing Fitting: None

Static Water Level: 48.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
65.00 ft. after 1.00 hrs. pumping at 30.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well: Owner is plugging well
Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: 21 **Additives:** None
Grouting Materials:
Neat cement From 0.00 ft. to 74.00 ft.

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	75.00 ft.	East

Drilling Machine Operator Name: R HEILER

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Loam-W/Sand-W/Gravel	7.00	7.00
Stones	1.00	8.00
Brown-Clay	6.00	14.00
Clay & Gravel	21.00	35.00
Sand & Gravel-Coarse	24.00	59.00
Black-Shale	1.00	60.00
White-Shale & Sandstone	9.00	69.00
Gray-Sandstone	17.00	86.00
Limestone	9.00	95.00
Green-Sandstone-Hard	4.00	99.00
Sandstone & Limestone	4.00	103.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 1686
Business Name: HART WELL DRLG CO
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks: EMPLOYEE: C DIETZ; INVOICED TO MURPHS PUMP; OWNER TO ABANDON OLD WELL

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

1/15/2003 14:29

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005931

Tax No:	Permit No: 11381	County: Jackson	Township: Blackman

Well ID: 38000005931

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NE¼ SE¼ NE¼	24	02S 01W		

Distance and Direction from Road Intersection: South East Corner of St. Matthews and St. Bernard.

Well Name:

Well Owner: Roy And Susan Mccall

Well Address:	Owner Address:
3715 St.Matthews Jackson MI 49201	3715 St.Matthews Jackson MI 49201

Drilling Method:

Well Depth: ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 12/16/2002

Casing Type:
Casing Joint:
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height:
Casing Fitting:

Static Water Level:
Yield Test Method:
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well: Owner is plugging well
Abandoned well ID:

Screen Installed: No **Well Intake:**
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: **Grouting Method:**
No. of Bags: **Additives:**
Grouting Materials:

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	75.00 ft.	East

Drilling Machine Operator Name: Hart Well Drilling

Employment: Subcontractor

Pump Installed: Yes
Pump Installation date: 12/17/2002
Manufacturer: Flint & Walling
Model Number: 4F10G05005
Length of Drop Pipe: 65.00 ft.
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pump Installation only: Yes
HP: 0.05
Pump Type: Submersible
Pump Capacity: 10.00 GPM
Id of Well:

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Pro-Source
Model Number: PT-4202

Formation Description	Thickness	Depth to Bottom

Geology Remarks:

Contractor Type: Pump Installer
Registration Number: 2362
Business Name: Murph's Pumps Inc.
Business Address: 4601 Page Ave, Michigan Center MI

WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

12/23/2002 14:02

GEOLOGICAL SURVEY SAMPLE No. JUN 2 8 1982

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

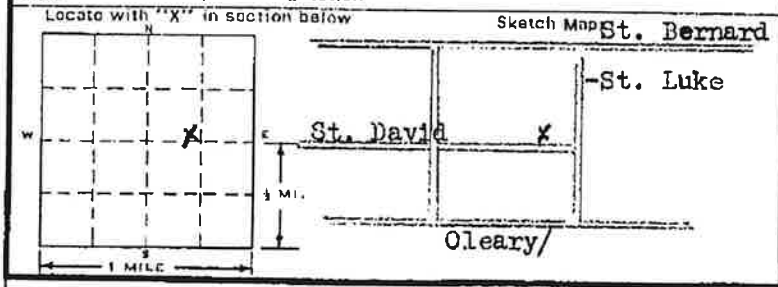
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	SE¼ SW ¼ NE ¼	24	T2S N/S.	R1W E/W.

Distance And Direction from Road Intersections: 100 yds W St. Luke & St. David, 1/8 mi N Oleary

Street address & City of Well Location: 2450 St. David

Locate with "X" in section below



3 OWNER OF WELL: Richard Graves

Address: 2455 St. Bernard, Jackson, Michigan 49201

4 WELL DEPTH: (completed) 65 ft. Date of Completion: 8/31/81

5 [X] Cable tool [ ] Rotary [ ] Driven [ ] Dug [ ] Hollow rod [ ] Jetted [ ] Bored [ ] ____

6 USE: [X] Domestic [ ] Public Supply [ ] Industry [ ] Irrigation [ ] Air Conditioning [ ] Commercial [ ] Test Well [ ] ____

7 CASING: Threaded [X] Welded [ ] Diam. 4 in. to 53 ft. Depth; ____ in. to ____ ft. Depth. Height: Above Surface 1 ft. Weight 11 lbs./ft. Drive Shoe? Yes [X] No [ ]

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Hard, hard gravel	40	40
Gravel, little clay	11	51
Sandstone and clay	14	65

8 SCREEN: Type: ____ Dia.: ____ Slot/Gauze ____ Length ____ Set between ____ ft. and ____ ft. Fittings:

9 STATIC WATER LEVEL: 17 ft. below land surface

10 PUMPING LEVEL below land surface: 21 ft. after 2 hrs. pumping 20 g.p.m.; ____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ____ Chlorides (Cl) ____ Hardness ____ Other ____

12 WELL HEAD COMPLETION: [ ] In Approved Pit [ ] Pitless Adaptor [X] 12" Above Grade

13 Well Grouted? [ ] Yes [X] No [ ] Neat Cement [ ] Bentonite [ ] ____ Depth: From ____ ft. to ____ ft.

14 Nearest Source of possible contamination: 75 feet W Direction S tank Type. Well disinfected upon completion [ ] Yes [X] No

15 PUMP: [X] Not installed. Manufacturer's Name ____ Model Number ____ HP ____ Volts ____ Length of Drop Pipe ____ ft. capacity ____ G.P.M. Type: [ ] Submersible [ ] Jet [ ] Reciprocating

ADDED INFO BY DRILLER, ITEM NO.
*CORRECTED BY
**ADDITION BY
ELEVATION
DEPTH TO ROCK
USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

Permit 8075

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Fox Brothers Drillers, Inc. (REGISTERED BUSINESS NAME) 167 (REGISTRATION NO.)

Address 6655 Brooklyn Rd., Jackson, Michigan 49201

Signed Marina L. Metcalfe (AUTHORIZED REPRESENTATIVE) Date 9/18/81

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER

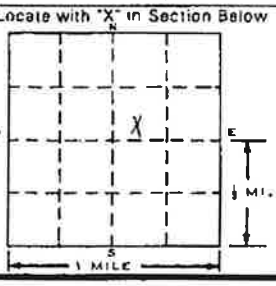
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
JACKSON	BLACKMAN	SW¼ S ½ NE¼	24	2 N/S	1 E/W

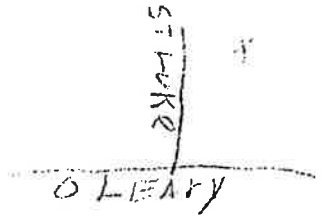
Distance And Direction From Road Intersection
350' North of OLEARY Rd AND 25' EAST of ST LUKE

Street Address & City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL:

John Baker
Address ST Luke
JACKSON, Mich
Address Same As Well Location? ☒ Yes ☐ No

4 WELL DEPTH: (completed)

150 ft.

Date of Completion

5

☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Auger ☐ Jetted ☐ ____

6 USE:

☒ Domestic ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat pump
☐ Test Well ☐ Type IIb Public ☐ ____

7 CASING:

Diameter ☐ Steel ☐ Threaded
☒ Plastic ☐ Welded
5 in. to 105 ft. depth
____ in. to ____ ft. depth
Grouted? Drill Hole Diameter
7½ in. to 105 ft. depth
____ in. to ____ ft. depth

Height: Above/Below
Surface 1 ft.
Weight 2.70 lbs./ft.
Drive Shoe ☒ Yes ☐ No

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
SAND Clay	6	6
Gravel	13	19
Gray Clay	28	47
SAND & Gravel Mix	17	64
Gray Clay	24	88
COAL	13	101
Lime Rock	36	137
Blue SAND Rock	13	150

8 SCREEN:

☒ Not Installed
Type ____ Diameter ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft.
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen ____ ft. Other ____

9 STATIC WATER LEVEL:

62 ft. below land surface ☐ Flow

10 PUMPING LEVEL: below land surface

____ ft. after ____ hrs. pumping at ____ G.P.M.
____ ft. after ____ hrs. pumping at ____ G.P.M.

11 WELL HEAD COMPLETION:

☒ Pitless adapter ☒ 12" above grade
☐ Basement offset ☐ Approved pit

12 WELL GROUTED?

☐ No ☒ Yes From Top to 105 ft
☐ Neat cement ☒ Bentonite ☐ Other ____
No. of bags of cement ____ Additives ____

13 Nearest source of possible contamination

Type ST Distance 50 ft. Direction W
Well disinfected upon completion? ☒ Yes ☐ No

14 PUMP:

☐ Not Installed ☐ Pump Installation Only
Manufacturer's name Red Jacket
Model number BC 112 HP 1/2 Volts 230
Length of Drop Pipe ____ ft. capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet ____
PRESSURE TANK:
Manufacturer's name ____
Model number WX 202 Capacity 4 Gallons

RECEIVED
Dept. of Public Health
JAN 2 - 1989
Environmental Health

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.

OK MCC 1-25 89

16 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Charles Washburn W.D. 1944
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 508 Pershing JXN
Signed ____ Date ____
AUTHORIZED REPRESENTATIVE

D67d 2/84

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 1C-415

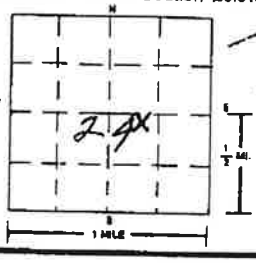
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	SE 1/4 SW 1/4 NW 1/4	24	3 - S	1 - W

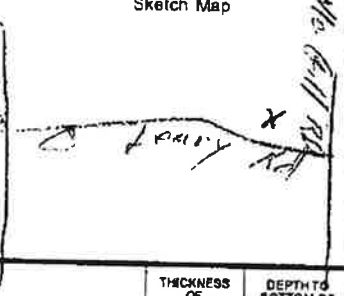
Distance and Direction from Road Intersection: ¼ mile West of McRoll Rd

Street Address & City of Well Location:

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: NORMAN TRAI
2300 O'LEARY
Address Same as Well Location ☒ Yes ☐ No

4. WELL DEPTH: 165 ft. | Date Completed: 7/12/95 | ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☒ Welded ☐ Other _____
Diameter: 5 in. to 75 ft. depth; _____ in. to _____ ft. depth
Height: Above/Below Surface: 2 ft
Weight: 200 lbs./ft.
BORE HOLE: Diameter: 8 in. to 75 ft. depth; _____ in. to _____ ft. depth
☐ Drive Shoe ☒ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check ☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL: 32 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
37 ft. After 3 hrs. Pumping at 40 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☒ Pitless Adapter ☒ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 75 ft.
☐ Neat Cement ☒ Bentonite ☐ Other _____
No. of Bags 5 BARA-RA Additives SUPER MUD

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type Septic Distance 100 ft. Direction N/E
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name Weltex
Model Number _____ HP ½ Volts 230
Length of Drop Pipe 60 ft. Capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name Hydro-Pro
Model Number 20Z Capacity 4.2 Gallons

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
Sand	20	20
Sand & Gravel	20	40
Clay	30	70
Lime Stone	30	100
Shale	40	140
Sand & Rock	25	165

USE A 2ND SHEET IF NEEDED

FEB 22 1996
JACKSON COUNTY

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter 3 in. Depth 65 ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☒ Bentonite Chips
No. of Bags 3 Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name _____

GW-2-228 6/93

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME _____ REGISTRATION NO. _____
Address _____
Signed _____ Date _____
AUTHORIZED REPRESENTATIVE

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY SAMPLE No. [ ]

JAN 10 1979

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

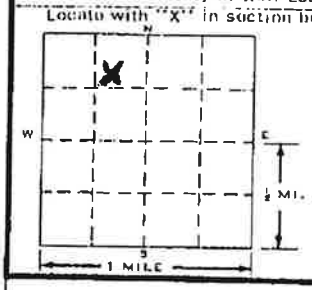
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	¼ ¼ ¼	24	T2S N/S.	R1W E/W.

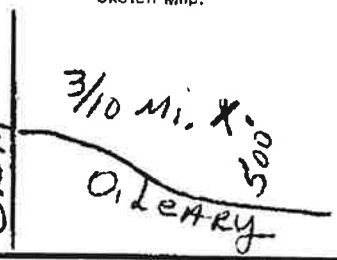
Distance And Direction from Road Intersections
500' north of O'Leary
3/10 mile east of Elm

Street address & City of Well Location

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL: Frank Lininger
Address 746 Fields Rd.
Dansville, Mich. 48819

4 WELL DEPTH: (completed) 70 ft. Date of Completion 8/28/78

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐

7 CASING: Threaded ☒ Welded ☐ Height: Above ~~Below~~ Surface 17" X.
4 in. to 46 ft. Depth Weight 11 lbs./ft.
___ in. to ___ ft. Depth Drive Shoe? Yes ☒ No ☐

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
brown sandy clay & gravel	5 ft	5
gravel	10	15
heavy gravel & stones	21	36
sandstone, shale & lime	34	70

8 SCREEN:
Type: ___ Dia.: ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
Fittings:

9 STATIC WATER LEVEL
12 ft. below land surface

10 PUMPING LEVEL below land surface
30 ft. after ___ hrs. pumping 30 G.P.M.
___ ft. after ___ hrs. pumping ___ G.P.M.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) ___ Chlorides (Cl) ___
Hardness ___ Other ___

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No
☐ Neat Cement ☒ Bentonite ☐ ___
Depth: From ___ ft. to ___ ft.

14 Nearest Source of possible contamination
___ feet ___ Direction ___ Type
Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☒ Not installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. capacity ___ G.P.M.
Type: ☐ Submersible ☐ Jet ☐ Reciprocating

ADDED INFO BY DRILLER, ITEM NO. 2
*CORRECTED BY
**ADDITION BY USE BACK OR EXTRA SHEET IF NEEDED

16 REMARKS: elevation, source of data, etc.
DEPTH TO ROCK [redacted]
permit #5994

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart WELL DRilling Co. (REGISTERED BUSINESS NAME) 522 (REGISTRATION NO.)

Address 1154 S. Jefferson Mason, Mich. 48854

Signed S. W. Hart (AUTHORIZED REPRESENTATIVE) Date 9/2/78

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY SAMPLE No. ☐

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

County	Twp.	Fraction	Section No.	Town	Range
Jackson	Blackman	SW ¼ NW ¼ SW ¼	21	2 ☐ N. ☒ S.	1 ☒ E. ☐ W.

Distance And Direction from Road Intersections: ½ mi N of hwy 94, bypass

Street address & City of Well Location: New church? Big Mound Jackson

OWNER No. ☐

3 OWNER OF WELL: Rev Phelps Anthony

Address: Loomis Park Baptist church 234 Orange st

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Clay, and sand gravel in layers	95	95
Hardpan of gravel and	124	124
Lime rock	32	154
shale	87	195
sandrock	30	225

4 WELL DEPTH: (completed) 225 ft. Date of Completion 12-27-66

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ___

6 USE: ☐ Domestic ☒ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ___

7 CASING: Diam. 4 in. to 124 ft. Depth; Threaded ☐ Welded ☐; Height: Above/~~Below~~ surface 1 ft.; Weight 11 lbs/ft.; ___ in. to ___ ft. Depth; Drive Shoe? Yes ☒ No ☐

8 SCREEN: Type: ___ Dia.: ___ Slot/Gauze ___ Length ___ Set between ___ ft. and ___ ft. Fittings: ___

9 STATIC WATER LEVEL 55 ft. below land surface

10 PUMPING LEVEL below land surface 55 ft. after ___ hrs. pumping ___ g.p.m.; ___ ft. after ___ hrs. pumping ___ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ___ Chlorides (Cl) ___ Hardness ___

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adaptor ☐ 12" Above Grade

13 GROUTING: Well Grouted? ☒ Yes ☐ No; Material: ☒ Neat Cement ☐ ___; Depth: From 0 ft. to 124 ft.

14 SANITARY: Nearest Source of possible contamination ___ 150 feet S Direction Gilbert Creek Type; Well disinfected upon completion ☐ Yes ☒ No

15 PUMP: Manufacturer's Name ___ Model Number ___ HP ___ Length of Drop Pipe ___ ft. capacity ___ G.P.M. Type: ☐ Submersible ☐ ___ ☒ Jet ☐ Reciprocating

16 Remarks, elevation, source of data, etc.

ADDED INFO. BY DRILLER, ITEM NO.

*CORRECTED BY

**ADDITION BY

17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Washburn Well Drilling — REGISTERED BUSINESS NAME — 2495 — REGISTRATION NO.

Address 548 Parkhampton Jackson

Signed V. Washburn — AUTHORIZED REPRESENTATIVE — Date 3-28-67

D67D 100M 6-66

APR 5 1967

GEOLOGICAL SURVEY COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 3922

1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	SW 1/4 NW 1/4 SW 1/4	24	2S	1W

Distance and Direction from Road Intersection: 3/10 mile North of Seymour Rd

Street Address & City of Well Location

Locate with 'x' in Section Below

Sketch Map: N. Elm Rd; Seymour Rd; N

3. OWNER OF WELL: Loomis Park Baptist Church
Address: 2301 N. Elm Rd, Jackson, Mi 49201
Address Same as Well Location ☒ Yes ☐ No

4. WELL DEPTH: 218 ft. Date Completed 11/13/97 ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ ____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☒ Type IIb Public ☐ ____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded ☐ Other ____
Diameter: 5 in. to 100 ft. depth; ____ in. to ____ ft. depth
BORE HOLE: Diameter: 8 in. to 100 ft. depth; ____ in. to ____ ft. depth
Height: Above/~~Below~~ Surface: 1 ft
Weight: SDR 21 lbs./ft.
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel Packed
Type ____ Diameter ____
Slot/Gauze ____ Length ____
Set Between ____ ft. and ____ ft.
FITTINGS: ☐ K-Packer ☐ Plumber Check ☐ Blank Above Screen ____ ft. ☐ Other ____

9. STATIC WATER LEVEL: 73 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
95 ft. After 2 hrs. Pumping at 50 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☒ Pitless Adapter ☒ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 100 ft.
☐ Neat Cement ☒ Bentonite ☐ Other ____
No. of Bags 4 1/2 Additives 1 1/2 gt. E-Z mud

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type Sewer line Distance 75+ ft. Direction West
Type ____ Distance ____ ft. Direction ____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name ~~Berkley~~ Gould
Model Number ____ HP 1 1/2 Volts 230
Length of Drop Pipe 95 ft. Capacity 30 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other ____
PRESSURE TANK:
Manufacturer's Name Well-Rite
Model Number WR20 Capacity ____ Gallons 26

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Clay, brn	2	2
Clay & gravel, brn	8	10
Gravel, brn	7	17
Clay & gravel, brn	4	21
Sand, brn	10	31
Sand & gravel, gray	13	44
Gravel, gray	7	51
Gravel & clay, gray	6	57
Sandstone, gray	2	59
Gravel & clay, gray	8	67
Limestone, gray	2	69
Gravel, sandstone, & lime, gray	4	73
Sandstone w/shale strips, gray	55	128
Sandstone, gray	90	218

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☒ Yes ☐ No
Casing Diameter 4 in. Depth ____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags ____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
Old well plugged by R.M. Brewer Well Drilling Co., Parma

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Bill & Dave Weber

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Bear Well Drilling Co. 38-1529
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 8301 Dixon Rd Rives Jct.
Signed William Weber AUTHORIZED REPRESENTATIVE Date 12/3/97

JACKSON COUNTY HEALTH DEPT RECEIVED JAN 05 1998

GW-2-226 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 38000000955 Failure to comply is a misdemeanor. **Import ID:** 38720124301

Tax No:	Permit No:	County: Jackson	Township: Blackman

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ NW¼ NW¼	24	02S 01W		6370

Well ID: 38000000955

Elevation: 924 ft

Latitude: 42.291967

Longitude: -84.376293

Distance and Direction from Road Intersection: WSSN# 06370

Well Name: SPSM WELL #3

Well Owner: State Of Michigan, Dmb

Well Address: SPSM WELL #3 JACKSON MI

Owner Address: 131 STEVENS MASON BUILDING LANSING MI 48909

Drilling Method: Other

Well Depth: 352.00 ft. **Well Use:** Type I public

Well Type: New **Date Completed:** 1/17/1956

Casing Type: Unknown
Casing Joint: Unknown
Diameter: 12.00 in. to 103.00 ft. depth

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 0.00 ft. above grade
Casing Fitting: None

Static Water Level: 72.00 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:
55.00 ft. after 8.00 hrs. pumping at 520.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: Yes **Well Intake:**
Filter Packed: No
Screen Diameter: 12.00 in. **Length:** 0.00 ft.
Screen Material Type:
Slot: 0.00 in. Set Between 0.00 ft. and 0.00 ft.
Blank: 0.00 ft. Above
Fittings:
None

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: **Additives:** None
Grouting Materials:
Unknown From 0.00 ft. to 0.00 ft.

Well Head Completion: 12 inches above grade, Other

Nearest source of possible contamination:

Type	Distance	Direction
Unknown	0.00 ft.	
Unknown		

Drilling Machine Operator Name: T.R. BREWER

Employment: Unknown

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:**
Manufacturer: Other **Pump Type:** Submersible
Model Number: **Pump Capacity:** 0.00 GPM
Length of Drop Pipe: 0.00 ft. **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Gravel & Clay	15.00	15.00
Sand	3.00	18.00
Brown-Clay	35.00	53.00
Red-Clay	31.00	84.00
Sand-Wet/Moist	8.00	92.00
Sandstone-Soft	6.00	98.00
Sandstone-Hard	18.00	116.00
Shale-Hard	35.00	151.00
Sandstone	5.00	156.00
Shale-Soft	3.00	159.00
Sandstone	120.00	279.00
Shale	2.00	281.00
Sandstone	71.00	352.00

Geology Remarks: 1. [GRAVEL & CLAY] [15] [15] 2. [SAND] [18] [3] 3. [BROWN CLAY] [53] [35] 4. [REDISH GRAY CLAY] [84] [31] 5. [MUDDY SAND] [92] [8] 6. [SOFT SANDROCK] [98] [6] 7. [HARD SANDROCK] [116] [18] 8. [HARD LAYERS OF SHALE] [151] [35] 9. [SANDROCK] [156] [5] 10. [SOFT SHALE] [159] [3] 11. [SANDROCK] [279] [120] 12. [SHALE] [281] [2] 13. [SANDROCK] [352] [71]

Contractor Type: Unknown
Registration Number:
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks: WELL IS LISTED ON LOG AS DRILLED;

OTHER REMARKS **Drilling Method:** Drilling Method unknown **Well Head Completion:** 12 inch Above Grade **Pump Manufacturer:** Pump Manufacturer unknown

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:50

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PART 127 ACT 368, P.A. 1978

PERMIT NUMBER

1 LOCATION OF WELL

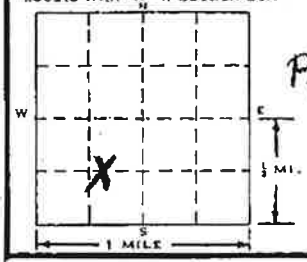
County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	¼ ¼ ¼	13	T2S N/S	R1W E/W

Distance And Direction From Road Intersection

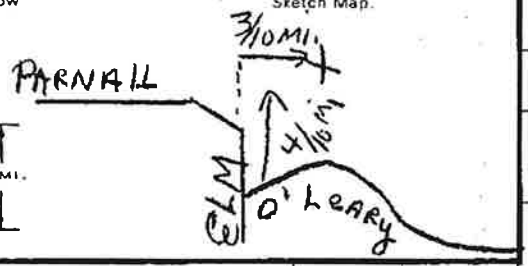
3/10 mile east of Elm
4/10 mile north of O'Leary

Street Address & City of Wall Location

Locate with "X" in Section Below



Sketch Map



3 OWNER OF WELL

Address: State of Michigan
Dept. of Management & Budget
131 Stevens St. Mason Building
Lansing, MI 48909 P.O. Box 30026

Address Same As Well Location? ☐ Yes ☒ No

4 WELL DEPTH: (completed)

399 ft.

Date of Completion: 6-18-85

5

☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Auger ☐ Jetted ☐

6 USE

☐ Domestic ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat pump
☒ Test Well ☐ Type IIb Public ☐

7 CASING

Diameter: ☒ Steel ☒ Threaded ☐ Plastic ☐ Welded
6 in. to 60.5 ft. depth
___ in. to ___ ft. depth
Grouted Drill Hole Diameter
9 7/8 to 58 ft. depth
___ in. to ___ ft. depth

Height Above Surface: 2.5 ft
Weight: 19 lbs./ft
Drive Shoe: ☒ Yes ☐ No

8 SCREEN

☒ Not Installed
Type ___ Diameter ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen ___ ft. Other ___

9 STATIC WATER LEVEL

29.8 ft. below land surface ☐ Flow

10 PUMPING LEVEL below land surface

79 ft. after 24 hrs. pumping at 300 G.P.M.
___ ft. after ___ hrs. pumping at ___ G.P.M.

11 WELL HEAD COMPLETION

☐ Pitless adapter ☒ 12" above grade
☐ Basement offset ☐ Approved pit

12 WELL GROUTED?

☐ No ☒ Yes From ___ to ___ ft.
☐ Neat cement ☒ Bentonite ☐ Other ___
No. of bags of cement ___ Additives ___

13 Nearest source of possible contamination

Type ___ Distance ___ ft. Direction ___
Well disinfected upon completion? ☒ Yes ☐ No

14 PUMP

☒ Not Installed ☐ Pump Installation Only
Manufacturer's name ___
Model number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. capacity ___ G.P.M.
TYPE: ☐ Submersible ☐ Jet ___
PRESSURE TANK:
Manufacturer's name ___
Model number ___ Capacity ___ Gallons

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sandy Loom	2	2
Brown Sand, Clay & Gravel	8	10
Sand & Gravel	7	17
Clay, Gray, Sandy, & Gravely	12	29
Sand, Gravel & Stones w/Gray Clay	12	41
Hard Gray Sandstone	2	43
Gray Sandstone & Shale & Gravel	4	47
Gray Sandstone, Lt Gray Shale	9	56
Hard Sandstone	4	60
Gray Shale & Sandstone	6	66
Limestone	2	68
Gray Sandstone w/Gray Shale streaks	18	86
Limestone, Gray Sandstone & Shale	14	100
Shale & Gray Sandstone streaks	14	114
Gray Sandstone	39	153
Gray Sandstone w/small strips of Shale	9	162
Bluish Gray Sandstone	11	173
Hard Gray Sandstone	4	177
Bluish Gray Sandstone	26	203
Lt Gray Sandstone	20	223
Bluish Gray Sandstone	63	280
Sandstone	119	399

USE A 2ND SHEET IF NEEDED

RECEIVED
Mich. Dept. of Public Health
JUL 24 1985

15 Remarks, elevation, source of data, etc.

test well #C Bureau of Environmental and Occupational Health - CWQS
Jackson Regional Correctional Facility

16. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well DRilling Company 522
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 1154 S. Jefferson St. Mason, MI 48854

Signed S. W. Hart Date 7-9-85
AUTHORIZED REPRESENTATIVE

D67d (Rev 10-80)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY NO

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER

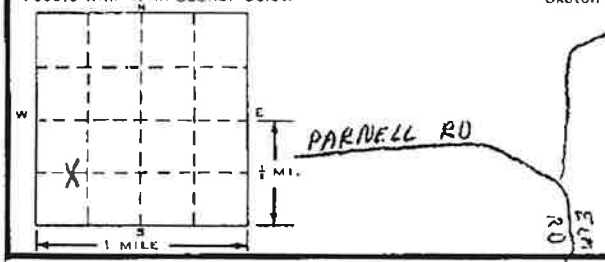
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	¼ ¼ ¼	13	T2S N/S	R1W E/W

Distance And Direction From Road Intersection
1300' north of Parnell Road
900' east of Elm Road

Street Address & City of Well Location

Locate with "X" in Section Below



3 OWNER OF WELL:
State Prison of Southern Mich.
Address 4000 Cooper Street
Jackson, Mi. 49201
Address Same As Well Location? XX Yes ☐ No

4 WELL DEPTH: 439 FT. | Date Completed MO 6 DAY 3 YEAR 93 | ☐ New Well XX Replacement Well

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Auger ☐ Jetted ☐

6 USE ☐ Domestic ☒ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public ☐

7 CASING: Diameter ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded
12 in. to 80 ft. depth
20 in. to 40 ft. depth
Grouted Drill Hole Diameter
17½ in. to 78'6" ft. depth
24 in. to ____ ft. depth
Height Above/Below Surface 18" ft
Weight 49.56 lbs./ft
Drive Shoe ☒ Yes ☐ No

8 SCREEN: ☒ Not Installed
Type ____ Diameter ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft.
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bremer Check ☐ Blank above screen ____ ft. Other ____

9 STATIC WATER LEVEL
33.44 ft. below land surface ☐ Flow

10 PUMPING LEVEL: below land surface
157 ft. after 72 hrs. pumping at 1002 G.P.M
____ ft. after ____ hrs. pumping at ____ G.P.M

11 WELL HEAD COMPLETION ☐ Pitless adapter ☒ 12" above grade ☐ Basement offset ☐ Approved pit

12 WELL GROUTED? ☐ No ☒ Yes From 80 to surface
☒ Neat cement ☐ Bentonite ☐ Other ____
No. of bags of cement 105 Additives ____

13 Nearest source of possible contamination
Type ____ Distance ____ ft. Direction ____
Well disinfected upon completion? XX Yes ☐ No
Was old well plugged? XX Yes ☐ No

14 PUMP ☐ Not Installed ☐ Pump Installation Only
Manufacturer's name Goulds
Model number 11CHC HP 60 Volts 480
Length of Drop Pipe 180 ft. capacity 1000 G.P.M
TYPE: ☐ Submersible ☐ Jet line shaft turbine
PRESSURE TANK:
Manufacturer's name ____
Model number ____ Capacity ____ Gallons

2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand / Brown Clay / Cobbles	4	4
Brown Clay / Cobbles / Gravel - mix	13	17
Gravel - med / Sand / Cobbles	15	32
Gray Clay - smooth-sandy	17	49
Gravel - med	2	51
Gray Clay - smooth	5	56
Sandstone - gray/white	11	67
Brown Limestone / Sandstone -green	14	81
Gray Green Shale / Sandstone pieces	34	115
White-Gray Sandstone	48	163
Gray Shale	6	169
Gray Sandstone	262	431
Black Shale / Sandstone	8	439

USE A 2ND SHEET IF NEEDED

RECEIVED
Mich. Dept. of Public Health
AUG 16 1993
BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH-GWQS

15. Remarks, elevation, source of data, etc.

17. Rig Operator's Name
Chris Fell

16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company 1686
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 1154 S. Jefferson St. Mason, MI 48854
Signed David W. Hart AUTHORIZED REPRESENTATIVE Date 8/9/93

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

D67d 2/00

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY SAMPLE No.

MAR 30 1984

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

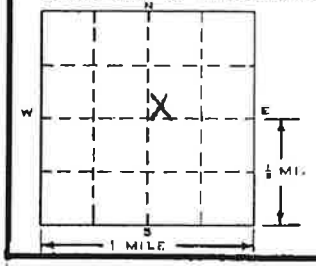
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
JACKSON	LEONI	NE ¼ SW ¼ SW ¼	18	T2 S	R1 E

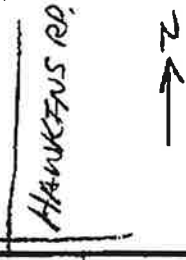
Distance And Direction from Road Intersections: APPROX. 100 YDS NORTH OF TRUMBLE & 0.4 MILE WEST OF INTERSECTION OF HAWKINS

Street address & City of Wall Location: ACROSS from 4201 Trumble

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL: E.O. SAGNER

Address 1417 Ringle ~~Trumble Rd~~ Jackson, MI.

4 WELL DEPTH: (completed) 171 ft. Date of Completion JUNE 30, 1983

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☐ Welded ☒ Diam. PVC 5 in. to 104 ft. Depth; ____ in. to ____ ft. Depth

Height: Above/~~Below~~ Surface 1 ft. SHALE PACKER

Weight ____ lbs./ft. ~~Drive Shoe?~~ Yes ☒ No ☐

8 SCREEN:

Type: ____ Dia.: ____

Slot/Gauze ____ Length ____

Set between ____ ft. and ____ ft.

Fittings:

9 STATIC WATER LEVEL 15 ft. below land surface

10 PUMPING LEVEL below land surface

95 ft. after 1 hrs. pumping 20 g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) ____ Chlorides (Cl) ____

Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☒ Bentonite ☐ ____

Depth: From 6 ft. to 104 ft.

14 Nearest Source of possible contamination

300+ feet SOUTH Direction SEPTIC TANK Type

Well disinfected upon completion? ☒ Yes ☐ No

15 PUMP: ☒ Not Installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of Drop Pipe ____ ft. capacity ____ G.P.M.

Type: ☐ Submersible ☐ Jet ☐ Reciprocating

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	11	11
BROWN SAND	46	57
BROWN SAND & GRAVEL	45	102
GRAY SANDSTONE, SHALE	69	171

ADDED INFO BY DRILLER, ITEM NO.

*CORRECTED BY

**ADDITION BY

ELEVATION

DEPTH TO ROCK

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

Jackson County Health Dept. Permit #8604

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

BEAR WELL DRILLING 1529

REGISTERED BUSINESS NAME REGISTRATION NO.

Address 614 UNION ST., JACKSON

Signed William Weber Date 1/7/84

AUTHORIZED REPRESENTATIVE

D67d 100M (Rev. 12-66)

GEOLOGICAL SURVEY COPY

LOGICAL SURVEY NO. [ ]

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT [ ][ ][ ][ ][ ][ ]

TION OF WELL

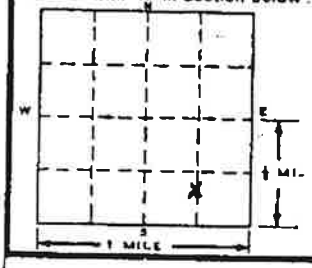
Township Name	Fraction	Section Number	Town Number
Jackson / Leoni	SW¼ NE¼ SW¼	15	2 N

Distance And Direction From Road Intersection

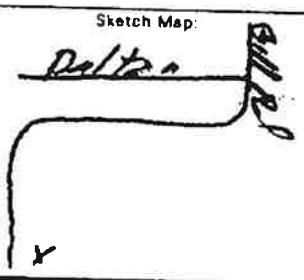
¼ East of Dalton & Bill Rd

Street Address & City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL: City - County

Address

Address Same As Well Location? ☐ Yes ☒ No

4 WELL DEPTH: (completed) 225 ft. | Date of Completion Sept. 1 - 82

5 ☐ Cable tool ☐ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Auger ☐ Jetted ☐

6 USE: ☐ Domestic ☐ Type I Public ☒ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat pump
☐ Test Well ☐ Type IIb Public ☐

7 CASING: Diameter ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Grouted Drill Hole Diameter
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 1 ft.
Weight 200 lbs. PVC
Drive Shoe ☐ Yes ☐ No

8 SCREEN: ☒ Not Installed
Type ____ Diameter ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft.
FITTINGS. ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen ____ ft. Other ____

9 STATIC WATER LEVEL:
13 ft. below land surface ☐ Flow

10 PUMPING LEVEL below land surface
35 ft. after 5 hrs pumping at 200 G.P.M.
____ ft. after ____ hrs pumping at ____ G.P.M.

11 WELL HEAD COMPLETION: ☒ Pitless adapter ☐ 12" above grade ☐ Basement offset ☐ Approved pit

12 WELL GROUTED? ☐ No ☒ Yes From 0 to 120 ft.
☐ Neat cement ☒ Bentonite ☐ Other ____
No. of bags of cement ____ Additives ____

13 Nearest source of possible contamination
Type Pump Distance 20 ft. Direction N
Well disinfected upon completion? ☒ Yes ☐ No

14 PUMP ☐ Not Installed ☐ Pump Installation Only
Manufacturer's name Burks
Model number 5119F HP 3 Volts 230
Length of Drop Pipe 65 ft. capacity 65 G.P.M.
TYPE ☒ Submersible ☐ Jet ____
PRESSURE TANK
Manufacturer's name Not Installed
Model number ____ Capacity ____ Gallons

2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sandy Clay	84	84
Shale – Dry	36	120
Lime & Shale	65	185
Sand Rock	40	225

USE A 2ND SHEET IF NEEDED

15 Remarks, elevation, source of data, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Washburn Well Drilling — REGISTERED BUSINESS NAME — 1150 — REGISTRATION NO.

Address 548 Perkins Jackson Mi.

Signed John A. Washburn — AUTHORIZED REPRESENTATIVE — Date 11-4-84

D67d 2/84

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

LOCAL HEALTH DEPT. COPY

GEOLOGICAL SURVEY SAMPLE No.

JAN 29 1973

18-1

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	~~SW¼~~ SE¼ SW¼	18	2 ~~N~~ S.	1 ~~E~~/W

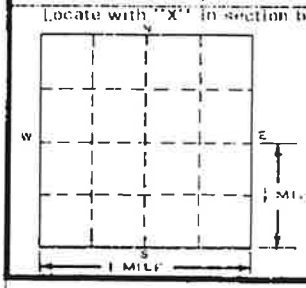
Distance And Direction from Road Intersections

½ Mi. N. of Seymour on Dalton on W. Side

Street address & City of Well Location

Locate with "X" in section below

Sketch Map:



3 OWNER OF WELL:

Address Ch. Goostry
2511 Dan
Jackson

4 WELL DEPTH: (completed) 43 ft. **Date of Completion** 12-4-72

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐

7 CASING: Threaded ☐ Welded ☒ Diam. 4 in. to 40 ft. Depth; ____ in. to ____ ft. Depth

Height: Above/~~Below~~ Surface 1 ft.; Weight 11 lbs./ft.; Drive Shoe? Yes ☒ No ☐

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Clay	30	30
Shale, Sand Rock	10	40
Lime Rock, Sand Rock	3	43

USE A 2ND SHEET IF NEEDED

8 SCREEN:

Type: _____ Dia.: _____

Slot/Gauze _____ Length _____

Set between _____ ft. and _____ ft.

Fittings:

9 STATIC WATER LEVEL

30 ft. below land surface

10 PUMPING LEVEL below land surface

40 ft. after 1 hrs. pumping 20 g.p.m.

_____ ft. after ___ hrs. pumping _____ g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) _____ Chlorides (Cl) _____

Hardness _____ Other _____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☒ Bentonite ☐ _____

Depth: From _____ ft. to _____ ft.

14 Nearest Source of possible contamination

_____ feet _____ Direction _____ Type

Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☐ Not installed

Manufacturer's Name _____

Model Number _____ HP ___ Volts _____

Length of Drop Pipe _____ ft. capacity _____ G.P.M.

Type: ☐ Submersible ☐ Jet ☐ Reciprocating

16 Remarks, elevation, source of data, etc.

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

LJT Rotary Well Drilling Inc. 1077
REGISTERED BUSINESS NAME REGISTRATION NO.

Address Rt 2 Charlotte

Signed _____ Date 1-20-73
AUTHORIZED REPRESENTATIVE

367d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

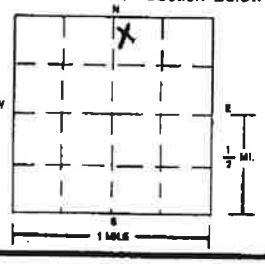
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
JACKSON	LEONI	NW 1/4 NW 1/4 NE 1/4	10	T2S	R1E

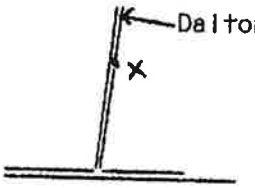
Distance and Direction from Road Intersection
4/10 mi N Seymour Rd & Dalton Rd

527 Dalton Road
Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Jack Potter
3701 St Anne
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: 31 ft. | Date Completed 1/20/95 | ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat Pump
☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded
☒ Plastic ☐ Welded
☐ Other glued
Diameter: 5 in. to 28 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: +XXX ft
Weight: 2 lbs./ft.

BORE HOLE:
Diameter: 8 in. to 28 ft. depth
_____ in. to _____ ft. depth
☒ Drive Shoe
☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	11	11
Clay	14	25
Gravel and sand	9	34

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☐ Not Installed ☐ Gravel-Packed
Type stainless Diameter 4"
Slot/Gauze .012 Length: 4'
Set Between 28 ft. and 31 ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☒ Blank Above Screen 1.5 ft. Other _____

9. STATIC WATER LEVEL:
2 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
3 ft. After 1 hrs. Pumping at 20 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☒ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 27 ft.
☐ Neat Cement ☒ Bentonite ☐ Other _____
No. of Bags 2 Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type s tank Distance 60 ft. Direction NE
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name StaRite
Model Number 10SP4C02J HP 1/2 Volts 220
Length of Drop Pipe 10 ft. Capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name WellMate
Model Number WM-6 Capacity 5+ Gallons old

15. ABANDONED WELL PLUGGED? ☒ Yes ☐ No
Casing Diameter 4" in. Depth _____ ft.
PLUGGING MATERIAL:
☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☒ Bentonite Chips
No. of Bags 2 Casing Removed? ☐ Yes ☒ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name MWilson/SDeland

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

FOX & BOLEY WELL DRILLING, INC. (REGISTERED BUSINESS NAME) 0167 (REGISTRATION NO)
Address 6655 Brooklyn Rd., Jackson, MI 49201
Signed Norma L Melville (AUTHORIZED REPRESENTATIVE) Date 1/23/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO. 0027

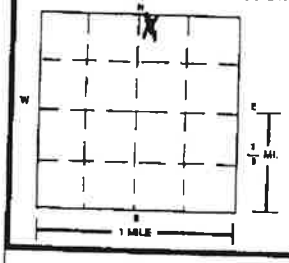
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Leoni	NW 1/4 NW 1/4 NE 1/4	19	2S	1E

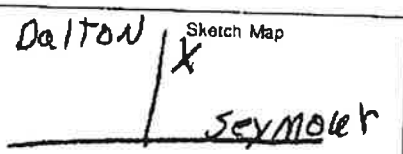
Distance and Direction from Road Intersection: 3/4 mi. N. of Seymour on E. side of Dalton

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Arland Nichols, 519 Dalton Rd, Jackson
Address Same as Well Location: [X] Yes [ ] No

4. WELL DEPTH: 185 ft. Date Completed: 10.5.94 [X] New Well [ ] Replacement Well

5. [ ] Cable Tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow Rod [ ] Auger/Bored [ ] Jetted [ ]

6. USE: [X] Household [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat Pump [ ] Test Well [ ] Type IIb Public [ ]

7. CASING: [ ] Steel [ ] Threaded [X] Plastic [ ] Welded [ ] Other
Diameter: 5 in. to 67 ft. depth; ___ in. to ___ ft. depth
Height: Above/~~Below~~ Surface: 1 ft
Weight: ___ lbs./ft.
BORE HOLE: Diameter: 7 7/8 in. to 67 ft. depth; ___ in. to ___ ft. depth
[ ] Drive Shoe [X] Shale Packer

8. SCREEN: [X] Not Installed [ ] Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length ___
Set Between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Bremer Check [ ] Blank Above Screen ___ ft. Other ___

9. STATIC WATER LEVEL: 29 ft. Below Land Surface [ ] Flowing

10. PUMPING LEVEL: Below Land Surface
185 ft. After 4 hrs. Pumping at 35 G.P.M.
[ ] Plunger [ ] Bailer [X] Air [ ] Test Pump

11. WELL HEAD COMPLETION:
[ ] Pitless Adapter [X] 12" Above Grade
[ ] Basement Offset [ ] Well House

12. WELL GROUTED? [ ] No [X] Yes From 0 to 67 ft.
[ ] Neat Cement [X] Bentonite [ ] Other
No. of Bags 7 Additives ___

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type Septic Distance 75 ft. Direction ___
Type ___ Distance ___ ft. Direction ___

2. FORMATION DESCRIPTION

	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	12	12
gravel	9	21
gray clay	3	24
gravel & blue shale	26	50
gray clay	8	58
gray sandrock	17	75
gray " 1st. of Lime	21	96
" " 1st. of shale	11	107
" shale 1st. of Lime	43	150
" Sandrock	35	185

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? [ ] Yes [ ] No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL
[ ] Cement/Bentonite Slurry [ ] Neat Cement [ ] Bentonite Slurry [ ] Concrete Grout [ ] Bentonite Chips
No. of Bags ___ Casing Removed? [ ] Yes [ ] No

16. REMARKS: (Elevation, Source of Data, etc.)

14. PUMP: [X] Not Installed [ ] Pump Installation Only
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. Capacity ___ G.P.M.
TYPE: [ ] Submersible [ ] Jet [ ] Other
PRESSURE TANK:
Manufacturer's Name ___
Model Number ___ Capacity ___ Gallons ___

17. DRILLING MACHINE OPERATOR:
[X] Employee [ ] Subcontractor
Name TERRY

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME: TERRY'S WELL SERVICE 23-2033 REGISTRATION NO.
Address: 2120 BELLEVUE HWY. OLIVET, MI
Signed: Terry Coods AUTHORIZED REPRESENTATIVE Date: 10-6-94

GW-2-228 9-93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY NO

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NUMBER 2198 X

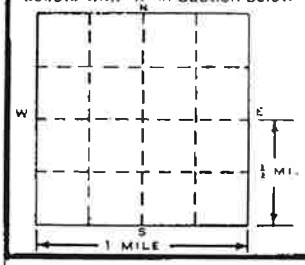
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
JACKSON	Leoni	1/4 1/4 1/4	19	T2 N/S	R1 E/W

Distance And Direction From Road Intersection

Street Address & City of Well Location

Locate with "X" in Section Below — Sketch Map:



3 OWNER OF WELL

Facis Bradley
Address 511 Dalton Rd
Jackson, MI. 49201
Address Same As Well Location? [X] Yes [ ] No

4 WELL DEPTH

158 FT. Date Completed MO 8 DAY 3 YEAR 89 [ ] New Well [X] Replacement Well

5

[ ] Cable tool [X] Rotary [ ] Driven [ ] Dug
[ ] Hollow rod [ ] Auger [ ] Jetted [ ]

6 USE

[X] Domestic [ ] Type I Public [ ] Type III Public
[ ] Irrigation [ ] Type IIa Public [ ] Heat pump
[ ] Test Well [ ] Type IIb Public [ ]

7 CASING

Diameter [ ] Steel [ ] Threaded
[X] Plastic [ ] Welded
5 in. to 67 ft. depth
___ in. to ___ ft. depth
Grouted Drill Hole Diameter
8 in. to 67 ft. depth
___ in. to ___ ft. depth

Height: Above/Below Surface 1 ft
Weight ___ lbs./ft.
SHALE PACKERS
Drive Shoe [ ] Yes [ ] No

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	4	4
ROCKS	2	6
BROWN CLAY	8	14
ROCKS	8	22
GRAY CLAY, ROCKS	14	36
GRAVEL, ROCKS	6	42
GRAVEL, GRAY CLAY	9	51
BROWN SANDSTONE	3	54
GRAY SANDSTONE (SOFT)	9	63
GRAY SANDSTONE	65	128
GRAY SHALE, LIMESTONE	20	148
GRAY SANDSTONE	10	158

CWK 1/25/90

RECEIVED Mich. Dept. of Public Health JAN 31 1990 BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

USE A 2ND SHEET IF NEEDED

8 SCREEN

[X] Not Installed
Type ___ Diameter ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Lead Packer [ ] Bromer Check
[ ] Blank above screen ___ ft. Other ___

9 STATIC WATER LEVEL

___ ft. below land surface [ ] Flow

10 PUMPING LEVEL below land surface

WATER
158 ft. after 2 hrs. pumping at 23 G.P.M.
___ ft. after ___ hrs. pumping at ___ G.P.M.

11 WELL HEAD COMPLETION

[X] Pitless adapter [X] 12" above grade
[ ] Basement offset [ ] Approved pit

12 WELL GROUTED?

[ ] No [X] Yes From 6 to 65 ft.
[ ] Neat cement [X] Bentonite [ ] Other ___
No. of bags of cement ___ Additives ___

13 Nearest source of possible contamination

Type SEPTIC TANK Distance 50 ft. Direction EAST
Well disinfected upon completion? [X] Yes [ ] No
Was old well plugged? [ ] Yes [ ] No

14 PUMP

[ ] Not Installed [ ] Pump Installation Only
Manufacturer's name F & W
Model number ___ HP 1/2 Volts ___
Length of Drop Pipe ___ ft. capacity 10 G.P.M.
TYPE: [X] Submersible [ ] Jet ___
PRESSURE TANK:
Manufacturer's name X-TROL
Model number 202 Capacity 6 Gallons

15. Remarks, elevation, source of data, etc.

RECEIVED JAN 31 1990 BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

16 WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

BEAR WELL DRILLING 1529
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 8201 DIXON RD, BROOKLYN
Signed William Weber Date 12/8/89
AUTHORIZED REPRESENTATIVE

17. Rig Operator's Name:

BILL - DAVE WEBER

D67d 2/89

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY COPY

30

GEOLOGICAL SURVEY SAMPLE No. [ ]

OCT 29 1973

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

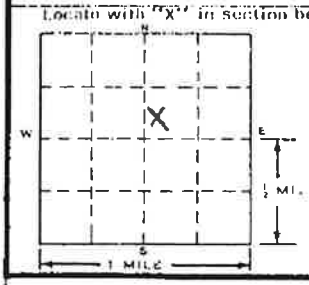
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	SW ¼ (SW) NE ¼	19	T2S N/S.	R1E E/W.

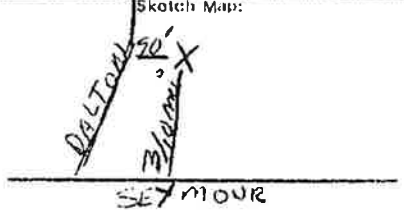
Distance And Direction from Road Intersections: 90' east of Dalton Rd. and 3/10 mile north of Seymour Ave.

Street address & City of Well Location: 431 Dalton, Jackson

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL:
Address: Norman Boucher, 348 Keith Dr., Jackson, Mi. 49201

4 WELL DEPTH: (completed) 215 ft. Date of Completion 8/22/73

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐

7 CASING: Threaded ☒ Welded ☐ Diam. black
4 in. to 77 ft. Depth
____ in. to ____ ft. Depth
Height: Above ~~Grade~~ Surface 1 ft.
Weight 11 lbs./ft.
Drive Shoe? Yes ☒ No ☐

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
red clay & gravel	27	27
gravel, sand, grey clay	36	63
limestone & white shale	4	67
sandstone & green shale	7	74
green sandstone	9	83
limestone & white shale	7	90
green sandstone & shale	6	96
limestone	17	113
grey shale & sandstone	5	118
limestone 6	6	124
limestone & green shale	7	131
limestone & grey shale	9	140
hard sandstone	11	151
sandstone & grey shale	6	157
limestone	4	161
sandstone & grey shale	28	189
sandstone	26	215

USE A 2ND SHEET IF NEEDED

8 SCREEN:
Type: ____ Dia.: ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft.
Fittings:

9 STATIC WATER LEVEL
42 ft. below land surface

10 PUMPING LEVEL below land surface
90 ft. after ___ hrs. pumping ~~80 w/air~~ g.p.m.
____ ft. after ___ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) ____ Chlorides (Cl) ____
Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adaptor ☐ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No
☐ Neat Cement ☒ Bentonite ☐ ____
Depth: From ____ ft. to ____ ft.

14 Nearest Source of possible contamination
~~55~~ feet ~~east~~ Direction ~~septic~~ Type
Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☐ Not installed
Manufacturer's Name ~~McDonald~~
Model Number ~~1605089~~ HP ~~1/2~~ Volts ~~230~~
Length of Drop Pipe ~~84~~ ft. capacity ~~12~~ G.P.M.
Type: ☒ Submersible ☐ Jet ☐ Reciprocating

16 Remarks, elevation, source of data, etc. Elev. 974.2 from USGS

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

UART WELL DRILLING COMPANY (REGISTERED BUSINESS NAME) 522 (REGISTRATION NO.)

Address ~~1154 S. Jefferson, Mason, Mi. 48854~~

Signed Eleanor Hart (AUTHORIZED REPRESENTATIVE) Date 8/31/73

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 1419

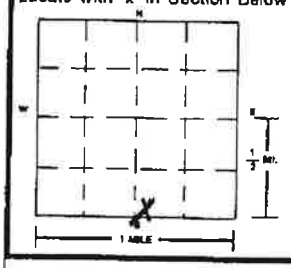
1. LOCATION OF WELL

County: Jackson | Township Name: LEONI | Fraction: SW1/4 SW1/4 SW1/4 | Section No.: 19 | Town No.: 2S | Range No.: 1E

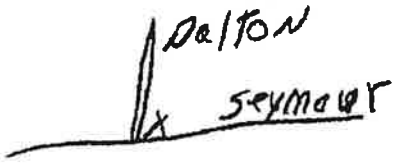
Distance and Direction from Road Intersection: NE. corner of Dalton & Seymour

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Richard Pluta, 3502 Seymour Rd, Jackson
Address Same as Well Location: [X] Yes [ ] No

4. WELL DEPTH: 64 ft. | Date Completed: 10/31/95 | [ ] New Well [X] Replacement Well

5. [ ] Cable Tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow Rod [ ] Auger/Bored [ ] Jetted [ ]

6. USE: [X] Household [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat Pump [ ] Test Well [ ] Type IIb Public [ ]

7. CASING: [ ] Steel [ ] Threaded [X] Plastic [ ] Welded [ ] Other
Diameter: 5 in. to 59 ft. depth; ___ in. to ___ ft. depth
Height: Above/Below Surface: 1 ft
Weight: ___ lbs./ft.
BORE HOLE: Diameter: 7 7/8 in. to 59 ft. depth; ___ in. to ___ ft. depth
[ ] Drive Shoe [X] Shale Packer

8. SCREEN: [X] Not Installed [ ] Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length: ___
Set Between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Bremer Check [ ] Blank Above Screen ___ ft. Other ___

9. STATIC WATER LEVEL: 10 ft. Below Land Surface [ ] Flowing

10. PUMPING LEVEL: Below Land Surface: 64 ft. After 2 hrs. Pumping at 50 G.P.M.
[ ] Plunger [ ] Bailer [X] Air [ ] Test Pump

11. WELL HEAD COMPLETION: [ ] Pitless Adaptor [X] 12" Above Grade [ ] Basement Offset [ ] Well House

12. WELL GROUTED? [ ] No [X] Yes From 0 to 59 ft.
[ ] Neat Cement [X] Bentonite [X] Other Grout
No. of Bags: 6 Additives: ___

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type: Septic Distance: 100 ft. Direction: ___
Type: ___ Distance: ___ ft. Direction: ___

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
clay & sand	12	12
gray clay	5	17
gravel	7	24
gray clay	5	29
sand	17	46
gray & green sandrock & ST. of Lime	18	64

USE A 2ND SHEET IF NEEDED

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NOV 21 1995
BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH-GWOS

14. PUMP: [X] Not Installed [ ] Pump Installation Only
Manufacturer's Name: ___
Model Number: ___ HP: ___ Volts: ___
Length of Drop Pipe: ___ ft. Capacity: ___ G.P.M.
TYPE: [ ] Submersible [ ] Jet [ ] Other ___
PRESSURE TANK:
Manufacturer's Name: ___
Model Number: ___ Capacity: ___ Gallons: ___

15. ABANDONED WELL PLUGGED? [ ] Yes [ ] No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL: [ ] Neat Cement [ ] Bentonite Slurry [ ] Cement/Bentonite Slurry [ ] Concrete Grout [ ] Bentonite Chips
No. of Bags: ___ Casing Removed? [ ] Yes [ ] No

16. REMARKS: (Elevation, Source of Data, etc.)
Polling set pump ~ 960'

17. DRILLING MACHINE OPERATOR:
[X] Employee [ ] Subcontractor
Name: TERRY

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
TERRY'S WELL SERVICE (REGISTERED BUSINESS NAME) 23-2033 (REGISTRATION NO)
Address: 2120 BELLEVUE HWY. OLIVET, MI 49076
Signed: Jessy Cords (AUTHORIZED REPRESENTATIVE) Date: 11-7-95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY SAMPLE No.

DEC 12 1978

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

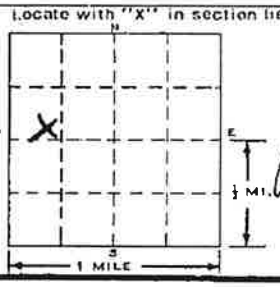
County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	SE SW NW ¼	19	2 N/S.	1 E/W.

Distance And Direction from Road Intersections
1 mile East of Griffin Road on north side of Seymour Road

Street address & City of Well Location

Locate with "X" in section below

Sketch Map:



Permit # 6434

3 OWNER OF WELL: Robert Rudlaff
Address 3906 Seymour rd Jackson mich

4 WELL DEPTH: (completed) 160 ft. Date of Completion 11-9-78

5 ☐ Cable tool ☑ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☑ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐

7 CASING: Threaded ☑ Welded ☐ Diam. 4 in. to 101 ft. Depth; ____ in. to ____ ft. Depth
Height: Above/Below Surface 1 ft. Weight 11 lbs./ft. Drive Shoe? Yes ☑ No ☐

8 SCREEN:
Type: _____ Dia.: _____
Slot/Gauze _____ Length _____
Set between _____ ft. and _____ ft.
Fittings:

9 STATIC WATER LEVEL 40 ft. below land surface

10 PUMPING LEVEL below land surface
_____ ft. after ___ hrs. pumping _____ g.p.m.
_____ ft. after ___ hrs. pumping _____ g.p.m.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) _____ Chlorides (Cl) _____
Hardness _____ Other _____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☑ 12" Above Grade

13 Well Grouted? ☐ Yes ☑ No ☐ Neat Cement ☐ Bentonite ☐ _____
Depth: From _____ ft. to _____ ft.

14 Nearest Source of possible contamination
60 feet NE Direction Septic Type
Well disinfected upon completion ☐ Yes ☐ No

15 PUMP: ☑ Not installed
Manufacturer's Name, _____
Model Number _____ HP ___ Volts _____
Length of Drop Pipe _____ ft. capacity ____ G.P.M.
Type: ☐ Submersible ☐ Jet ☐ Reciprocating

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown clay	20	20
Sand	20	40
Gravel	40	80
Gravel & shale	5	85
shale	15	100
sand rock	5	105
Brown lime rock	10	115
sand rock	45	160

ADDED INTO BY DRILLER, ITEM NO.
*CORRECTED BY
**ADDITION BY
ELEVATION
DEPTH TO ROCK
USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.
~ 990'
6434

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Leonard Well Drilling 0404
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 4 Seymour Rd
Signed M. Leonard Date 11-18-78
AUTHORIZED REPRESENTATIVE

D67a 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

TAX NO:

PERMIT NO: H-6342 | Page 1 of 1

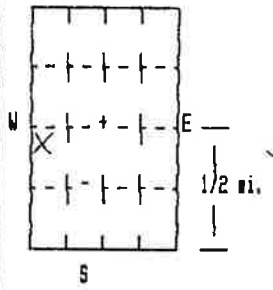
1. LOCATION OF WELL

County	Township Name	Fraction	Section No	Town No	Range Number
JACKSON	LEONI	NW 1/4 NW 1/4 SW 1/4	19	2 S	1 E

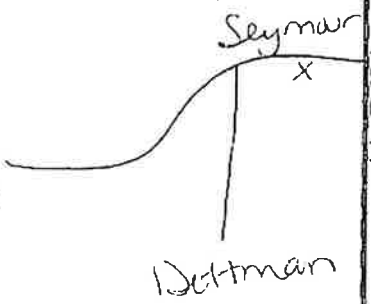
Distance And Direction From Road Intersection
EAST OF DETTMAN ON THE SOUTH SIDE OF SEYMOUR ROAD

Well Addr: 3303 SEYMOUR ROAD

Locate with 'X' in Sec. Below



Sketch Map



3. Owner of Well MARK WAGNER
Address 3303 SEYMOUR ROAD
JACKSON MI
Address Same as Well Location? NO

4. WELL DEPTH 100 ft. | Date Compl 07/18/98 | This is a: REPLACEMENT

5. EQUIPMENT USED: ROTARY
6. WELL USE: HOUSEHOLD

7. CASING Type: PLASTIC | Connection: WELDED
Diam. | Height ABOVE
5 in. to 94 ft. | Surface 1 ft
in. to ft. | Weight lb./ft.
BORE HOLE: | Drive Shoe NO
8 1/2 in. to 94 ft. | Shale Packer NO
in. to ft.

Formation Description	Thickness	Depth
CLAY	80	80
GRAVEL WITH LAYERED SHALE	8	88
SANDROCK CREVICE	10	98
LIMESTONE HARD	2	100

DRILLER NOTES:
4 1/2" TO 100'

JACKSON COUNTY HEALTH DEPT. RECEIVED AUG 7 1998

8. Screen Type: _____ Diam: ____ [X] Not Inst.
____ _____ Length: ____
Set Between ____ ft. and ____ ft.
Fittings: _____ [_] Blank above scrn: ____ ft

9. Static Level: ft. Flow: [N]

10. Pumping Level below land surface:
100 ft. after 1 hrs. @ 100 GPM
[_] Plunger [_] Bailer [X] Air [_] Test Pump

11. Well Head Completion: 12" ABOVE GRADE

12. Grouted from 94 to 0 ft Material: NEAT CEMENT
No. of Bags 15 bags Additives: EZ MUDD

13. Nearest source of possible contamination:
Type: SEWAGE BED Distance: 60 ft. Dir: SOUTH
Type: Distance: ft. Dir:

14. Pump: [X] Not Installed [_] Installation Only
Manufacturer's Name:
Model: HP: 0 Voltage: 0
Drop pipe: ft. Capacity: 0 GPM
Pump type:
Pressure Tank Manufacturer's Name :
Model: Capacity: ____ Gal.

15. Abandoned Well Plugged? YES
Casing Diameter 4 in. Depth 80 ft.
Plugging Material: NEAT CEMENT
No. of Bags 5 Casing Removed? N

16. Remarks, elevation, source of data, etc.

17. Drilling Machine Operator: [_] Employee [_] Subcontractor
Name EDWARD BIRKMEIER

GW-2-228 9/93
Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Registered Bus. Name ED BIRKMEIER WELL DRILLING LTD 1607
Business Address 10605 Easton Road New Lothrop MI 48460

Signed _____ 08/04/98
Authorized Representative Date

GELOLGICAL SURVEY COPY Mich. Dept. of Public Health Auth. No. 89-12-001

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: W-6342 | Page 1 of 1

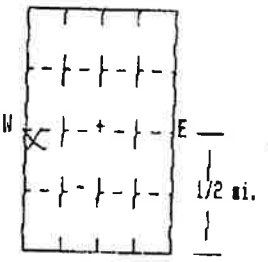
1. LOCATION OF WELL

County	Township Name	Fraction	Section No	Town No	Range Number
JACKSON	LEONI	NW 1/4 NW 1/4 SW 1/4	19	2 S	1 E

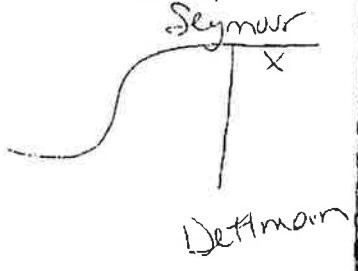
Distance And Direction From Road Intersection
EAST OF DETTMAN ON THE SOUTH SIDE OF SEYMOUR ROAD

Well Addr: 3303 SEYMOUR ROAD

Locate with 'X' in Sec. Below



Sketch Map



3. Owner of Well MARK WAGNER
Address 3303 SEYMOUR ROAD
JACKSON MI
Address Same as Well Location? NO

4. WELL DEPTH 100 ft. | Date Compl 07/18/98 | This is a: REPLACEMENT

5. EQUIPMENT USED: ROTARY

6. WELL USE: HOUSEHOLD

7. CASING Type: PLASTIC | Connection: WELDED
Diam. | Height ABOVE
5 in. to 94 ft. | Surface 1 ft
in. to ft. | Weight lb./ft.
BORE HOLE: | Drive Shoe NO
8 1/2 in. to 94 ft. | Shale Packer NO
in. to ft.

Formation Description	Thickness	Depth
CLAY	80	80
GRAVEL WITH LAYERED SHALE	8	88
SANDROCK CREVICE	10	98
LIMESTONE HARD	2	100
DRILLER NOTES: 4 1/2" TO 100'		

8. Screen Type: _____ Diam: ____ [X] Not Inst.
Length: ____
Set Between ____ ft. and ____ ft.
Fittings: _____ [_] Blank above scrn: ____ ft

9. Static Level: 45 ft. Flow: (N)

10. Pumping Level below land surface:
100 ft. after 1 hrs. @ 100 GPM
[_] Plunger [_] Bailer [X] Air [_] Test Pump

11. Well Head Completion: 12" ABOVE GRADE

12. Grouted from 94 to 40 ft Material: NEAT CEMENT
No. of Bags 15 bags Additives: EZ MUDD

13. Nearest source of possible contamination:
Type: SEWAGE BED Distance: 60 ft. Dir: SOUTH
Type: Distance: ft. Dir:

14. Pump: [X] Not Installed [_] Installation Only
Manufacturer's Name: STA-RITE
Model: 10P4002FW HP: 0 3/4 Voltage: 0230
Drop pipe: 80 ft. Capacity: 0 10 GPM
Pump type: SUBMERSIBLE
Pressure Tank Manufacturer's Name: WELL-MATE
Model: WM 12 Capacity: 40 Gal.

15. Abandoned Well Plugged? YES
Casing Diameter 4 in. Depth 80 ft.
Plugging Material: NEAT CEMENT
No. of Bags 5 Casing Removed? N

16. Remarks, elevation, source of data, etc.
CLAY POOL SET PUMP AND ADAPTOR
#0630 Bruce Hoffman

17. Drilling Machine Operator: [_] Employee [_] Subcontractor
Name EDWARD BIRKMEIER

GW-2-228 9/93
Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Registered Bus. Name ED BIRKMEIER WELL DRILLING LTD 1607
Business Address 10655 Eastman Road New Lothrop MI 48460

Signed Edward Birkmeier 08/04/98
Authorized Representative Date

IMPORTANT: File with deed. WELL OWNER COPY Mich. Dept. of Public Health Auth. No. 89-12-001

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 38000001475 Failure to comply is a misdemeanor. **Import ID:** 38727119003

Tax No:	Permit No:	County: Jackson	Township: Leoni

Well ID: 38000001475

Elevation: 1000 ft

Latitude: 42.2833572359

Longitude: -84.3633447798

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ NW¼ SW¼	19	02S 01E		

Distance and Direction from Road Intersection: 450' E OF DETTMAN RD., 150' S OF SEYMOUR RD.

Well Name:

Well Owner: Cummings Const. Co.

Well Address:	Owner Address:
3327 SEYMOUR RD. JACKSON MI 49201	3805 WESTCHESTER BLVD. JACKSON MI 49203

Drilling Method: Cable tool

Well Depth: 100.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 1/16/1970

Casing Type: Unknown
Casing Joint: Threaded & coupled
Diameter: 4.00 in. to 84.00 ft. depth

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: None

Static Water Level: 42.00 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:
42.00 ft. after 2.00 hrs. pumping at 30.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:** Unknown
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: No **Grouting Method:**
No. of Bags: **Additives:**
Grouting Materials:

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	55.00 ft.	South

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:**
Manufacturer: Goulds **Pump Type:** Submersible
Model Number: **Pump Capacity:** 0.00 GPM
Length of Drop Pipe: 45.00 ft. **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Clay-Sandy	20.00	20.00
Clay & Gravel	21.00	41.00
Clay & Gravel-W/Boulders	10.00	51.00
Gravel-W/Shale	10.00	61.00
Shale-Sandy	19.00	80.00
Limestone-W/Sand	3.00	83.00
Sandstone	17.00	100.00

Geology Remarks: 1. [CLAY, SANDY] [20] [20] 2. [CLAY AND GRAVEL] [41] [21] 3. [CLAY, GRAVEL AND BOULDERS] [51] [10] 4. [GRAVEL, SHALEY] [61] [10] 5. [SHALE, SANDY] [80] [19] 6. [LIMESTONE AND SAND] [83] [3] 7. [SANDSTONE] [100] [17]

Contractor Type: Unknown
Registration Number: 167
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:
OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:58

GEOLOGICAL SURVEY SAMPLE No.

MAR 05 1981

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

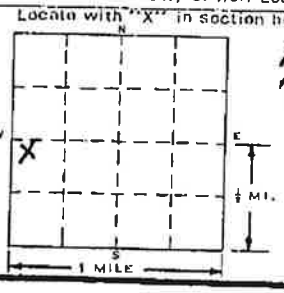
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	NW ¼ NW ¼ SW ¼	19	T2 N/S.	R 1 E/W.

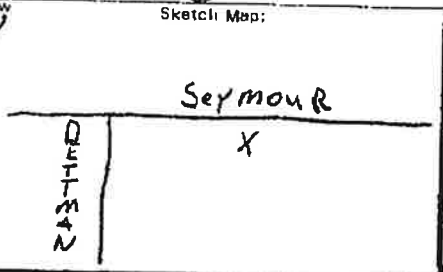
Distance And Direction from Road Intersections: ½ mi. E. of Dettman Rd

Street address & City of Well Location: Same

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL: Melvin BATTERSON

Address: 3329 SEYMOUR Rd Jackson, MI

4 WELL DEPTH: (completed) 105 ft. Date of Completion 8-23-80

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☐ Welded ☐ Diam. PLASTIC 5 in. to 79 ft. Depth; ____ in. to ____ ft. Depth. Height: Above/~~Below~~ Surface 1 ft. Weight ____ lbs./ft. Drive Shoe? Yes ☐ No ☐

8 SCREEN: Type: ____ Dia.: ____ Slot/Gauze ____ Length ____ Set between ____ ft. and ____ ft. Fittings:

9 STATIC WATER LEVEL ____ ft. below land surface

10 PUMPING LEVEL below land surface ____ ft. after ____ hrs. pumping ____ g.p.m. ____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ____ Chlorides (Cl) ____ Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☒ Bentonite ☐ ____ Depth: From 0 ft. to 79 ft.

14 Nearest Source of possible contamination 50+ feet W Direction Septic Tank Type. Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☒ Not installed. Manufacturer's Name ____ Model Number ____ HP ____ Volts ____ Length of Drop Pipe ____ ft. capacity ____ G.P.M. Type: ☐ Submersible ☐ Jet ☐ Reciprocating

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
CLAY & GRAVEL	36	36
CLAY, GRAY	4	40
GRAVEL, LARGE	24	64
CLAY, GREEN	5	69
LIMESTONE	17	86
SANDSTONE & CLAY	19	105

ADDED INFO BY DRILLER, ITEM NO.
*CORRECTED BY
**ADDITION BY
ELEVATION
DEPTH TO ROCK
USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

Jackson County Health Dept.
Permit # 7641

809.3 – 815.5

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

BEAR WELL DRILLING Co. 38-1529
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address 4600 E. SOUTH ST. JACKSON, MI.

Signed William Neher AUTHORIZED REPRESENTATIVE Date 2/27/81

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000006879

Tax No:	Permit No: 12295	County: Jackson	Township: Leoni

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NE¼ NE¼ SW¼	19	02S 01E		

Well ID: 38000006879

Elevation:

Latitude: 42.28365

Longitude: -84.35995

Distance and Direction from Road Intersection: Straight S of dalton Rd. on Seymour Rd.

Well Name:

Well Owner: Vickie Dix

Well Address:	Owner Address:
3501 Seymour Rd. Jackson MI 49201	3501 Seymour Rd. Jackson MI 49201

Drilling Method: Rotary

Well Depth: 71.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 10/2/2003

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 61.00 ft. depth

Bore Diameter 1: 7.88 in. to 61.00 ft. depth
Bore Diameter 2: 4.50 in. to 71.00 ft. depth
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 16.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
2.00 hrs. pumping at 50.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well: Owner is plugging well
Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe inside casing
No. of Bags: 5 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 61.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	North
None	0.00 ft.	

Drilling Machine Operator Name: Billy

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Brown-Sand & Clay	18.00	18.00
Brown-Sand & Gravel	13.00	31.00
Gray-Sand & Gravel	19.00	50.00
Gray-Sandstone	12.00	62.00
Gray-Limestone-W/Sandstone	9.00	71.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2033
Business Name: Terry's Well Service
Business Address: 2120 Bellevue Hwy. Olivet MI

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

10/7/2003 11:54

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER 3910

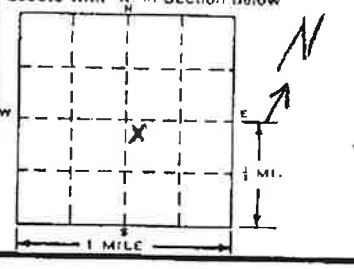
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	NW¼ NW¼ SE¼	19	T2 N/S	R1 E/W

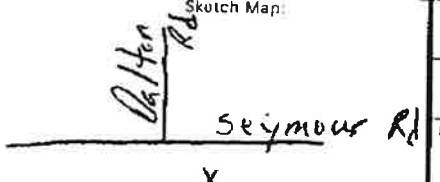
Distance And Direction From Road Intersection: South of Dalton Rd

Street Address or City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL

Shayne Whitaker
Address 3503 Seymour Rd.
Jackson, MI 49201

Address Same As Well Location? XX Yes ☐ No

4 WELL DEPTH: 68 FT. | Date Completed MO. 5 DAY 19 YEAR 92 | ☐ New Well ☒ Replacement Well

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Auger ☐ Jetted ☐

6 USE: ☒ Domestic ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public ☐

7 CASING Diameter ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded

5 in. to 60 ft. depth
___ in. to ___ ft. depth

Grouted Drill Hole Diameter
8 in. to 60 ft. depth
___ in. to ___ ft. depth

Height: Above/Below Surface 1 ft.
Weight SDR 21 lbs./ft.
Drive Shoe ☐ Yes ☐ No

8 SCREEN: ☒ Not Installed

Type ___ Diameter ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bromer Check
☐ Blank above screen ___ ft. Other ___

9 STATIC WATER LEVEL:
13 ft. below land surface ☐ Flow

10 PUMPING LEVEL below land surface
60 ft. after 2 hrs. pumping at 150 G.P.M
___ ft. after ___ hrs. pumping at ___ G.P.M

11 WELL HEAD COMPLETION: ☒ Pitless adapter ☒ 12" above grade ☐ Basement offset ☐ Approved pit

12 WELL GROUTED? ☐ No ☒ Yes From 6 to 60 ft.
☐ Neat cement ☒ Bentonite ☐ Other ___
No. of bags of cement ___ Additives ___

13 Nearest source of possible contamination
Type Septic tank Distance 50 ft Direction South
Well disinfected upon completion? ☒ Yes ☐ No
Was old well plugged? ☒ Yes ☐ No

14 PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's name Berkley
Model number ___ HP 1/2 Volts 115
Length of Drop Pipe 35 ft Capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet
PRESSURE TANK
Manufacturer's name Owner's
Model number ___ Capacity ___ Gallons

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown clay	6	6
Rocks	3	9
Brown clay	2	11
Rocks	16	27
Gray sand	24	51
Gray clay	2	53
Gray sandstone	12	65
Brown limestone	3	68

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.

OK MCC 12-29-92

17. Rig Operator's Name:

Dave and Bill Weber

16. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Bear Well Drilling (REGISTERED BUSINESS NAME) 38-1529 (REGISTRATION NO.)
Address 8301 Dixon Rd. Rives Junction, MI 49277
Signed [signature] (AUTHORIZED REPRESENTATIVE) Date 12-14-92

D67d 2/89

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY COPY

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: W5421

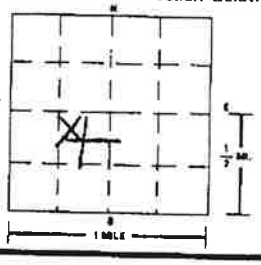
1. LOCATION OF WELL

County: Jackson | Township Name: Leoni | Fraction: NW 1/4 NE 1/4 SW 1/4 | Section No.: 19 | Town No.: 2N | Range No.: 1E

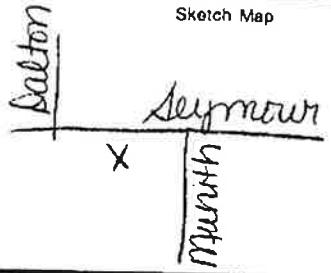
Distance and Direction from Road Intersection: 3635 Seymour Rd. - between Munith + Dettman Rds.

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL

Address: Karla + Chris Smith, P.O. Box 532, Concord MI

Address Same as Well Location: ☐ Yes ☒ No

4. WELL DEPTH: 92 ft. | Date Completed: 12/30/94 | ☒ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☒ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded ☐ Other _____

Diameter: 5 in. to 90 ft. depth; _____ in. to _____ ft. depth

Height: Above/Below Surface: 1 ft

Weight: _____ lbs./ft.

BORE HOLE: Diameter: 7 7/8 in. to 90 ft. depth; 4 7/8 in. to 92 ft. depth

☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed

Type _____ Diameter _____

Slot/Gauze _____ Length: _____

Set Between _____ ft. and _____ ft.

FITTINGS: ☐ K-Packer ☐ Bremer Check ☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL: 25 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface: 90 ft. After 1 hrs. Pumping at 100 G.P.M.

☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:

☒ Pitless Adapter ☒ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 90 ft.

☐ Neat Cement ☒ Bentonite ☐ Other _____

No. of Bags 4 Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:

Type Septic Distance 60 ft. Direction E

Type _____ Distance _____ ft. Direction _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Clay	8	8
Brown Sand	10	18
Gravel + Stones	70	88
Gray Sandstone	4	92

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No

Casing Diameter _____ in. Depth _____ ft.

PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips

No. of Bags _____ Casing Removed? ☐ Yes ☐ No

14. PUMP: ☐ Not Installed ☐ Pump Installation Only

Manufacturer's Name: Myers

Model Number _____ HP 1/2 Volts 220

Length of Drop Pipe 50 ft. Capacity 10 G.P.M.

TYPE: ☒ Submersible ☐ Jet ☐ Other _____

PRESSURE TANK:

Manufacturer's Name: A.O. Smith

Model Number V-60 Capacity 20 Gallons

16. REMARKS: (Elevation, Source of Data, etc.)

15. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

M.W. Cornell & Sons Inc - 0819

REGISTERED BUSINESS NAME — REGISTRATION NO.

Address: 5077 Meridian, Williamston

Signed: Marvin W Cornell (AUTHORIZED REPRESENTATIVE) Date: 1-2-95

17. DRILLING MACHINE OPERATOR:

☒ Employee ☐ Subcontractor

Name: Jamie Richard

GW-2-226 9/93

POA

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required

Penalty: Conviction of a violation of any provision is a misdemeanor.

39

GEOLOGICAL SURVEY SAMPLE No. 2

DEC 19 1975

WATER WELL RECORD
ACT 294 PA 1965

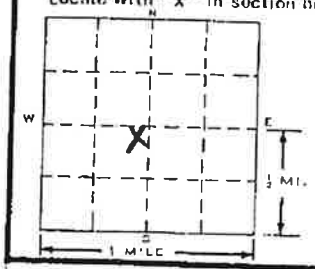
MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

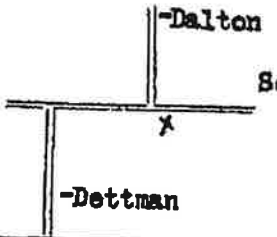
County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	NE ¼ NE ¼ SW ¼	19	T2S N/S.	R1E E/W.

Distance And Direction from Road Intersections
SE of intersection Dalton & Seymour Rds.
1/3 mi E Dettman & Seymour Rds
3637 Seymour Road
Street address of Well Location

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL:
Mrs. Jack Brigmon
Address 1500 W. North Centaur Apt, #D30
Jackson, Michigan

4 WELL DEPTH: (completed) 63 ft. Date of Completion 10/22/75

5 [X] Cable tool [ ] Rotary [ ] Driven [ ] Dug [ ] Hollow rod [ ] Jetted [ ] Bored [ ]

6 USE: [X] Domestic [ ] Public Supply [ ] Industry [ ] Irrigation [ ] Air Conditioning [ ] Commercial [ ] Test Well [ ]

7 CASING: Threaded [X] Welded [ ] Diam. 4 in. to 59 ft. Depth; ___ in. to ___ ft. Depth
Height: Above/Below Surface 1 ft.
Weight 11 lbs./ft.
Drive Shoe? Yes [X] No [ ]

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	40	40
Sand and gravel	23	63

8 SCREEN:
Type: stainless Dia.: 4"
Slot/Gauze .012 Length 4'
Set between 59 ft. and 63 ft.
Fittings: riser and seal

9 STATIC WATER LEVEL
30 ft. below land surface

10 PUMPING LEVEL below land surface
31 ft. after 1 hrs. pumping 30 G.P.M.
___ ft. after ___ hrs. pumping ___ G.P.M.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) ___ Chlorides (Cl) ___
Hardness ___ Other ___

12 WELL HEAD COMPLETION: [ ] In Approved Pit [X] Pitless Adaptor [ ] 12" Above Grade

13 Well Grouted? [ ] Yes [X] No
[ ] Neat Cement [ ] Bentonite [ ] ___
Depth: From ___ ft. to ___ ft.

14 Nearest Source of possible contamination
50 feet S Direction s tank Type
Well disinfected upon completion [X] Yes [ ] No

15 PUMP: [ ] Not installed
Manufacturer's Name Goulds
Model Number 10EI5422 HP 1/2 Volts 230
Length of Drop Pipe 40 ft. capacity 10 G.P.M.
Type: [X] Submersible [ ] Jet [ ] Reciprocating

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc. El. T 965 Top 1½

Permit 4332

ADDED INFO BY DRILLER, ITEM NO.
*CORRECTED BY T. T.
**ADDITION BY
ELEVATION
DEPTH TO ROCK

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Fox Brothers Drillers, Inc. 167
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 6655 Brooklyn Rd., Jackson, Mi. 49201
Signed Bernard Fox Jr. Date 11/26/75
AUTHORIZED REPRESENTATIVE

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NUMBER

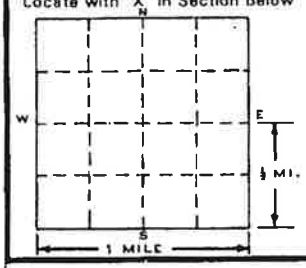
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson		¼ ¼ ¼	19	2S N/S	1E E/W

Distance And Direction From Road Intersection

Street Address & City of Well Location

Locate with "X" in Section Below — Sketch Map:



3 OWNER OF WELL: MR JOHN MURPHY

Address 3803 SEYMOUR
JACKSON MICH

Address Same As Well Location? ☒ Yes ☐ No

4 WELL DEPTH: (completed) ft. — Date of Completion

5 ☐ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Auger ☐ Jetted ☐ _____

6 USE: ☐ Domestic ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public ☐ _____

7 CASING: Diameter ☐ Steel ☐ Threaded ☐ Plastic ☐ Welded
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Grouted Drill Hole Diameter
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height Above/Below Surface _____ ft
Weight _____ lbs /ft
Drive Shoe ☐ Yes ☐ No

8 SCREEN: ☐ Not Installed
Type _____ Diameter _____
Slot/Gauze _____ Length _____
Set between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen _____ ft. Other _____

9 STATIC WATER LEVEL:
_____ ft. below land surface ☐ Flow

10 PUMPING LEVEL: below land surface
_____ ft. after _____ hrs. pumping at _____ G.P.M.
_____ ft. after _____ hrs. pumping at _____ G.P.M.

11 WELL HEAD COMPLETION ☐ Pitless adapter ☐ 12" above grade ☐ Basement offset ☐ Approved pit

12 WELL GROUTED? ☐ No ☐ Yes From _____ to _____ ft.
☐ Neat cement ☐ Bentonite ☐ Other _____
No. of bags of cement _____ Additives _____

13 Nearest source of possible contamination
Type _____ Distance _____ ft. Direction _____
Well disinfected upon completion? ☐ Yes ☐ No

14 PUMP: ☐ Not Installed ☒ Pump Installation Only
Manufacturer's name Berkley Pump Inc
Model number 2455N13802 HP 1½ Volts 230
Length of Drop Pipe 60 ft. capacity 10 G.P.M.
TYPE: ☒ Submersible ☐ Jet _____
PRESSURE TANK:
Manufacturer's name Well X Tank
Model number 202 Capacity 6 Gallons

2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

Dexter Pump Spr — 0556
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address 2207 Parnall Rd Jackson

Signed _____ Date 5-15-85
AUTHORIZED REPRESENTATIVE

D67d 2/84

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY COPY

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000001473 **Import ID:** 38727119001

Tax No:	Permit No:	County: Jackson	Township: Leoni

Well ID: 38000001473

Elevation: 984 ft

Latitude: 42.2837412495

Longitude: -84.3540979895

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NE¼ NW¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: 400' W OF MUNITH RD., 200' S OF SEYMOUR RD.

Well Name:

Well Owner: Fox, Alan

Well Address:
3803 SEYMOUR RD.
JACKSON MI 49201

Owner Address:
3803 SEYMOUR RD.
JACKSON MI 49201

Drilling Method: Rotary

Well Depth: 130.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 5/13/1985

Casing Type: PVC plastic
Casing Joint: Welded
Diameter: 5.00 in. to 101.00 ft. depth

Bore Diameter 1: 8.00 in. to 101.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: None

Static Water Level: 30.00 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Unknown
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 0.00 ft.

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	53.00 ft.	South

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Brown-Clay	16.00	16.00
Sand & Gravel	81.00	97.00
Limestone	6.00	103.00
Sandstone	27.00	130.00

Geology Remarks: 1. [BROWN CLAY] [16] [16] 2. [SAND AND GRAVEL] [97] [81] 3. [LIME] [103] [6] 4. [SANDROCK] [130] [27]

Contractor Type: Unknown
Registration Number: 107
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:58

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER: W 0086

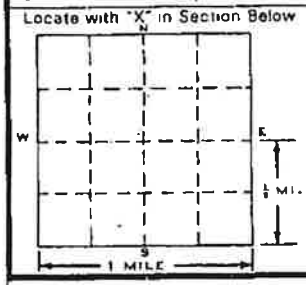
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	NW¼ NW¼ SE¼	19	1-2 S	1 E/W

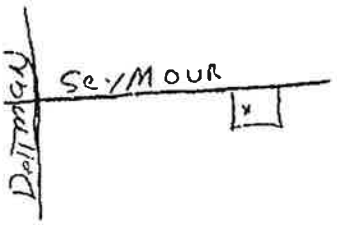
Distance And Direction From Road Intersection: Between Dalton & Muith on Seymour S side

Street Address & City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL:
John Heavey
Address: 3803 Seymour Jackson 49201
Address Same As Well Location? [X] Yes [ ] No

4 WELL DEPTH: (completed) 130 ft. | Date of Completion 5-13-85

5 [ ] Cable tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow rod [ ] Auger [ ] Jetted [ ]

6 USE: [X] Domestic [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat pump [ ] Test Well [ ] Type IIb Public [ ]

7 CASING: Diameter [ ] Steel [ ] Threaded [X] Plastic [X] Welded
5 in. to 101 ft. depth
___ in. to ___ ft. depth
Grouted Drill Hole Diameter
8 in. to 101 ft. depth
___ in. to ___ ft. depth
Height: Above/Below JNK
Surface 1 ft.
Weight SDR 21 lbs./ft.
Drive Shoe [ ] Yes [X] No

8 SCREEN: [X] Not Installed
Type ___ Diameter ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Lead Packer [ ] Bremer Check
[ ] Blank above screen ___ ft. Other ___

9 STATIC WATER LEVEL:
30 ft. below land surface [ ] Flow

10 PUMPING LEVEL: below land surface
air test
___ ft. after ___ hrs. pumping at ___ G.P.M.
___ ft. after ___ hrs. pumping at ___ G.P.M.

11 WELL HEAD COMPLETION: [X] Pitless adapter [ ] 12" above grade [ ] Basement offset [ ] Approved pit

12 WELL GROUTED? [ ] No [X] Yes From 0 to 101 ft.
[ ] Neat cement [X] Bentonite [ ] Other ___
No. of bags of cement ___ Additives ___

13 Nearest source of possible contamination
Type ST Distance 53 ft. Direction E
Well disinfected upon completion? [X] Yes [ ] No

14 PUMP [X] Not Installed [ ] Pump Installation Only
Manufacturer's name ___
Model number ___ HP ___ Volts ___
Length of Drop Pipe ___ ft. capacity ___ G.P.M.
TYPE: [ ] Submersible [ ] Jet ___
PRESSURE TANK:
Manufacturer's name ___
Model number ___ Capacity ___ Gallons

2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
brown clay	16	16
sand and gravel	81	97
lime	6	103
sandrock	27	130

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.

RECEIVED
Mich. Dept. of Public Health
JUN 5 1985
Bureau of Environmental and Occupational Health-CWQS

16. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

Chas. H. Kleinfelt & Son 0107
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 3402 N 5 Pt. Hwy. Charlotte, MI. 48813
Signed ___ Date ___
AUTHORIZED REPRESENTATIVE

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

D67d 2/84

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER 4745

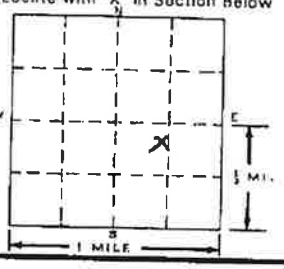
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	NE¼ NW¼ SE¼	19	T 2 N/S	R 1 E/W

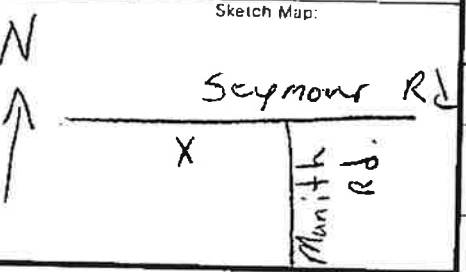
Distance And Direction From Road Intersection: 100 yds West of Munith Rd

Street Address & City of Well Location:

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL

Address: John Ruod, 3811 Seymour Rd, Jackson, MI 49201

Address Same As Well Location? [X] Yes [ ] No

4 WELL DEPTH: 117 Ft. Date Completed: MO. 7 DAY 30 YEAR 93 [ ] New Well [X] Replacement Well

5 [ ] Cable tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow rod [ ] Auger [ ] Jetted [ ]

6 USE: [X] Domestic [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat pump [ ] Test Well [ ] Type IIb Public [ ]

7 CASING: Diameter [ ] Steel [ ] Threaded [X] Plastic [ ] Welded

5 in. to 102 ft. depth

_____ in. to _____ ft. depth

Grouted Drill Hole Diameter: 8 in. to 102 ft. depth; _____ in. to _____ ft. depth

Height, Above/Below Surface: 1 ft.

Weight: SDR 21 lbs/ft

Drive Shoe [ ] Yes [ ] No

8 SCREEN: [X] Not Installed

Type _____ Diameter _____

Slot/Gauze _____ Length _____

Set between _____ ft. and _____ ft.

FITTINGS: [ ] K-Packer [ ] Lead Packer [ ] Bremer Check [ ] Blank Above screen _____ ft. Other _____

9 STATIC WATER LEVEL: 18 ft. below land surface [ ] Flow

10 PUMPING LEVEL below land surface: 80 ft. after 2 hrs. pumping at 40 G.P.M.; _____ ft. after _____ hrs. pumping at _____ G.P.M.

11 WELL HEAD COMPLETION: [X] Pitless adapter [X] 12" above grade [ ] Basement offset [ ] Approved pit

12 WELL GROUTED? [ ] No [X] Yes From 6 to 102 ft.

[ ] Neat cement [X] Bentonite [ ] Other

No. of bags of cement: 5 Additives: Ben-Seal

13 Nearest source of possible contamination: Type Septic tank Distance 50+ ft. Direction South

Well disinfected upon completion? [X] Yes [ ] No

Was old well plugged? [X] Yes [ ] No

14 PUMP: [X] Not Installed [ ] Pump Installation Only

Manufacturer's name: Burlc

Model number: 2W55NB8A Hp: ½ Volts: 230

Length of Drop Pipe: 45 ft. capacity: 10 G.P.M.

TYPE: [X] Submersible [ ] Jet _____

PRESSURE TANK:

Manufacturer's name _____

Model number _____ Capacity _____ Gallons

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	9	9
GRAVEL	2	11
BROWN CLAY	3	14
BROWN SAND	13	27
GRAY SAND, GRAVEL	14	41
GRAY GRAVEL	6	47
ROCKS, GRAVEL	20	67
GRAY CLAY, SHALE	7	74
GRAY SHALE, SANDSTONE	12	86
GRAY CLAY, SHALE	10	96
GRAY SHALE, SANDSTONE	3	99
GRAY SANDSTONE	3	102
GRAY LIMESTONE	4	106
GRAY SANDSTONE	8	117

USE ADDITIONAL SHEET IF NEEDED

15 Remarks, elevation, source of data, etc.

RECEIVED DEC 02 1993 MICH. DEPT. OF PUBLIC HEALTH

BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

17 Rig Operator's Name: Bill & Dave Weber

16 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

Bear Well Drilling 38-7529
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 8301 Dixon Rd. Rives Jct, MI

Signed William Weber AUTHORIZED REPRESENTATIVE Date 11/21/93

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

D67d 2/09

GEOLOGICAL SURVEY COPY

42

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000004984

Tax No:	Permit No: 9610	County: Jackson	Township: Leoni

Well ID: 38000004984

Elevation:

Latitude: 42.28418216

Longitude: -84.35414802

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ SW¼ NE¼	19	01S 01E		

Distance and Direction from Road Intersection: 1/10 MI W. OF SEYMOUR RD. & MUNITH RD.

Well Name:

Well Owner: Leroy Rupert

Well Address:	Owner Address:
3818 Seymour Rd. Jackson MI 49201	3818 Seymour Rd. Jackson MI 49201

Drilling Method: Rotary

Well Depth: 70.00 ft. **Well Use**: Household

Well Type: Replacement **Date Completed**: 5/1/2001

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 66.00 ft. depth

Bore Diameter 1: 8.00 in. to 70.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Drive shoe

Static Water Level: 45.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
51.00 ft. after 1.00 hrs. pumping at 20.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well: Owner is plugging well
Abandoned well ID:

Screen Installed: Yes **Well Intake**:
Filter Packed: No
Screen Diameter: 4.00 in. **Length**: 5.00 ft.
Screen Material Type: Stainless steel-wire wrapped
Slot: 12.00 in. Set Between 66.00 ft. and 70.00 ft.
Blank: 1.50 ft. Above
Fittings:
Blank above screen

Well Grouted: Yes **Grouting Method**: Unknown
No. of Bags: 8 **Additives**: None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 58.00 ft.

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	North

Drilling Machine Operator Name: TBurkholder/HHarris

Employment: Employee

Pump Installed: Yes **Pump Installation only**: No
Pump Installation date: **HP**: 0.50
Manufacturer: Aermotor **Pump Type**: Submersible
Model Number: A1250 **Pump Capacity**: 12.00 GPM
Length of Drop Pipe: 55.00 ft. **Id of Well**:
Diameter of Drop Pipe:
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Unknown
Manufacturer: Well-Mate
Model Number: WM-6

Formation Description	Thickness	Depth to Bottom
Sand	5.00	5.00
Clay Sand Gravel	8.00	13.00
Sand & Clay	17.00	30.00
Sand & Gravel	40.00	70.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 167
Business Name: Fox & Boley Well Drilling, Inc
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:
OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

7/23/2002 15:24

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000003730

Tax No:	Permit No: 7746	County: Jackson	Township: Leoni

Well ID: 38000003730

Elevation: 980 ft

Latitude: 42.28396792

Longitude: -84.35178155

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NW¼ NE¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: 101 EAST OF MUNITH ON SOUTH SIDE OF SEYMOUR

Well Name:

Well Owner: Douglas Calbus

Well Address:

Owner Address: SEYMOUR ROAD JACKSON

Drilling Method: Rotary

Well Depth: 170.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 2/14/2000

Casing Type: PVC plastic
Casing Joint: Unknown
Diameter: 5.00 in. to 86.00 ft. depth

Bore Diameter 1: 7.88 in. to 86.00 ft. depth
Bore Diameter 2: 4.50 in. to 170.00 ft. depth
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 42.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
170.00 ft. after 2.00 hrs. pumping at 35.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: 13 **Additives:** None
Grouting Materials:
Other From 0.00 ft. to 86.00 ft.

Well Head Completion: 12 inches above grade

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	60.00 ft.	

Drilling Machine Operator Name: TERRY

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Clay & Sand	10.00	10.00
Sand	22.00	32.00
Gravel	12.00	44.00
Gray-Clay & Stones	4.00	48.00
Shale-W/Gravel	19.00	67.00
Gray-Sandstone & Limestone-Green	58.00	125.00
Gray-Shale & Limestone	30.00	155.00
Gray-Sandstone	15.00	170.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2033
Business Name: TERRY'S WELL SERVICE INC.
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS **Grouting Material 1:** ABI

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

1/25/2001 08:50

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO: 5518

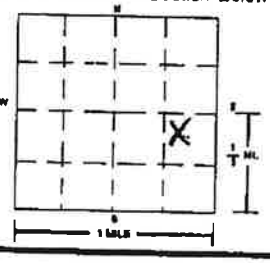
1. LOCATION OF WELL

County	Township Name	Fraction	Section No.	Town No.	Range No.
JACKSON	LEONI	NW 1/4 NE SE	19	T2S	R1E

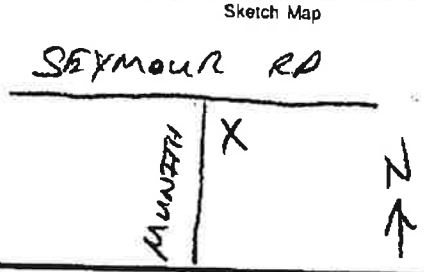
Distance and Direction from Road Intersection: 100 FT. S.E. OF INTERSECTION OF SEYMOUR AND MUNITH

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL: Lawrence Muck
Address: 3903 Seymour Rd. Jackson, Mich.
Address Same as Well Location: [X] Yes [ ] No

4. WELL DEPTH: 197 ft. | Date Completed: 7/24/94 | [ ] New Well [X] Replacement Well

5. [ ] Cable Tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow Rod [ ] Auger/Bored [ ] Jetted [ ] _____

6. USE: [X] Household [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat Pump [ ] Test Well [ ] Type IIb Public [ ] _____

7. CASING: [ ] Steel [ ] Threaded [X] Plastic [X] Welded [ ] Other _____
Diameter: 5 in. to 98 ft. depth; _ in. to _ ft. depth
Height: [X] Above [ ] Below Surface: 1 ft
Weight: SDR21 lb.
BORE HOLE: Diameter: 8 in. to 98 ft. depth; _ in. to _ ft. depth
[ ] Drive Shoe [X] Shale Packer

8. SCREEN: [X] Not Installed [ ] Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: [ ] K-Packer [ ] Bremer Check
[ ] Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL: 72 ft. Below Land Surface [ ] Flowing

10. PUMPING LEVEL: Below Land Surface
197 ft. After 2 hrs. Pumping at 25 G.P.M.
[ ] Plunger [ ] Bailer [X] Air [ ] Test Pump

11. WELL HEAD COMPLETION:
[ ] Pitless Adapter [X] 12" Above Grade
[ ] Basement Offset [ ] Well House

12. WELL GROUTED? [ ] No [X] Yes From 0 to 98 ft.
[ ] Neat Cement [X] Bentonite [ ] Other _____
No. of Bags 6 Additives BEN SEAL

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type SEPTIC Distance 50+ ft. Direction EAST
Type _____ Distance _____ ft. Direction _____

14. PUMP: [X] Not Installed [ ] Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: [ ] Submersible [ ] Jet [ ] Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	6	6
ROCKS	2	8
BROWN CLAY	8	16
BROWN GRAVEL	6	22
GRAY GRAVEL	42	64
GRAY GRAVEL, CLAY	9	73
GRAY CLAY	4	77
GRAY GRAVEL	17	94
GRAY SANDSTONE	4	98
BROWN LIMESTONE	6	104
GRAY SANDSTONE	78	182
GRAY SANDSTONE	15	197

RECEIVED
MICH. DEPT. OF PUBLIC Health
FEB 22 1996
RECEIVED
BUREAU OF ENVIRONMENTAL AND
OCCUPATIONAL HEALTH-GWQS
FEB 13 1996
JACKSON COUNTY
HEALTH DEPT.

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? [ ] Yes [ ] No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: [ ] Neat Cement [ ] Bentonite Slurry [ ] Cement/Bentonite Slurry [ ] Concrete Grout [ ] Bentonite Chips
No. of Bags _____ Casing Removed? [ ] Yes [ ] No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
[X] Employee [ ] Subcontractor
Name BILL & DAVE WEBER

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

REGISTERED BUSINESS NAME: Bear Well Drilling
REGISTRATION NO.: 38-1629
Address: 8321 Dixon Rd, Rives Junction, MI 49277
Signed: William Weber (AUTHORIZED REPRESENTATIVE)
Date: 2/21/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NUMBER: 1413

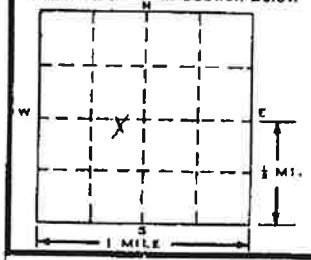
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
JACKSON	LEONI	NE¼ NE¼ SW¼	28	2 N/S	1 E/W

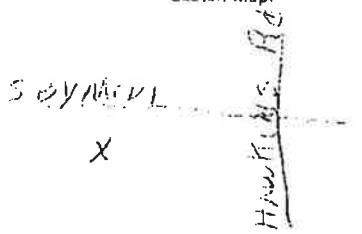
Distance And Direction From Road Intersection: 1/4 West of HAWKINS RD AND 1/4 South of SEYMOUR Rd

Street Address & City of Well Location

Locate with "X" in Section Below



Sketch Map:



3 OWNER OF WELL:

George Morris

Address: 3557 SEYMOUR JACKSON, MICH.

Address Same As Well Location? [X] Yes [ ] No

4 WELL DEPTH: (completed)

116 ft.

Date of Completion: 7-20-89

5

[ ] Cable tool [X] Rotary [ ] Driven [ ] Dug
[ ] Hollow rod [ ] Auger [ ] Jetted [ ]

6 USE:

[ ] Domestic [ ] Type I Public [ ] Type III Public
[ ] Irrigation [ ] Type IIa Public [ ] Heat pump
[ ] Test Well [ ] Type IIb Public [ ]

7 CASING:

Diameter: [ ] Steel [ ] Threaded [ ] Plastic [ ] Welded

2 in. to 81 ft. depth

_____ in. to _____ ft. depth

Grouted Drill Hole Diameter
6 in. to 81 ft. depth
_____ in. to _____ ft. depth

Height: Above/Below Surface 1 ft.

Weight 2.72 lbs./ft.

Drive Shoe [X] Yes [ ] No

8 SCREEN:

[ ] Not Installed

Type _____ Diameter _____

Slot/Gauze _____ Length _____

Set between _____ ft. and _____ ft.

FITTINGS [ ] K-Packer [ ] Lead Packer [ ] Bremer Check

[ ] Blank above screen _____ ft Other _____

9 STATIC WATER LEVEL:

32 ft. below land surface [ ] Flow

10 PUMPING LEVEL: below land surface

_____ ft. after _____ hrs. pumping at _____ G.P.M.

_____ ft. after _____ hrs. pumping at _____ G.P.M.

11 WELL HEAD COMPLETION:

[ ] Pitless adapter [ ] 12" above grade
[ ] Basement offset [ ] Approved pit

12 WELL GROUTED?

[ ] No [X] Yes From 1 ft. to 22 ft.

[ ] Neat cement [X] Bentonite [ ] Other _____

No. of bags of cement _____ Additives _____

13 Nearest source of possible contamination

Type S.T. Distance 40 ft. Direction S

Well disinfected upon completion? [X] Yes [ ] No

14 PUMP:

[X] Not Installed [ ] Pump Installation Only

Manufacturer's name _____

Model number _____ HP _____ Volts _____

Length of Drop Pipe _____ ft. capacity _____ G.P.M.

TYPE: [ ] Submersible [ ] Jet _____

PRESSURE TANK:

Manufacturer's name _____

Model number _____ Capacity _____ Gallons

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Clay & Grave Mix	33	33
Sand & Gravel Mix	17	50
Gray Clay	33	83
Lime Rock	16	99
Sand Rock	17	116

USE A 2ND SHEET IF NEEDED

RECEIVED
Mich. Dept. of Public Health
DEC 18 1989
BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH-GWQS

15. Remarks, elevation, source of data, etc.

12/14/89
CWK

16. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Charlie Washburn WD — 1944
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address 5118 Pershing Ave JXN

Signed Charlie Washburn Date 1/15/90
AUTHORIZED REPRESENTATIVE

D67d 2/84

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000004681

Tax No:	Permit No: 9097	County: Jackson	Township: Leoni

Well ID: 38000004681

Elevation:

Latitude: 42.28362958

Longitude: -84.35210284

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
NE¼ NW¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: ONE TENTH MILE SOUTH OF MUNITH RD. AND SEYMOUR RD.; MUNITH RD.

Well Name:

Well Owner: Travis Kell

Well Address:

Owner Address: 1907 SPRINGPORT RD. JACKSON MI 49202

Drilling Method: Rotary

Well Depth: 47.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 12/21/2000

Casing Type: PVC plastic
Casing Joint: Other
Diameter: 5.00 in. to 44.00 ft. depth

Bore Diameter 1: 8.00 in. to 47.00 ft. depth
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Drive shoe

Static Water Level: 25.00 ft. Below Grade(Not Flowing)
Yield Test Method: Test pump
Measurement Taken During Pump Test:
38.00 ft. after 1.00 hrs. pumping at 30.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: Yes **Well Intake:**
Filter Packed: No
Screen Diameter: 4.00 in. **Length:** 4.00 ft.
Screen Material Type: Stainless steel-wire wrapped
Slot: 0.01 in. Set Between 43.00 ft. and 47.00 ft.
Blank: 1.50 ft. Above
Fittings:
Blank above screen

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: 6 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 35.00 ft.

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	Southeast

Drilling Machine Operator Name: T BURKHOLDER

Employment: Employee

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:** 0.50
Manufacturer: Aermotor **Pump Type:** Submersible
Model Number: A+12-50 **Pump Capacity:** 12.00 GPM
Length of Drop Pipe: 35.00 ft. **Id of Well:**
Diameter of Drop Pipe: Unknown in.
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Unknown
Manufacturer: Well-Mate
Model Number: WM-6

Formation Description	Thickness	Depth to Bottom
Sand	7.00	7.00
Clay	4.00	11.00
Sand Gravel Clay	9.00	20.00
Sand & Gravel	5.00	25.00
Sand Gravel Clay	13.00	38.00
Sand & Gravel	9.00	47.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 167
Business Name: FOX & BOLEY WELL
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:
OTHER REMARKS **Casing Joint:** GLUED

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

6/26/2002 15:06

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

TAX NO:

PERMIT NO: 7361

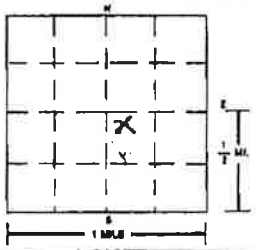
1. LOCATION OF WELL

County	Township Name	Fraction 1/4 1/4 1/4	Section No.	Town No.	Range No.
JACKSON	LEONI	NW SE	19	1-S	1-E

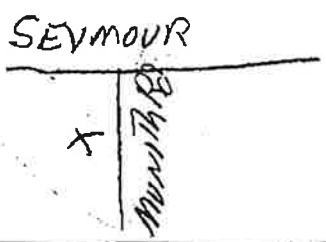
Distance and Direction from Road Intersection: ABOUT 500' SOUTH OF SEYMOUR RD & ABOUT 60' WEST OF MUNITH RD

Street Address & City of Well Location: 1702 MUNITH

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: JASON ZIMMERMAN, 6950 COON HILL RD, MUNITH MICH 49259
Address Same as Well Location ☐ Yes ☒ No

4. WELL DEPTH: 56 ft. Date Completed 7/30/99 ☒ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded ☐ Other _____
Diameter: 5 in. to 48 ft. depth; _____ in. to 1 ft. depth
BORE HOLE: Diameter: 8 3/4 in. to 56 ft. depth; _____ in. to _____ ft. depth
Height: Above/Below Surface: _____ ft
Weight: _____ lbs/ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN CLAY	3	3
BROWN SANDY CLAY	23	26
SAND	30	56

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☐ Not Installed ☐ Gravel-Packed
Type STAINLESS Diameter 4" Slot/Gauze 4"T5 9 4" 20 Length: 8
Set Between 48 ft. and 56 ft.
FITTINGS: ☐ K-Packer ☐ Bremer Clamp ☐ Blank Above Screen _____ ft. Other PUSHING PLUG

9. STATIC WATER LEVEL: 30 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
45 ft. After 1 hrs. Pumping at 30 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☒ Pitless Adapter ☐ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 48 ft.
☐ Neat Cement ☒ Bentonite ☐ Other _____
No. of Bags 4 Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type SEPTIC Distance 50 ft. Direction W
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name Goulds
Model Number 10GPD05422 HP 1/2 Volts 230
Length of Drop Pipe 40 ft. Capacity 12 G.P.M.
TYPE: ☒ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name well mate
Model Number WM6 Capacity 42 Gallons 6

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
☐ Employee ☐ Subcontractor
Name _____

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
SEBASTIANO & SONS WELL DRILLING (REGISTERED BUSINESS NAME) 1559 (REGISTRATION NO.)
Address 28731 U DRIVE NORTH SPRINGPORT
Signed William Sebastiano (AUTHORIZED REPRESENTATIVE) Date 7-30-99

GW-2-226 9/93

RECEIVED JACKSON COUNTY ENV. HEALTH DIV. AUG 02 1999
RECEIVED MICH DEPT OF ENVIRONMENTAL QUALITY NOV 04 1999
Drinking Water & Environmental Health Ground Water Section WELL CONSTRUCTION

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

48

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000004519

Tax No:	Permit No: 9068	County: Jackson	Township: Leoni

Well ID: 38000004519

Elevation:

Latitude: 42.28077758

Longitude: -84.3523792

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SW¼ NW¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: 1/4 MILE SOUTH OF SEYMOUR RD; 200 FEET EAST OF MUNITH RD

Well Name:

Well Owner: Lonnie & Leona Siggett

Well Address:	Owner Address:
1695 MUNITH ROAD	1695 MUNITH ROAD

Drilling Method: Rotary

Well Depth: 230.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 12/2/2000

Casing Type: PVC plastic
Casing Joint: Unknown
Diameter: 5.00 in. to 103.00 ft. depth

Bore Diameter 1: 8.75 in. to 103.00 ft. depth
Bore Diameter 2: 4.88 in. to 127.00 ft. depth
Bore Diameter 3:
Height:
Casing Fitting: Shale packer/trap

Static Water Level: 43.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
230.00 ft. after 0.25 hrs. pumping at 25.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:
Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Unknown
No. of Bags: 6 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 103.00 ft.

Well Head Completion: Unknown

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	East

Drilling Machine Operator Name: DAVID PRUDEN

Employment: Employee

Pump Installed: No **Pump Installation only:**
Pump Installation date: **HP:**
Manufacturer: **Pump Type:**
Model Number: **Pump Capacity:**
Length of Drop Pipe: **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Brown-Sand Clay Gravel	34.00	34.00
Gray-Clay	16.00	50.00
Gray-Shale	12.00	62.00
Limestone	6.00	68.00
Gray-Shale	21.00	89.00
Gray-Sandstone	17.00	106.00
Limestone	4.00	110.00
Brown-Unidentified Consolidated Fm	11.00	121.00
Gray-Shale	32.00	153.00
Gray-Sandstone	16.00	169.00
Gray-Unidentified Consolidated Fm	4.00	173.00
Gray-Sandstone	40.00	213.00
Gray-Shale	7.00	220.00
Gray-Sandstone	10.00	230.00

(Continued on Page 2)

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

6/5/2002 08:29

DEQ

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000004519

Tax No:	Permit No: 9068	County: Jackson	Township: Leoni

Well ID: 38000004519

Elevation:

Latitude: 42.28077758

Longitude: -84.3523792

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SW¼ NW¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: 1/4 MILE SOUTH OF SEYMOUR RD; 200 FEET EAST OF MUNITH RD

Well Name:

Well Owner: Lonnie & Leona Siggett

Well Address:	Owner Address:
1695 MUNITH ROAD	1695 MUNITH ROAD

(Continued from Page 1)

Formation Description	Thickness	Depth to Bottom

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978
Failure to comply is a misdemeanor

TAX NO:

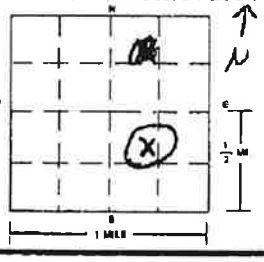
PERMIT NO: W-6859

1. LOCATION OF WELL

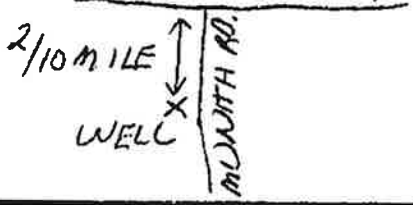
County	Township Name	Fraction	Section No.	Town No.	Range No.
JACKSON	NORTH PART LEONI	SE 1/4 NW 1/4 SE 1/4	19	2S	1E

Distance and Direction from Road Intersection
ON WEST SIDE OF MUNITH RD.
2/10 MILE SOUTH OF SEYMOUR RD.
Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL: ALBEN JORDEN
Address: 1628 - MUNITH RD.
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 162 ft. Date Completed: 12/3/98 ☐ New Well ☒ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☒ Welded ☐ Other
Diameter: 5 in. to 115 ft. depth; _____ in. to _____ ft. depth
Height: Above / Below Surface: _____ ft
Weight: 3 lbs./ft.
BORE HOLE: Diameter: 8 in. to 115 ft. depth; 4 3/4 in. to 162 ft. depth
☐ Drive Shoe ☒ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check ☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL: 23 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
100 ft. After 1 hrs. Pumping at 15 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☒ 12" Above Grade ☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 115 ft.
☐ Neat Cement ☒ Bentonite ☐ Other _____
No. of Bags 13 Additives PDS CO.

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type SDS Distance 50+ ft. Direction SSW
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe 60 ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
0-8 SAND W/GRAVEL	8	8
8-17 BROWN + GREY CLAY	9	17
17-57 SAND + GRAVEL	40	57
57-73 BROKEN ROCK + GRAVEL	16	73
73-82 SOFT BLACK SHALE	9	82
82-115 BROKEN ROCK + LIMESTONE	33	115
115-162 SANDROCK, LIMESTONE, SHALE	47	162
PUMP WILL BE INSTALLED BY MURPH'S PUMPS		

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☒ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR.
☒ Employee ☐ Subcontractor
Name MARC MCKEAGUE

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
KAT 2 WELL DRILLING INC. 13-1593
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 1479 E. MICH. AVE. BATTLE CREEK
Signed Marc McKeague AUTHORIZED REPRESENTATIVE Date 12-3-98

GEOLOGICAL SURVEY COPY

EQP 2017 (12/96)

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000001479 **Import ID:** 38727119007

Tax No:	Permit No:	County: Jackson	Township: Leoni

Well ID: 38000001479

Elevation: 985 ft

Latitude: 42.2808000742

Longitude: -84.3530365195

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SW¼ NE¼ SE¼	19	02S 01E		

Distance and Direction from Road Intersection: 1200' S OF SEYMOUR RD., 200' W OF MUNITH RD.

Well Name:

Well Owner: Hendges, Phillip

Well Address:	Owner Address:
1610 MUNITH RD. JACKSON MI 49201	1610 MUNITH RD. JACKSON MI 49201

Drilling Method: Cable tool

Well Depth: 126.00 ft. **Well Use:** Household

Well Type: Replacement **Date Completed:** 10/6/1972

Casing Type: Unknown
Casing Joint: Threaded & coupled
Diameter: 4.00 in. to 87.50 ft. depth

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Drive shoe

Static Water Level: 33.00 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:
34.00 ft. after 1.00 hrs. pumping at 18.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:** Unknown
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: No **Grouting Method:**
No. of Bags: **Additives:**
Grouting Materials:

Well Head Completion: Pitless adapter

Nearest source of possible contamination:

Type	Distance Direction
Septic tank	57.00 ft. West

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:**
Manufacturer: Other **Pump Type:** Submersible
Model Number: **Pump Capacity:**
Length of Drop Pipe: 0.00 ft. **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
Clay-Sandy	36.00	36.00
Clay-Gravely	24.00	60.00
Clay	27.00	87.00
Gray-Sandstone-Soft	24.00	111.00
Gray-Sandstone	15.00	126.00

Geology Remarks: 1. [SANDY CLAY] [36] [36] 2. [GRAVELY CLAY] [60] [24] 3. [CLAY] [87] [27] 4. [SOFT GREY SANDROCK] [111] [24] 5. [GREY SANDROCK] [126] [15]

Contractor Type: Unknown
Registration Number: 106
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks: PERMIT #1979

OTHER REMARKS **Pump Manufacturer:** SEARS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:58

GEOLOGICAL SURVEY CARD NO.

WATER WELL RECORD

1 LOCATION OF WELL

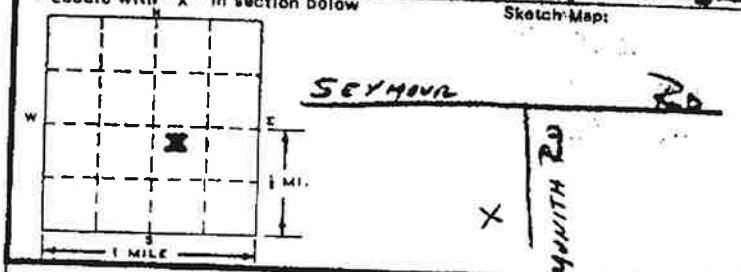
County: Jackson | Township Name: Leoni | Fraction: ¼ | Section: 4 | Town: 2S | Range: 1E

Distance and Direction from Road Intersection: 1/10th Mile South of Seymour Rd on W. West Side of Rd. 1600 South Rd

Street address & City of Well Location: Jackson, Michigan

Locate with "X" in section below

Sketch Map:



3 OWNER OF WELL

Address: [illegible] Jackson, Mich.

4 WELL DEPTH: (completed) 156 ft. Date of Comp. 6/24/74

5 ☒ Cable tool ☐ Rotary ☐ Dri... ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well

7 CASING: Threaded ☒ Welded ☐ Diam. 4 in. to 98 ft. Depth; ___ in. to ___ ft. Depth. Height: Above/Below Surface 1 ft. Weight 13 lbs./ft. Drive Shoe? Yes ☒ No ☐

8 SCREEN: Type: ___ Dia.: ___ Slot/Gauze ___ Length ___ Set between ___ ft. and ___ ft. Fittings:

9 STATIC WATER LEVEL 36 ft. below land surface

10 PUMPING LEVEL below land surface 50 ft. after 2 hrs. pumping 21 g.p.m. ___ ft. after ___ hrs. pumping ___ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ___ Chlorides (Cl) ___ Hardness ___ Other ___

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☐ Yes ☒ No ☐ Neat Cement ☐ Bentonite ☐ ___ Depth: From ___ ft. to ___ ft.

14 Nearest Source of possible contamination: 50+ feet W Direction Septic Type. Well disinfected upon completion? ☒ Yes ☐ No

15 PUMP: ☐ Not installed. Manufacturer's Name Reda. Model Number 2DIAP071 HP ½ Volts 230. Length of Drop Pipe 63 ft. capacity 17 G.P.M. Type: ☒ Submersible ☐ Jet ☐ Reciprocating

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Red Sandy clay	21	21
Clay	33	54
Water gravel	13	67
Muddy gravel	11	78
Sandrock	20	102
Lime rock	10	112
Sandrock	10	122
Shale	13	135
Muddy sandrock	15	150
Shale	6	156

USE A 2ND. SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

Well Permit #3339

5-24-74

17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

R.M. Brewer & Son Inc. (REGISTERED BUSINESS NAME) 106 (REGISTRATION NO.)

Address Parma, Michigan 49269

Signed William Stebner (AUTHORIZED REPRESENTATIVE) Date 6-28-74

D67d 100M (Rev. 12-68)

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978
Failure to comply is a misdemeanor

TAX NO:

PERMIT NO: W 41 04

1. LOCATION OF WELL
County: JACKSON | Township Name: LEONI | Fraction: SW 1/4 NE 1/4 SE 1/4 | Section No.: 19 | Town No.: T2S | Range No.: R1E

Distance and Direction from Road Intersection: 1/4 MI. SOUTH OF SEYMOUR

Street Address & City of Well Location

Locate with 'x' in Section Below

Sketch Map: SEYMOUR RD. / MUNITH RD / N

3. OWNER OF WELL
Address: ROBIN & DAWN MOON
1609 MUNITH RD
JACKSON, MICH
Address Same as Well Location: [X] Yes [ ] No

4. WELL DEPTH: 96 ft. | Date Completed: 4/21/98 | [X] New Well [ ] Replacement Well

5. [ ] Cable Tool [X] Rotary [ ] Driven [ ] Dug [ ] Hollow Rod [ ] Auger/Borod [ ] Jetted [ ]

6. USE: [X] Household [ ] Type I Public [ ] Type III Public [ ] Irrigation [ ] Type IIa Public [ ] Heat Pump [ ] Test Well [ ] Type IIb Public [ ]

7. CASING: [ ] Steel [ ] Threaded [X] Plastic [ ] Welded [ ] Other
Diameter: 5 in. to 82 ft. depth; ___ in. to ___ ft. depth
Height: Above/Below Surface: ___ ft
Weight: ___ lbs./ft.
BORE HOLE: Diameter: 8 in. to 82 ft. depth; ___ in. to ___ ft. depth
[ ] Drive Shoe [ ] Shale Packer

8. SCREEN: [X] Not Installed [ ] Gravel-Packed
Type ___ Diameter ___
Slot/Gauze ___ Length: ___
Set Between ___ ft. and ___ ft.
FITTINGS: [ ] K-Packer [ ] Bremer Check
[ ] Blank Above Screen ___ ft. [ ] Other ___

9. STATIC WATER LEVEL
26 ft. Below Land Surface [ ] Flowing

10. PUMPING LEVEL: Below Land Surface
96 ft. After 2 hrs. Pumping at 45 G.P.M.
[ ] Plunger [ ] Bailer [X] Air [ ] Test Pump

11. WELL HEAD COMPLETION:
[X] Pitless Adapter [X] 12" Above Grade
[ ] Basement Offset [ ] Well House

12. WELL GROUTED? [ ] No [X] Yes From 0 to 82 ft.
[ ] Neat Cement [X] Bentonite [X] Other E-Z MUD
No. of Bags 4 Additives 1/3 GEL

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type SEPTIC Distance 50+ ft. Direction EAST
Type ___ Distance ___ ft. Direction ___

14. PUMP: [ ] Not Installed [ ] Pump Installation Only
Manufacturer's Name AERMOTOR
Model Number 712-50 HP 1/2 Volts 230
Length of Drop Pipe 45 ft. Capacity 1.2 G.P.M.
TYPE: [X] Submersible [ ] Jet [ ] Other ___
PRESSURE TANK:
Manufacturer's Name WELL-RITE
Model Number WR-60 Capacity 6 Gallons

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
BROWN SAND, CLAY	17	17
BROWN SAND, GRAVEL	4	21
BROWN CLAY, GRAVEL	3	24
GRAY CLAY, GRAVEL	7	31
GRAY GRAVEL	5	36
GRAY CLAY, GRAVEL	7	43
GRAY GRAVEL	10	53
GRAY SAND, GRAVEL	14	67
GRAY GRAVEL	11	78
GRAY SANDSTONE, GRAVEL	18	96

RECEIVED JUN 03 1998
WATER SUPPLY
GROUND

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? [ ] Yes [ ] No
Casing Diameter ___ in. Depth ___ ft.
PLUGGING MATERIAL: [ ] Neat Cement [ ] Bentonite Slurry [ ] Cement/Bentonite Slurry [ ] Concrete Grout [ ] Bentonite Chips
No. of Bags ___ Casing Removed? [ ] Yes [ ] No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:
[X] Employee [ ] Subcontractor
Name BILL & DAVE WEBER

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
BEAR WELL DRILLING 38-1529
REGISTERED BUSINESS NAME REGISTRATION NO.
Address 8301 DIXON RD RENSSELAERTOWN
Signed William Weber AUTHORIZED REPRESENTATIVE Date 5-20-98

GEOLOGICAL SURVEY COPY

EQP 2017 (12/96)

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 38000005426

Tax No:	Permit No: 10817	County: Jackson	Township: Leoni

Well ID: 38000005426

Elevation:

Latitude:

Longitude:

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SW¼ SE¼ SE¼	19	01S 01E		

Distance and Direction from Road Intersection: 3/8 mi S of Seymour on E side of Munith

Well Name:

Well Owner: Tina Osowaski

Well Address:	Owner Address:
1575 Munith Rd. Jackson MI 49201	1575 Munith Rd. Jackson MI 49201

Drilling Method: Rotary

Well Depth: 160.00 ft. **Well Use:** Household

Well Type: New **Date Completed:** 8/29/2002

Casing Type: PVC plastic
Casing Joint: Solvent welded/glued
Diameter: 5.00 in. to 105.00 ft. depth

Bore Diameter 1: 7.88 in. to 105.00 ft. depth
Bore Diameter 2: 4.50 in. to 160.00 ft. depth
Bore Diameter 3:
Height: 1.00 ft. above grade
Casing Fitting: Shale packer/trap

Static Water Level: 39.00 ft. Below Grade(Not Flowing)
Yield Test Method: Air
Measurement Taken During Pump Test:
160.00 ft. after 3.00 hrs. pumping at 70.00 GPM

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No **Well Intake:** Bedrock Well
Filter Packed:
Screen Diameter: **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes **Grouting Method:** Grout pipe inside casing
No. of Bags: 11 **Additives:** None
Grouting Materials:
Bentonite slurry From 0.00 ft. to 105.00 ft.

Well Head Completion: 12 inches above grade, Pitless adapter

Nearest source of possible contamination:

Type	Distance	Direction
Septic tank	50.00 ft.	South
None	0.00 ft.	

Drilling Machine Operator Name: Terry

Employment: Employee

Pump Installed: Yes **Pump Installation only:** No
Pump Installation date: **HP:** 0.50
Manufacturer: A.Y. McDonald **Pump Type:** Submersible
Model Number: 12050K2 **Pump Capacity:** 10.00 GPM
Length of Drop Pipe: 65.00 ft. **Id of Well:**
Diameter of Drop Pipe: 1.00 in.
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Goulds
Model Number: V100

Formation Description	Thickness	Depth to Bottom
Brown-Clay & Sand	27.00	27.00
Gray-Clay	17.00	44.00
Gray-Gravel-W/Shale	56.00	100.00
Gray-Limestone-Brown	17.00	117.00
Gray-Sandstone	10.00	127.00
Gray-Shale Sandstone Limestone	33.00	160.00

Geology Remarks:

Contractor Type: Water well drilling contractor
Registration Number: 2033
Business Name: Terry's Well Service, Inc.
Business Address: 2120 W. Bellevue Hwy. Olivet, MI 49076

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative **Date**

General Remarks:

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

9/14/2002 10:18

GEOLOGICAL SURVEY SAMPLE No. [ ]

JAN 02 1990

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

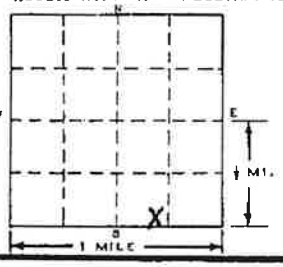
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	SE ¼ of W ½ ¼	19	2 N/S.	1 E/W.

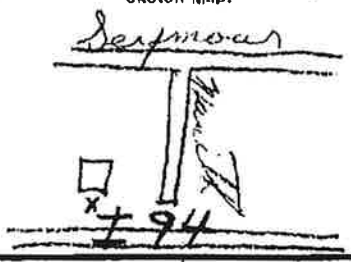
Distance And Direction from Road Intersections: ¼ mile S. of Seymour

Street address & City of Well Location: 1440 Munith Rd

Locate with "X" in section below



Sketch Map:



8 OWNER OF WELL: Paul Lavanger

Address: Van Mar Homes Inc

4 WELL DEPTH: (completed) 155 ft. Date of Completion

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☐ Welded ☒ Height: Above/Below Surface 1 ft.

5 in. to 112 ft. Depth | Weight 200 lbs./ft.

____ in. to ____ ft. Depth | Drive Shoe? Yes ☐ No ☒

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	60	60
Clay & Rocks	45	105
Lime Marshall Sandstone	50	155

8 SCREEN:

Type: ____ Dia.: ____

Slot/Gauze ____ Length ____

Set between ____ ft. and ____ ft.

Fittings:

9 STATIC WATER LEVEL

55 ft. below land surface

10 PUMPING LEVEL below land surface

____ ft. after ____ hrs. pumping ____ g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) ____ Chlorides (Cl) ____

Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☒ Bentonite ☐ ____

Depth: From 0 ft. to 112 ft.

14 Nearest Source of possible contamination

50 feet W Direction Septic Type

Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☒ Not installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of Drop Pipe ____ ft. capacity ____ G.P.M.

Type: ☐ Submersible ☐ Jet ☐ Reciprocating

ADDED INFO BY DRILLER, ITEM NO.

*CORRECTED BY

**ADDITION BY

ELEVATION

DEPTH TO ROCK

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

Permit # 6885

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Washburn Well Drilling 1150

REGISTERED BUSINESS NAME REGISTRATION NO.

Address 548 Pershing

Signed [signature] Date 12/12/89

AUTHORIZED REPRESENTATIVE

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.

Well ID: 38000001486 — Failure to comply is a misdemeanor. — **Import ID:** 38727119401

Tax No:	Permit No:	County: Jackson	Township: Leoni

Well ID: 38000001486

Elevation:

Latitude: 42.2818

Longitude: -84.3647

Fraction:	Section:	Town/Range:	French Claim:	WSSN:
SE¼ NW¼ SW¼	19	02S 01E		2039538

Distance and Direction from Road Intersection: 2039538; 1 KINGDOM HALL

Well Name: 001

Well Owner: Kingdom Hall

Well Address:	Owner Address:
3377 DETTMAN JACKSON MI 49201	3377 DETTMAN JACKSON MI 49201

Drilling Method: Unknown

Well Depth: 0.00 ft. — **Well Use:** Type II public

Well Type: Replacement — **Date Completed:**

Casing Type: Unknown
Casing Joint: Unknown
Diameter:

Bore Diameter 1:
Bore Diameter 2:
Bore Diameter 3:
Height: 0.00 ft. above grade
Casing Fitting: None

Static Water Level: 999.99 ft. Below Grade(Not Flowing)
Yield Test Method: Unknown
Measurement Taken During Pump Test:

Abandoned Well Plugged: No
Reason for not plugging Well:

Abandoned well ID:

Screen Installed: No — **Well Intake:** Unknown
Filter Packed:
Screen Diameter: — **Length:**
Screen Material Type:
Slot:
Blank:
Fittings:

Well Grouted: Yes — **Grouting Method:** Unknown
No. of Bags: — **Additives:** None
Grouting Materials:
Unknown — From 0.00 ft. to 0.00 ft.

Well Head Completion: Unknown

Nearest source of possible contamination:

Type	Distance	Direction
Unknown	0.00 ft.	
Unknown		

Drilling Machine Operator Name:

Employment: Unknown

Pump Installed: No — **Pump Installation only:**
Pump Installation date: — **HP:**
Manufacturer: — **Pump Type:**
Model Number: — **Pump Capacity:**
Length of Drop Pipe: — **Id of Well:**
Diameter of Drop Pipe:
Draw Down Seal Used:

Pressure Tank Installed: No
Pressure Tank Type:
Manufacturer:
Model Number:

Formation Description	Thickness	Depth to Bottom
No Log	0.00	0.00

Geology Remarks: 1. [NO LOG AVAILABLE] [0] [0]

Contractor Type: Unknown
Registration Number:
Business Name:
Business Address:

WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signature of Registered Representative — **Date**

General Remarks: No Log Available

OTHER REMARKS

EQP 2017C (2/2000)

ATTENTION WELL OWNER: FILE WITH DEED

2/17/2000 11:58

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

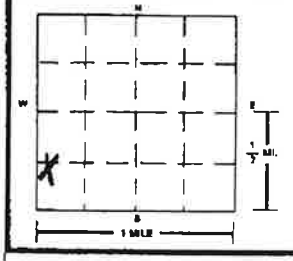
PERMIT NO: 5333

1. LOCATION OF WELL

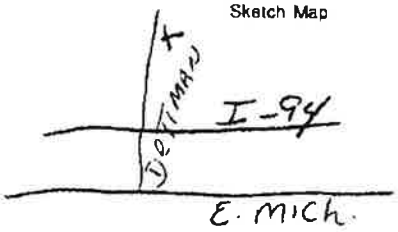
County	Township Name	Fraction	Section No.	Town No.	Range No.
JACKSON	LEONI	NW 1/4 SW 1/4 SW 1/4	19	2S	1E

Distance and Direction from Road Intersection
¼ mi. N. of I 94 on E. side of Dettman
Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: GEORGE MORRIS
3780 HAWKINS RD.
JACKSON MI 49201
Address Same as Well Location ☐ Yes ☒ No DETTMAN

4. WELL DEPTH: 70 ft. | Date Completed: 12/14/95 | ☒ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug
☒ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☒ Household ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat Pump
☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded ☐ Other _____
Diameter: 5 in. to 56 ft. depth
_____ in. to _____ ft. depth
BORE HOLE:
Diameter 7 7/8 in. to 56 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: 1 ft
Weight: _____ lbs./ft.
☐ Drive Shoe ☒ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bromer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
8 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
70 ft. After 2 hrs. Pumping at 50 G.P.M.
☐ Plunger ☐ Bailer ☒ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☒ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 0 to 56 ft.
☐ Neat Cement ☒ Bentonite ☒ Other GROUT
No. of Bags 6 Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type SEPTIC Distance 50 ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
SAND & STKS OF CLAY	19	19
GRAVEL	10	29
GRAY CLAY	8	37
GRAVEL	7	44
GRAY SANDROCK & STKS OF LIME	26	70

RECEIVED
DEC 21 1995
JACKSON HEALTH DEPT

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
MURPHS SET PUMP

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name TERRY

GW-2-228 9/93

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
TERRY'S WELL SERVICE (REGISTERED BUSINESS NAME) 23-2033 (REGISTRATION NO.)
Address 2120 BELLEVUE HWY., OLIVET, MI 49076
Signed Terry Combs (AUTHORIZED REPRESENTATIVE) Date 12-18-95

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY SAMPLE No.

SEP 12 1978

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	¼ ¼ ¼	19	2 N/S	1 E/W

Distance And Direction from Road Intersections: On Gypsy Lane off of Munith off of Ann Arbor Rd.

Street address & City of Well Location

Locate with "X" in section below

Sketch Map: N, W, E, S, ½ MI., 1 MILE

3 OWNER OF WELL: Daniel Kelso

Address 3434 Gypsy Lane Jackson, Mich.

4 WELL DEPTH: (completed) 130 ft. Date of Completion 8-1-78

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☐ Welded ☐ Diam. Plastic in. 5 to 102 ft. Depth; ____ in. to ____ ft. Depth

Height: Above/Below Surface 1 ft. Weight ____ lbs./ft. Drive Shoe? Yes ☒ No ☐

8 SCREEN: Type: ____ Dia.: ____ Slot/Gauze ____ Length ____ Set between ____ ft. and ____ ft. Fittings:

9 STATIC WATER LEVEL 50 ft. below land surface

10 PUMPING LEVEL below land surface 130 ft. after 1 hrs. pumping 40 g.p.m.; ____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ____ Chlorides (Cl) ____ Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No ☐ Neat Cement ☒ Bentonite ☐ ____ Depth: From ____ ft. to ____ ft.

14 Nearest Source of possible contamination ____ feet ____ Direction ____ Type

Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: ☒ Not installed Manufacturer's Name ____ Model Number ____ HP ____ Volts ____ Length of Drop Pipe ____ ft. capacity ____ G.P.M.

Type: ☐ Submersible ☐ Jet ☐ Reciprocating

2

FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand, strks. clay	50	50
Clay, gravel	45	95
Sand rock, lime	35	130

ADDED INFO BY DRILLER, ITEM NO.

*CORRECTED BY

**ADDITION BY

ELEVATION

DEPTH TO ROCK

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

6232

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Jeff Rotary Well Drilling Inc. 1077

REGISTERED BUSINESS NAME REGISTRATION NO.

Address #2 Charlotte, Mich.

Signed Louis Cook AUTHORIZED REPRESENTATIVE Date 8-2-78

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY SAMPLE No. [ ]

JUL 31 1981

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

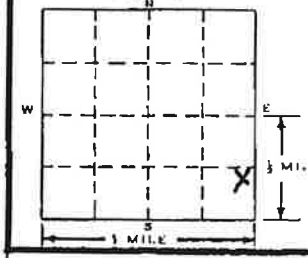
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Blackman	NE ¼ SE ¼ SE ¼	24	T2S N/S.	R1W E/W.

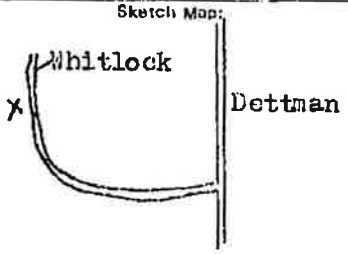
Distance And Direction from Road Intersections
500' W Whitlock and Dettman Roads

2945 Whitlock Rd.
Street address & City of Well Location

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL:
Mark Sullivan
Address 2945 Whitlock
Jackson, Michigan 49201

4 WELL DEPTH: (completed) Date of Completion
47 ft. 6/17/81

5
[X] Cable tool [ ] Rotary [ ] Driven [ ] Dug
[ ] Hollow rod [ ] Jetted [ ] Bored [ ]

6 USE:
[X] Domestic [ ] Public Supply [ ] Industry
[ ] Irrigation [ ] Air Conditioning [ ] Commercial
[ ] Test Well [ ]

7 CASING:
Threaded [X] Welded [ ]
Diam. 4 in. to 43 ft. Depth
___ in. to ___ ft. Depth
Height: Above/Below Surface 1 ft.
Weight 11 lbs./ft.
Drive Shoe? Yes [X] No [ ]

2 FORMATION

FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand and gravel	22	22
Gravel and little clay	18	40
Sand	7	47

USE A 2ND SHEET IF NEEDED

8 SCREEN:
Type: stainless Dia.: 4"
Slot/Gauze .008 Length 4'
Set between 43 ft. and 47 ft.
Fittings: seal, plug and riser

9 STATIC WATER LEVEL
24 ft. below land surface

10 PUMPING LEVEL below land surface
40 ft. after 2 hrs. pumping 15 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) ___ Chlorides (Cl) ___
Hardness ___ Other ___

12 WELL HEAD COMPLETION:
[ ] In Approved Pit
[X] Pitless Adapter [ ] 12" Above Grade

13 Well Grouted? [ ] Yes [X] No
[ ] Neat Cement [ ] Bentonite [ ] ___
Depth: From ___ ft. to ___ ft.

14 Nearest Source of possible contamination
70 feet W Direction s system Type
Well disinfected upon completion [X] Yes [ ] No

15 PUMP:
[ ] Not installed
Manufacturer's Name k Aermotor
Model Number A5SD12B HP 1/2 Volts 220
Length of Drop Pipe 35 ft. capacity 12 G.P.M.
Type: [X] Submersible
[ ] Jet [ ] Reciprocating

16 Remarks, elevation, source of data, etc.
Permit 2946

ADDED INFO BY DRILLER, ITEM NO.
*CORRECTED BY
**ADDITION BY
ELEVATION
DEPTH TO ROCK

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Fox Brothers Drillers, Inc. 167
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 6655 Brooklyn Rd., Jackson, Michigan 49201

Signed [signature] Date 6/19/81
AUTHORIZED REPRESENTATIVE

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER 1837

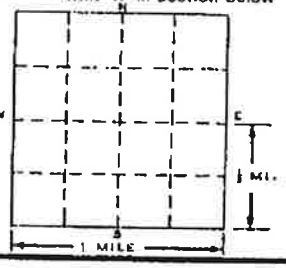
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Jackson	Leoni	¼ ¼ ¼	19	2 N/S	1 E/W

Distance And Direction From Road Intersection: 3123 Whipple Rd

Street Address & City of Well Location

Locate with "X" in Section Below — Sketch Map



3 OWNER OF WELL

Lewis Colvin
Address 3123 Whipple Rd
Jackson, MI 49201

Address Same As Well Location? ☐ Yes ☐ No

4 WELL DEPTH: 120 FT. — Date Completed MO. 03 DAY 03 YEAR 89 — ☒ New Well ☐ Replacement Well

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Auger ☐ Jetted ☐

6 USE: ☒ Domestic ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public ☐

7 CASING: Diameter ☐ Steel ☐ Threaded ☒ Plastic ☐ Welded
5 in. to 117 ft. depth
in. to ft. depth
Grouted Drill Hole Diameter
8 in. to 117 ft. depth
in. to ft. depth
Height Above/Below Surface ft
Weight lbs /ft
Drive Shoe ☐ Yes ☐ No

8 SCREEN: ☒ Not Installed
Type Diameter
Slot/Gauze Length
Set between ft. and ft.
FITTINGS ☐ K-Packer ☐ Lead Packer ☐ Bremer Check
☐ Blank above screen ft Other

9 STATIC WATER LEVEL: 45 ft. below land surface ☐ Flow

10 PUMPING LEVEL below land surface
100 ft. after 1 hrs. pumping at 20 G.P.M.
ft. after hrs. pumping at G.P.M.

11 WELL HEAD COMPLETION: ☒ Pitless adapter ☒ 12" above grade ☐ Basement offset ☐ Approved pit

12 WELL GROUTED? ☐ No ☒ Yes From 0 to 117 ft
☐ Neat cement ☒ Bentonite ☐ Other
No. of bags of cement Additives

13 Nearest source of possible contamination
Type SEPTIC Distance 50 ft. Direction
Well disinfected upon completion? ☐ Yes ☐ No
Was old well plugged? ☐ Yes ☐ No

14 PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's name Webtrol
Model number HP 1/2 Volts 230
Length of Drop Pipe 65 ft. capacity 10 G.P.M
TYPE: ☒ Submersible ☐ Jet
PRESSURE TANK: A-O Smith
Manufacturer's name
Model number V-60 Capacity 6.1 Gallons

2 FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	110	110
Sandstone	10	120

4/20/89
AWK

RECEIVED
Mich. Dept. of Public Health
APR 24 1989
Bureau of Environmental and Occupational Health

USE A 2ND SHEET IF NEEDED

15. Remarks, elevation, source of data, etc.
Well Grouted from 0 to 25ft with Benseal
Permit No.

17. Rig Operator's Name:

16. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

LJT WELL DRILLING INC 23-1077
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 4621 THORNTON HWY CHARLOTTE MI

Signed Jerry Lewis Pres AUTHORIZED REPRESENTATIVE Date 3-18-89

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

D87d 12/85

DRILLING CONTRACTOR COPY

GEOLOGICAL SURVEY SAMPLE No.

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

19,20,21 or 16

1 LOCATION OF WELL

County	Twp.	Fraction	Section No.	Town	Range
Jackson	Leoni	¼ ¼ ¼		2 N/S	1 E/W

Distance And Direction from Road Intersections

OWNER No.

9057 Seymour Rd Rt 2 Grass Lake
Street address & City of Well Location

3 OWNER OF WELL: Ronald Morton
Address 9057 Seymour Rd Grass Lake

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	0	112
Gravel	112	117
Clay Shale	117	120
Limestone	120	122
Shale	122	140
Sandstone	140	156
Sandstone (Marshallrock)	156	240

4 WELL DEPTH: (completed) 240 ft. Date of Completion May 21 68

5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ___

6 USE: ☐ Domestic ☒ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ___

7 CASING: Diam. Threaded ☒ Welded ☐
4 in. to 122 ft. Depth
___ in. to ___ ft. Depth
Height: Above/Below surface ___ ft.
Weight ___ lbs/ft.
Drive Shoe? Yes ☒ No ☐

8 SCREEN:
Type: ___ Dia.: ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
Fittings:

9 STATIC WATER LEVEL
2 ft. below land surface

10 PUMPING LEVEL below land surface
2 ft. after 2 hrs. pumping 50 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11 WATER QUALITY in Parts Per Million:
Iron (Fe) ___ Chlorides (Cl) ___
Hardness ___

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade

13 GROUTING:
Well Grouted? ☐ Yes ☒ No
Material: ☐ Neat Cement ☐ ___
Depth: From ___ ft. to ___ ft.

14 SANITARY: Incomplete
Nearest Source of possible contamination
___ feet ___ Direction ___ Type
Well disinfected upon completion ☒ Yes ☐ No

15 PUMP: Not installed
Manufacturer's Name ___
Model Number ___ HP ___
Length of Drop Pipe ___ ft. capacity ___ G.P.M.
Type: ☐ Submersible ☐ ___ ☐ Jet ☐ Reciprocating

16 Remarks, elevation, source of data, etc.

ADDED INFO. BY DRILLER, ITEM NO.

*CORRECTED BY:

**ADDITION BY:

17 WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Lloyd W Sandford — REGISTERED BUSINESS NAME
0292 — REGISTRATION NO.
Address 323 Cardinal Ct. Jackson
Signed Lloyd W Sandford — AUTHORIZED REPRESENTATIVE
Date May 21 68

D67D 100M 6-66

APR 28 1969

GEOLOGICAL SURVEY COPY

RESOURCE, INC.

320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

McGill Rd. Landfill

Boring/Well No. MW1 | Sheet 1 of 1 | Begun 10/30/86 | Completed 10/30/86

Elevations: Surface: 945.5 (U.S.G.S.) | Top of Casing: 947.83

Soil Boring/Well Log

Driller	Geologist	Drill Tech
JBL	DPR	BC

Sampler Tool Penetration/Recovery(in.)	Split Spoon Sampler Blows, 6-inch Intervals: 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth(ft.)	Description and Remarks	Well Diagram
				SC		5, 10, 15, 20, 25, 30, 35	Clay-rich sand, stony, pebbly. Encountered numerous roots.	
							5" shale packer @ 22 ft.	
							T.D. @ 28 ft.	

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation

- Screened Interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout
- _____

MONITORING WELL NO: MW-1R

NTH CONSULTANTS, LTD.

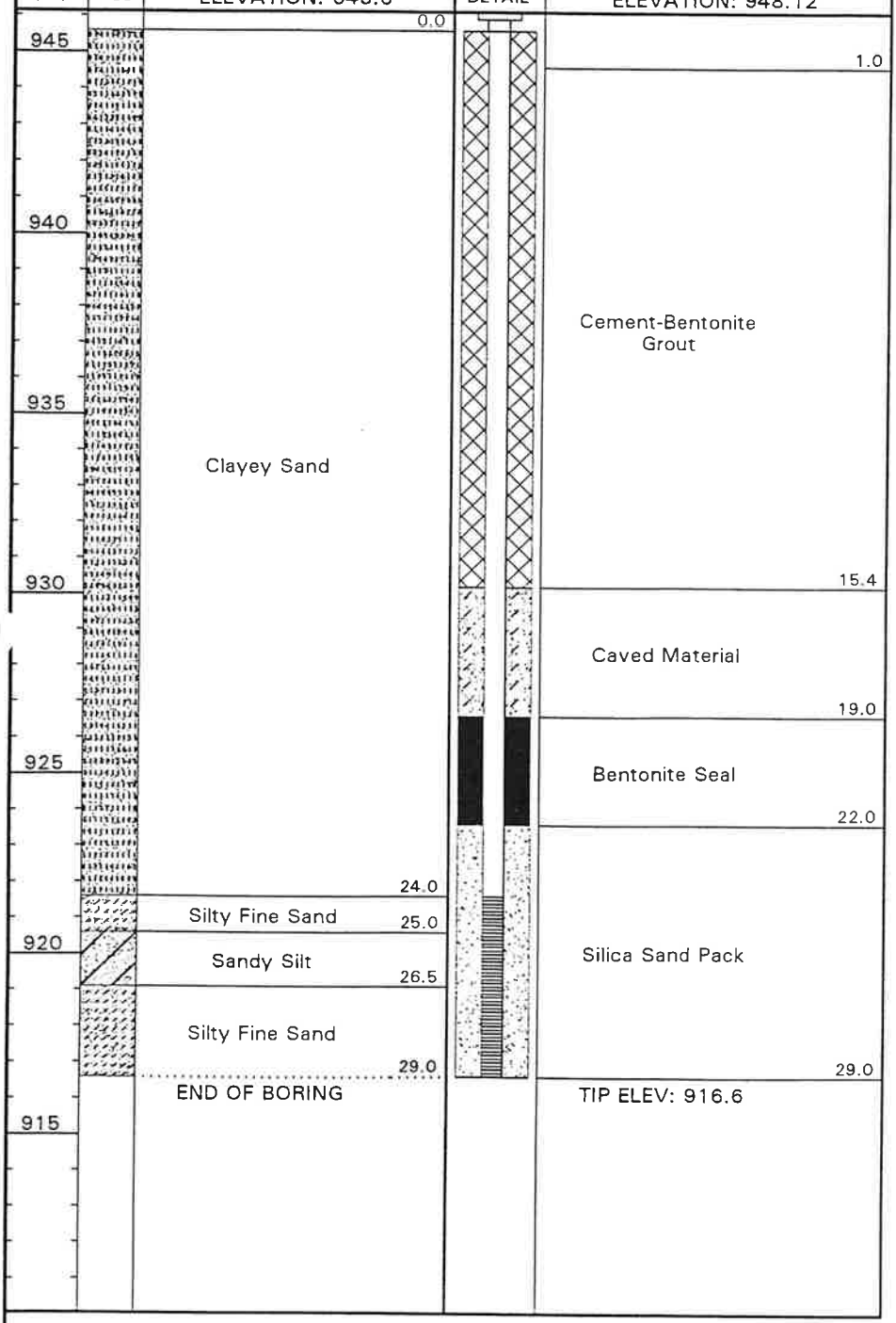
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-12-98	930.89	
06-22-98	930.13	

NOTES

[1] Generalized subsurface profile developed from the original Log of Test Boring No. MW-1.

[2] Developed well using a rod pump--removed approximately 75 gallons.

[3] Coordinates:
E 13122753.0011 N 288315.7442

Started:	*06/09/98*
Completed:	*06/09/98*
Inspector:	*D. Hohner / A. Kesl*
Contractor:	*Stearns Drilling Company*
Driller:	*D. Daverman*
Equipment:	*4-1/4" ID Hollow-Stem Augers*
Well Type:	*Monitoring*

Casing Diameter:	*2.0 inches*
Casing Length:	*26.5 feet*
Casing Type:	*PVC*
Screen Diameter:	*2.0 inches*
Screen Length:	*5.0 feet*
Screen Mesh:	*0.010 inch*
Screen Type:	*PVC*

FIGURE NO.

WELL ABANDONMENT LOG: MW-1R

NTH CONSULTANTS, LTD.

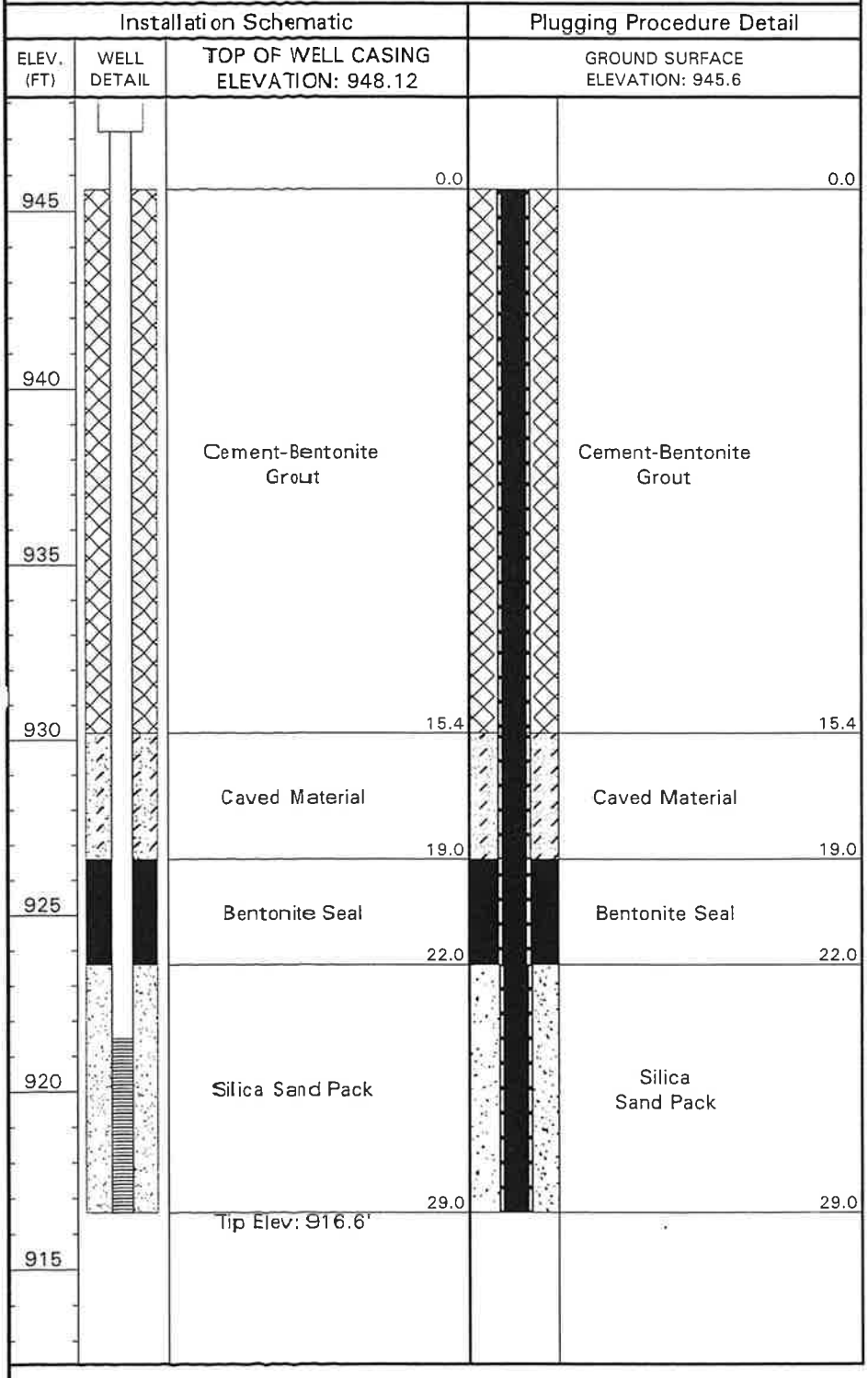
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well inaccessible to overdrill. Casing was cut off and well was abandoned in place by tremie grouting with bentonite grout.

[2] Original well construction details based on log of monitoring wells by NTH Consultants, Ltd., dated 06/09/98.

Started:	*05/24/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/24/01*	Casing Length:	*26.5 feet*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. A-1

RESOURCE, INC.

320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

McGill RR Landfill — JACKSON

Boring/Well No. MW2 | Sheet 1 of 1 | Begun 10/30/86 | Completed 10/30/86

Elevations: Surface (U.S.G.S.): 945.5 | Top of Casing: 947.24

Soil Boring/Well Log

Driller: JBL | Geologist: DPR | Drill Tech: BC

Sampler Tool Penetration/ Recovery (in.)	Split Spoon Sampler Blows / 6-inch Intervals: 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth (ft.)	Description and Remarks	Well Diagram
				SC		5	Clay-rich sand, pebbly, with a few stones. Encountered numerous roots; returned wood fibers in mud.	
						10	5" shale packer @ 12 ft.	
						15		
						20	T.D. @ 18 ft.	
						25		
						30		
						35		

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation:
- Screened Interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout
- _____

WELL ABANDONMENT LOG: MW-2

NTH CONSULTANTS, LTD.

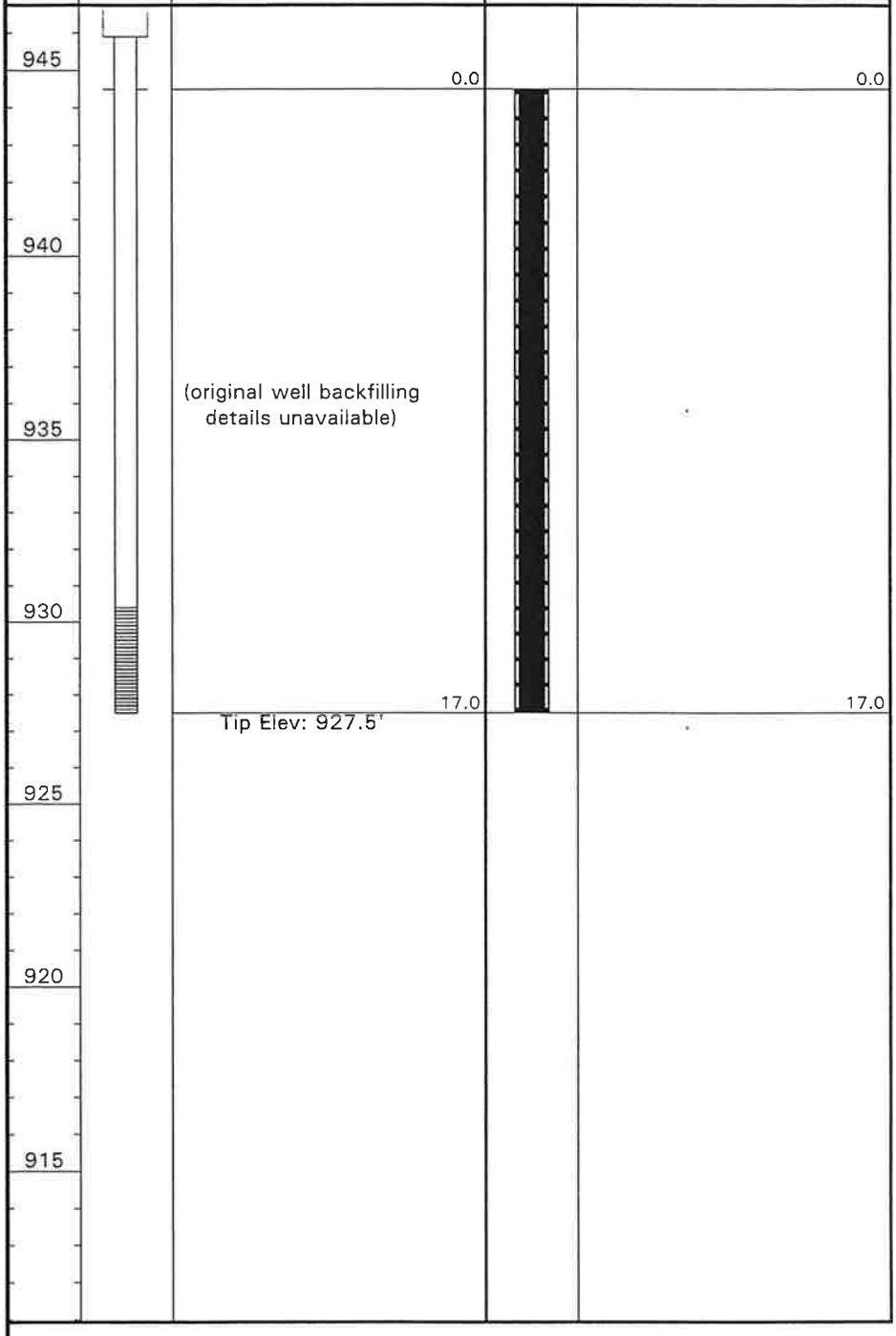
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well inaccessible to overdrill. Casing was was cut off at ground surface and well was abandoned in place by tremie grouting with bentonite grout.

[2] Original well construction details based on tabulated data in "Monitoring Well Summary" by Strata Environmental Services, Inc.

Started:	*05/24/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/24/01*	Casing Length:	*17.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Stainless Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*3.0 feet*
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Monitoring*	Screen Type:	*Stainless Steel*

FIGURE NO. A-2

RESOURCE, INC.

320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

McGill Rd. Landfill | ckson | 016

Boring/Well No. MW3 | Sheet 1 of 1 | Begun 10/31/86 | Completed 10/31/86

Elevations: Surface (U.S.G.S.): 941.5 | Top of Casing: 942.88

Soil Boring/Well Log

Driller: JBL | Geologist: DPR | Drill Tech: BC

Sampler Tool Penetration/ Recovery (in.)	Split Spoon Sampler Blows, 6-inch Intervals: 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth (ft.)	Description and Remarks	Well Diagram
					SC	5, 10, 15, 20, 25, 30, 35	Clayey fine to medium-grained sand with a few stones. Encountered numerous roots; returned wood fiber in drilling mud.	
							5" shale packer @ 22 ft.	
							T.D. @ 28 ft.	

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation:
- Screened Interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW3

Sheet 1 of 1

Project PHILIP MORRIS LANDFILL

Location JACKSON

Date Completed 2-22-96

Crew Chief DARYL KRAUSE
Drill Rig CME 750
Boring Method 4¼ HSA

Hole Plugged With CEMENT GROUT

GROUNDWATER:
Encountered @ 8' ft.
After completion ft.
After hrs. ft.
Seepage ft.
Boring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap

Screen/Type
Size
Slot
Set @
Backfilled

Bentonite Seal
Grout/Type CEMENT GROUT
Depth 31 TO SURFACE
Protective Casing —
Materials Cleaned ALL EQUIP
Development —

REMARKS: WELL CASING & SCREEN IN GOOD CONDITION

LEGEND:
BlowCount: Blows per 6"
w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	In Feet	SOIL DESCRIPTION
None			0	Hole Drilled w/ 4¼ HSA
				Drilled & pulled Hollow
				MW3
				ABANDONMENT
			5	
			10	
			15	
			20	
			25	
			30	
			31'	31' F-08

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF MW-3R

SHEET 1 of 1

CLIENT: PHILIP ENVIRONMENTAL (MICHIGAN) INC.

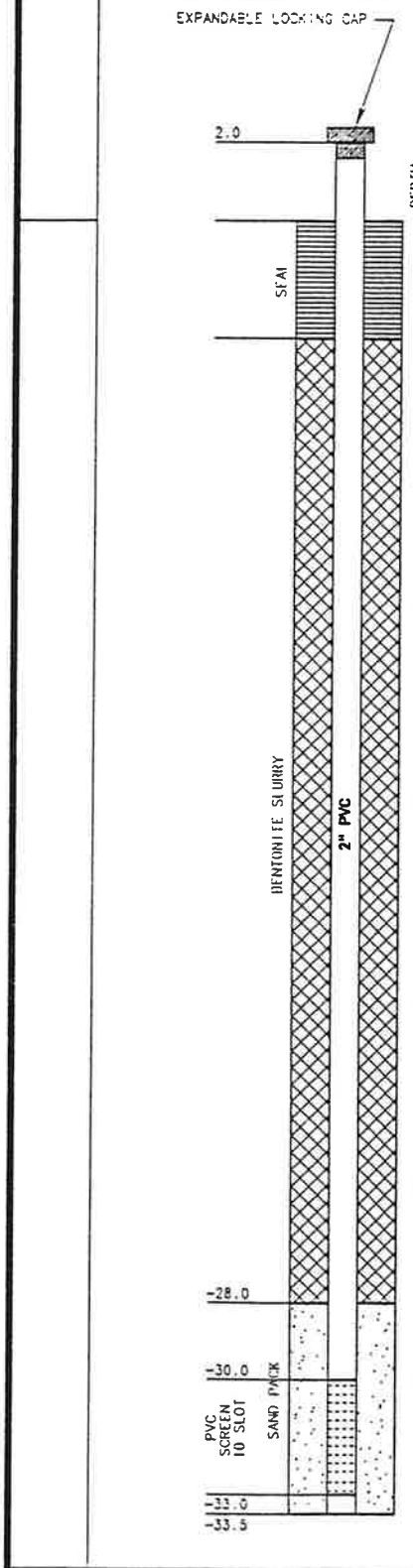
LOCATION: MCGILL ROAD LANDFILL (PHASE I)

DRILLING CO: WMD

START DATE: 5/1/95 10:00AM

GEOLOGIST: DAK

COMPLETION DATE: 5/1/95 1:00PM



DEPTH IN FEET	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
0				**FILL** Brown sand, fine and medium grained, some clay, trace gravel, piece of wood, damp.
5				**TOPSOIL** Dark brown sand, fine grained, some silt, roots, damp.
				SAND Dark gray, fine grained, with silt, damp.
10				
15				**SILT** Dark gray, with sand, trace clay, saturated.
20				
25				**SAND** Dark gray, with silt, saturated.
30				Total depth = 33.5 Feet

NOTE: Stratigraphic representations indicated above are approximate and may represent gradational changes.

GRAVEL · SAND · SILT · CLAY · ORGANIC · TILL · SHALE · ROCK · MISC. FILL · TOPSOIL

SATURATION LEVEL AT TIME OF DRILLING

STATIC WATER LEVEL

GROUNDWATER QUALITY FIELD DATA SHEET SHEET _1_ OF _1_

ENVIROLOGIC
TECHNOLOGIES, INC.

PROJECT/NAME: **PHILIP/950042A**
CLIENT: **PHILIP ENVIRONMENTAL (MI), INC.**
WELL INSTALLATION DATE: **May 1, 1995**

MONITORING WELL DEVELOPMENT DATA

WELL NUMBER: **MW-3R** LOCK NUMBER: **3381**
WELL LOCATION: **West of Phase I (Adjacent to MW-3 and MW-4)**
CASING MATERIAL: **PVC**
HEIGHT OF PIPE ABOVE GROUND: **~2 Feet**
DEPTH OF WELL: **~34.5 Feet (TOC)** SCREENED INTERVAL: **30-33 Feet BGL**
T.O.C. ELEVATION: _____ GROUND ELEVATION: _____
WELL DEVELOPMENT/PUMP CHARACTERISTICS: **(5/3/95) Bailed dry after 10 gallons. fair recovery**
COMMENTS: **Extremely silty and dark gray to cloudy appearance**

SAMPLING DATA

PARAMETERS SAMPLED FOR: _____
SAMPLED BY: _____ SAMPLE DATE/TIME: _____
STATIC WATER DEPTH (from T.O.C): _____ STATIC WATER ELEVATION: _____
WELL DEVELOPMENT/PUMP CHARACTERISTICS: _____
SAMPLING EQUIPMENT: _____
DECONTAMINATION PROCEDURES: _____
PURGE VOLUME REQUIRED: _____ VOLUME PURGED: _____
SAMPLE CONTAINERS: _____
SAMPLE PRESERVATION: _____
PHYSICAL APPEARANCE OF SAMPLE: _____
SAMPLE NUMBER: _____ SAMPLE LABEL: _____
SAMPLES DELIVERED TO: _____
NOTES: _____

						FINAL
Temp.:						
Ph:						
Cond.:						

MIDWEST WATER RESOURCE, INC.

320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

McGill Rd. Landfill | Jackson | 026

Boring/Well No. MW4 | Sheet 1 of 1 | Begun 10/31/86 | Completed 10/31/86

Elevations: Surface (U.S.G.S.): 941.5 | Top of Casing: 943.97

Soil Boring/Well Log

Driller: JBL | Geologist: DPR | Drill Tech: JES

Sampler Tool Penetration/ Recovery (in.)	Split Spoon Sampler Blows / 6-inch Intervals 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth (ft.)	Description and Remarks	Well Diagram
					SC	5	Clayey fine to medium sand with a few stones. Encountersed numerous stones; returned wood fibers in drilling mud	
						10	5" shale packer 2 12 ft. ----------	
						15		
						20	T.D. @ 18 ft.	
						25		
						30		
						35		

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation

- Screened Interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout

MIDWEST WAT .(RESOURCE, INC.
320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

Project: Plus Corp. McGill Rd. Landfill | Jackson | Job No. 025

Boring/Well No. MW5 | Sheet 1 of 1 | Begun 11/3/86 | Completed 11/3/86

Elevations: Surface: 987 (U.S.G.S.) | Top of Casing: 989.03

Soil Boring/Well Log

Driller: JES | Geologist: DPR | Drill Tech: JBL

Sampler Tool Penetration/ Recovery (in.)	Split Spoon Sampler Blows 6-inch Intervals 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth (ft.)	Description and Remarks	Well Diagram
					SC	10	Clayey fine to medium sand, some silt. Orange to light brown with a few stones.	
						20		
						30		
						40	Gray fine to medium sand with less clay.	
						50	T.D. @ 49 ft.	
						60		

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation:
- Screened interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout

MIDWEST WAT . RESOURCE, INC.

320 W. Santee Hwy.
Charlotte, MI 48813
Tel: (517)543-8155

Project: Plus Corp. McGill Rd. Landfill | Jackson | Job No. 025

Boring/Well No. MW5 | Sheet 1 of 1 | Begun 11/3/86 | Completed 11/3/86

Elevations: Surface (U.S.G.S.): 987 | Top of Casing: 989.03

Soil Boring/Well Log

Driller: JES | Geologist: DPR | Drill Tech: JBL

Sampler Tool Penetration/ Recovery(in.)	Split Spoon Sampler Blows 6-inch Intervals 1st	2nd	3rd	Unified Soil Class	Sample No. and Type	Depth(ft.)	Description and Remarks	Well Diagram
					SC	10	Clayey fine to medium sand, some silt. Orange to light brown with a few stones.	
						20		
						30		
						40	Gray fine to medium sand with less clay.	
						50	T.D. @ 49 ft.	
						60		

SS = Split Spoon
ST = Shelby Tube

Well Diagram Explanation:
- Screened interval
- Dry Granular Bentonite Grout
- Granular Bentonite Slurry Grout
- Cement Grout
- _____

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW5

Sheet 1 of 1

Project Phillips McGill LANDFILL

Location JACKSON MI

Date Completed 7-21-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 4¼" H.S.A.

Hole Plugged With cement / Bent

GROUNDWATER:
Encountered @ 35' ft.
After completion ft.
After hrs. ft.
Seepage ft.
oring Caved at ft.

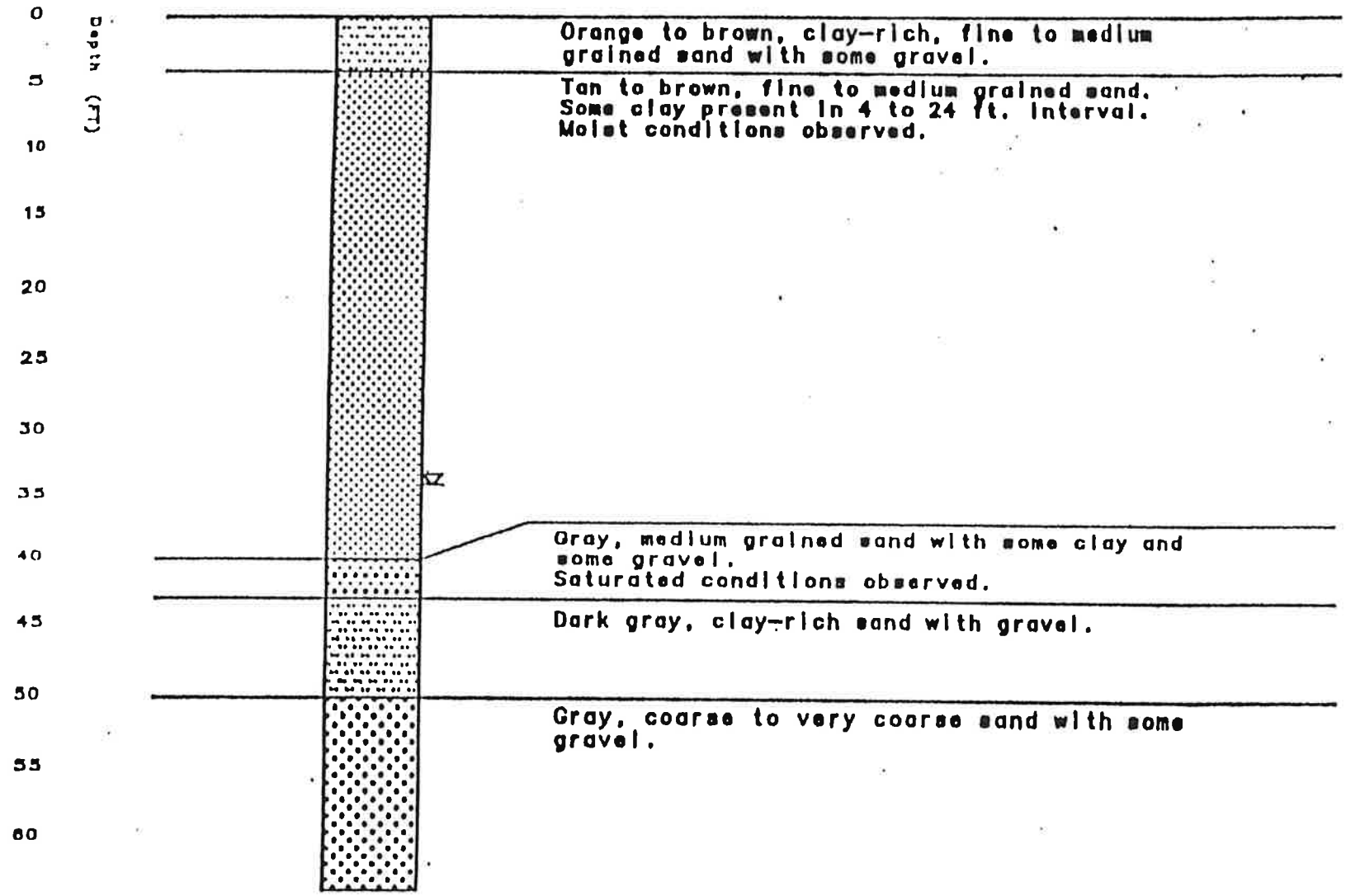
MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap
Screen/Type
Size
Slot
Set @
Backfilled
Bentonite Seal
Grout/Type cement / Bent
Depth 53' to surface
Protective Casing None
Materials Cleaned All Equipment
Development

REMARKS: CONDITION 2" well CASING good screen good 4" Stainless steel screen

Sample Type	REC	Blow Count	Depth in Feet	SOIL DESCRIPTION
None			5	Hole Drilled w 4¼ to 55'
			10	ABANDONMENT MW5
			15	
			20	
			25	
			53'	53' E.O.B.
			30	

LEGEND:
BlowCount-Blows per 6"
w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

MW–6



LEGEND

CLAYEY SAND | F.TO M. SAND | M. SAND | C.TO V.C. SAND

MW–6 WELL LOG | Mcgill Road Landfill, Jackson, Michigan

ENVIROLOGIC TECHNOLOGIES INC.

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 6

Sheet 1 of 1

Project PHILIP McGILL LANDFILL

Location JACKSON

Date Completed 2-21-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 4¼ H-SA

Hole Plugged With CEMENT GROUT

GROUNDWATER:
Encountered @ 35' ft.
After completion ft.
After ____ hrs. ft.
Seepage ft.
Boring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap

Screen/Type
Size
Slot
Set @
Backfilled

Bentonite Seal
Grout/Type CEMENT/BENT
Depth 66' TO SURFACE
Protective Casing
Materials Cleaned All Equip
Development

REMARKS: WELL CASING BROKE IN HOLE @ 32' OPEN DRILLED PIPE TO 66' W/ 4¼ H SA

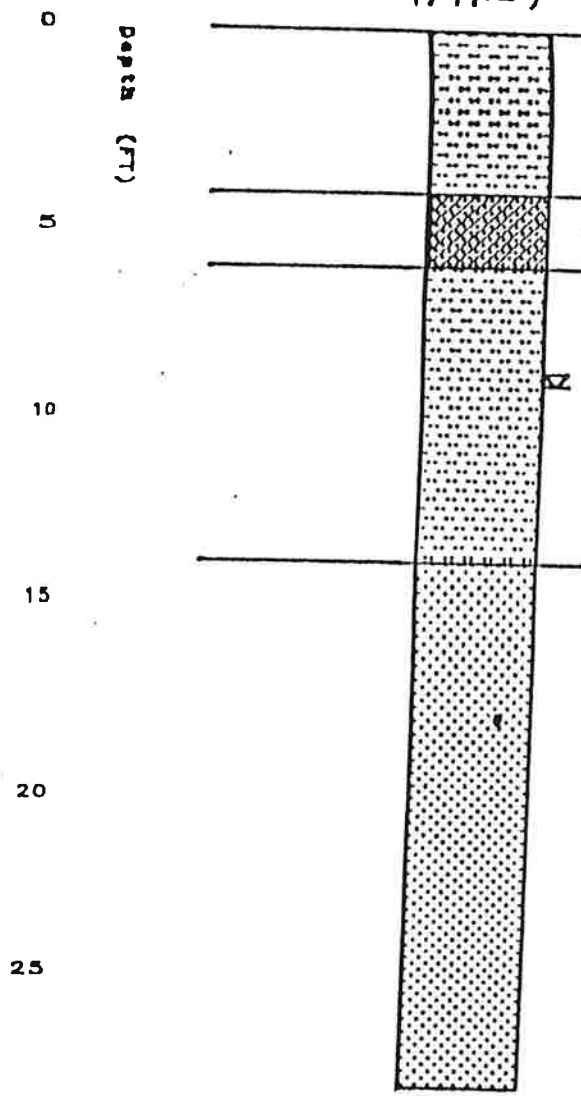
LEGEND:
BlowCount/Blows per 6" w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
None				Hole Drilled w/ 4¼ H.S.A.
				ABANDONMENT MW 6
				Drilled to 66
			5	
			10	
			15	
			20	
			66'	66' F-OB
			25	
			30	

WELL CASING BROKE IN HOLE @ 32' OPEN DRILLED PIPE TO 66' W/ 4¼ H SA

CASING IN BAD SHAPE

MW-7



0 to 2 feet, red to brown, clay-rich, fine to medium grained sand. 2 to 4 feet, brown to gray, clay-rich, fine to medium grained sand.

Orange to brown mottled sandy clay. Some clay present in 4 to 24 ft. interval.

Tan, clay-rich sand some gravel. Moist conditions observed.

14 to 20 feet, tan, fine to medium grained sand with clay. 20 to 28 feet, gray, fine to medium grained san with clay and some gravel.

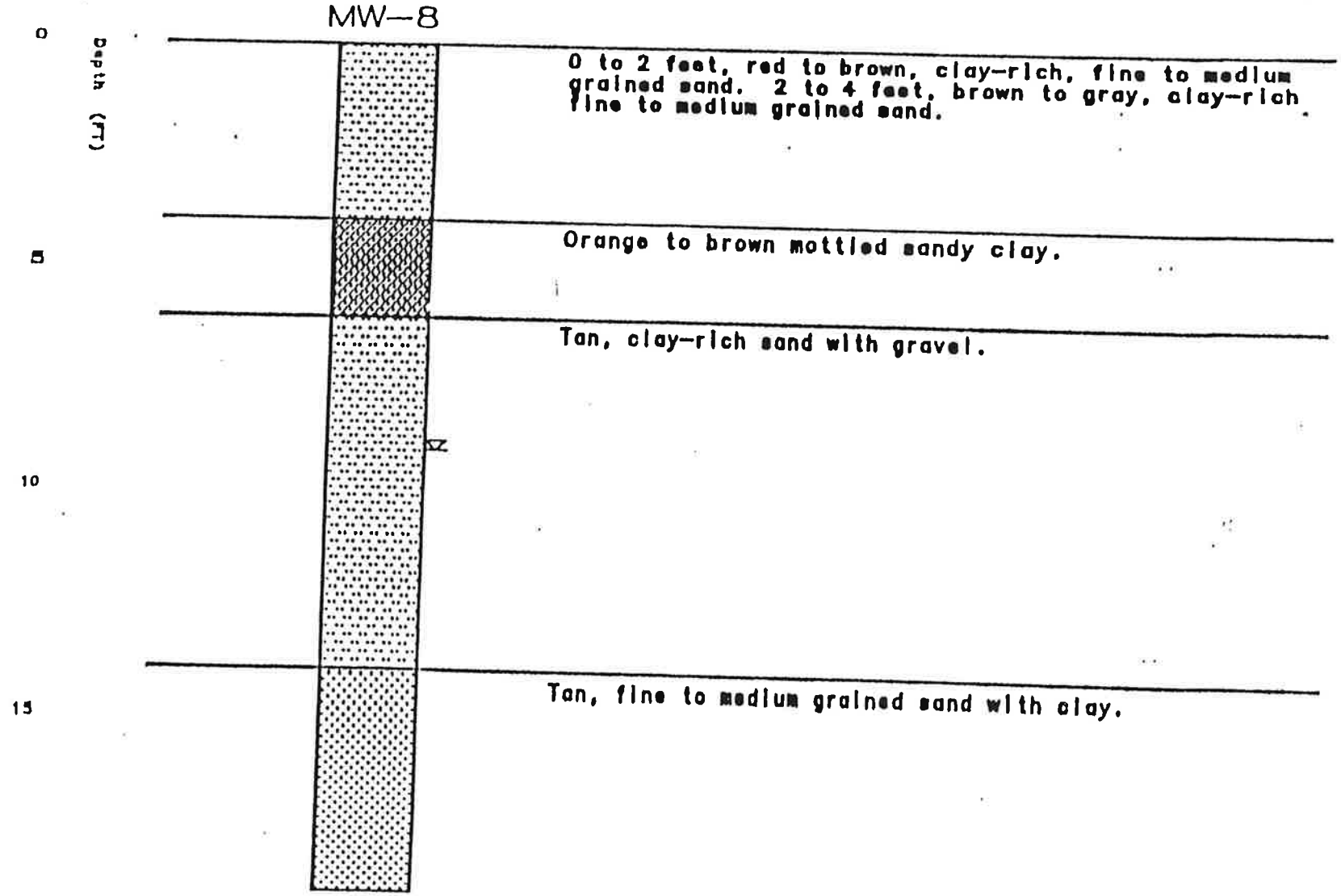
LEGEND

CLAYEY SAND F. TO M. SAND SANDY CLAY

MW-7 WELL LOG

McGill Road Landfill, Jackson Michigan

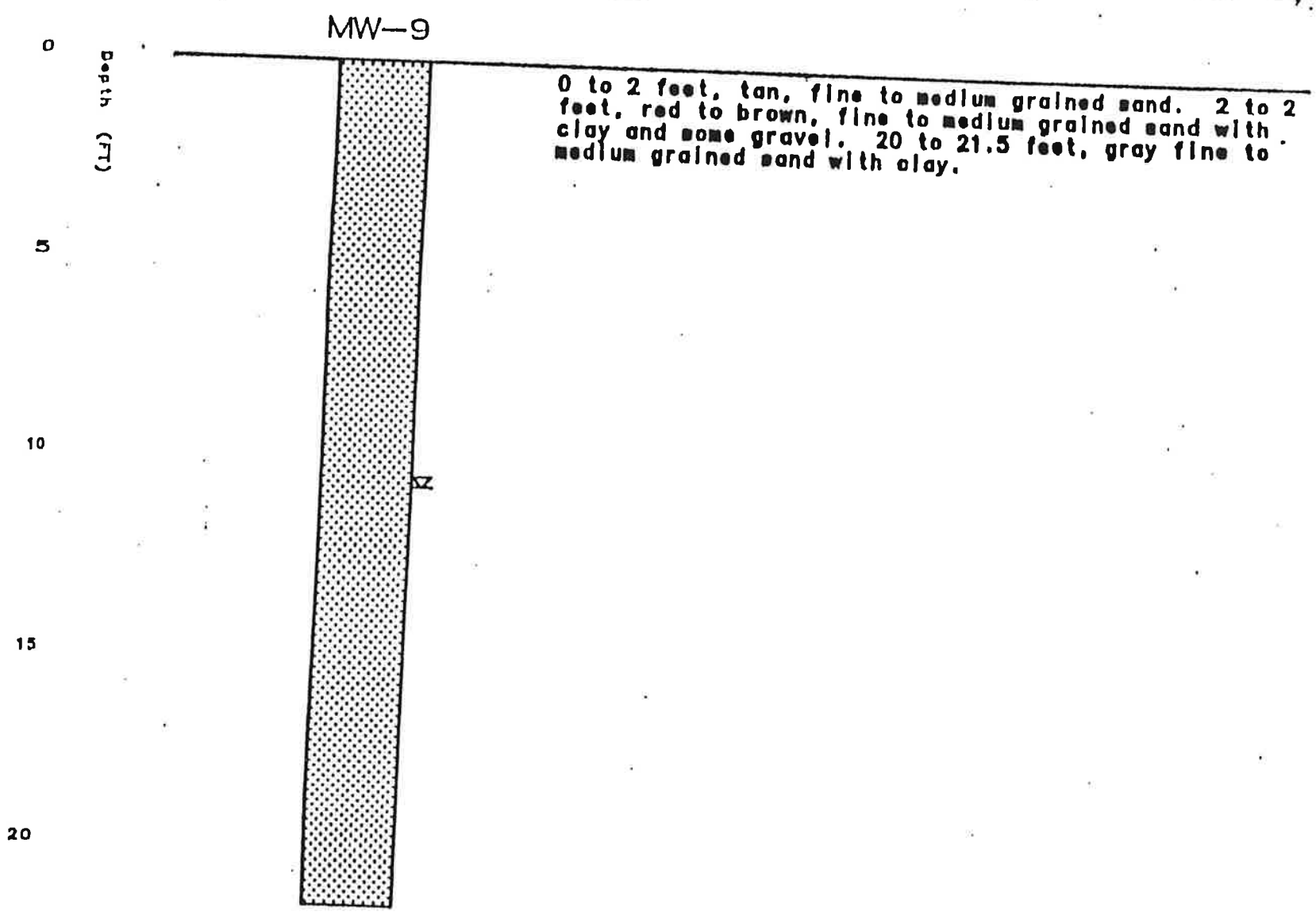
ENVIROLOGIC TECHNOLOGIES INC.



MW-8 WELL LOG

Mcgill Road Landfill, Jackson, Michigan

ENVIROLOGIC TECHNOLOGIES INC.



MW-9 WELL LOG

Mcgill Road Landfill, Jackson, Michigan

ENVIROLOGIC TECHNOLOGIES INC.

2534 BLACK CREEK ROAD
MUSKEGON, MICHIGAN 49444-2574
PH. (616) 777-3447

LOG OF SOIL BORING NO. MW #10

PROJECT McGill Landfill

JOB NO. 223-1

LOCATION McGill Road

SURFACE ELEV. _____ DATE 7-30-91

Jackson, MI

Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per 6"
	SC	0-7' Clayey sand, light greenish gray, fine grained, with silt and gravel.	
5			
		7-20' Clayey sand, grayish brown, fine grained, with silt.	
10			
		▽ STATIC WATER LEVEL 13.5'	
15			
20		TOTAL DRILLING DEPTH 20'	
25			
30			

TYPE OF SAMPLE
-DISTURBED
-SPLIT SPOON
-CONSIST LINER
-[illegible]

REMARKS Well screen set from 13-18 feet with 5' #10 slot stainless steel well screen, dielectric coupling and 13' of 2" galvanized pipe.

GROUND WATER OBSERVATIONS

G W ENCOUNTERED AT	FT	INS
G W ENCOUNTERED AT	FT	INS
G W AFTER COMPLETION	FT	INS
[illegible]	FT	INS

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 10

Sheet 1 of 1

Project PHILIP MORRIS LANDFILL

Location JACKSON

Date Completed 2-27-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 750
Boring Method 4¼ HSA

Hole Plugged With CEMENT BENT

GROUNDWATER:
Encountered @ 9.0' ft.
After completion ft.
After ____ hrs. ft.
Seepage ft.
Boring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap
Screen/Type
Size
Slot
Set @
Backfilled
Bentonite Seal
Grout/Type CEMENT BENT
Depth 21' TO SURFACE
Protective Casing
Materials Cleaned ALL EQUIPMENT
[redacted] WELL CASING & SCREEN GOOD CONDITION
WELL ABANDONMENT

REMARKS:

GEND:
BlowCount:Blows per 6"
w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
None			5	Hole Drilled w/ 4¼" to fill well MW 10 (ABANDONMENT)
			10	
			15	
			20	
			21'	21' F.B
			25	
			30	

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF MW-10R

SHEET 1 of 1

CLIENT: PHILIP ENVIRONMENTAL (MICHIGAN) INC.

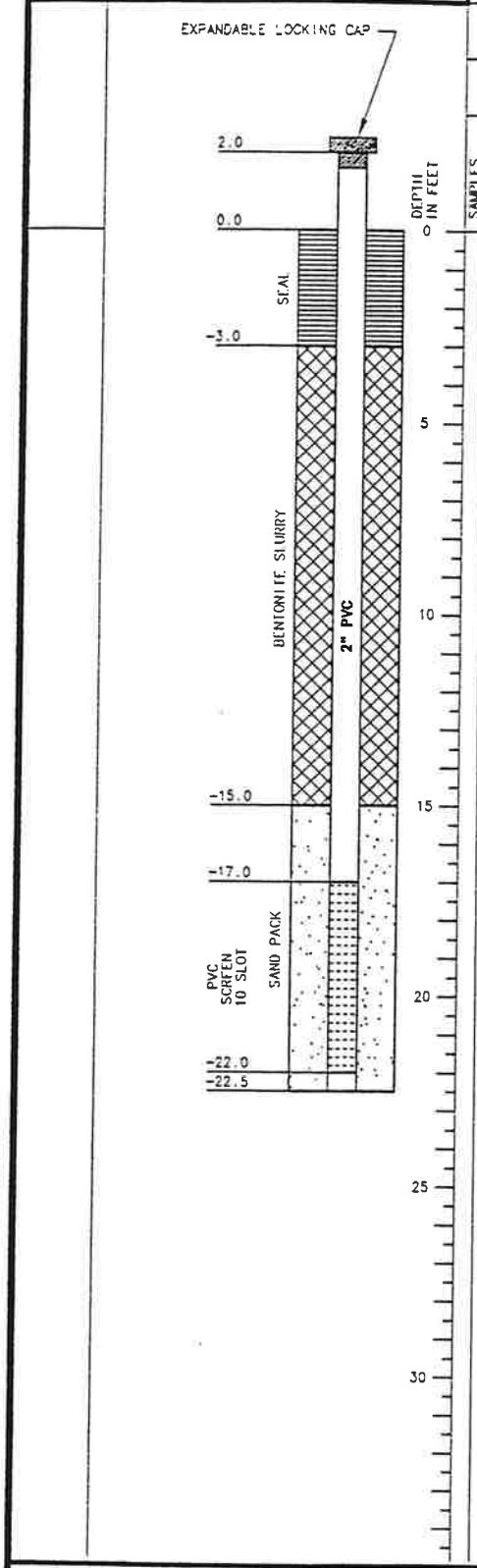
LOCATION: MCGILL ROAD LANDFILL (PHASE I)

DRILLING CO: WMD

START DATE: 5/1/95 1:30PM

GEOLOGIST: DAK

COMPLETION DATE: 5/1/95 7:30PM



DESCRIPTION

FILL
Brown sand, fine and medium grained, some clay, trace gravel, pieces of wood, damp.

SAND
Brown, fine grained, with silt, damp.

SAND
Brown, fine grained, with silt, saturated.

SAND
Gray, fine grained, with silt, saturated.

Total depth = 22.5 feet

NOTE:
Stratigraphic representations indicated above are approximate and may represent gradational change.

GRAVEL · SAND · SILT · CLAY · ORGANIC · TILL · SHALE · ROCK · MISC. FILL · TOPSOIL

SATURATION LEVEL AT TIME OF DRILLING

STATIC WATER LEVEL

GROUNDWATER QUALITY FIELD DATA SHEET SHEET _1_ OF _1_

ENVIROLOGIC TECHNOLOGIES, INC.

PROJECT/NAME: **PHILIP/950042A**

CLIENT: **PHILIP ENVIRONMENTAL (MI), INC.**

WELL INSTALLATION DATE: **May 1, 1995**

MONITORING WELL DEVELOPMENT DATA

WELL NUMBER: **MW-10R** LOCK NUMBER: **3381**

WELL LOCATION: **West of Phase I (Adjacent to MW-10 and MW-56)**

CASING MATERIAL: **PVC**

HEIGHT OF PIPE ABOVE GROUND: **~2 Feet**

DEPTH OF WELL: **~22.5 Feet BGL** SCREENED INTERVAL: **17-22 Feet BGL**

T.O.C. ELEVATION: _____ GROUND ELEVATION: _____

WELL DEVELOPMENT/PUMP CHARACTERISTICS: **(5/3/95) Bailed approx. 30 gallons, good recovery**

COMMENTS: **Extremely silty and dark gray to cloudy appearance**

SAMPLING DATA

PARAMETERS SAMPLED FOR: _____

SAMPLED BY: _____ SAMPLE DATE/TIME: _____

STATIC WATER DEPTH (from T.O.C): _____ STATIC WATER ELEVATION: _____

WELL DEVELOPMENT/PUMP CHARACTERISTICS: _____

SAMPLING EQUIPMENT: _____

DECONTAMINATION PROCEDURES: _____

PURGE VOLUME REQUIRED: _____ VOLUME PURGED: _____

SAMPLE CONTAINERS: _____

SAMPLE PRESERVATION: _____

PHYSICAL APPEARANCE OF SAMPLE: _____

SAMPLE NUMBER: _____ SAMPLE LABEL: _____

SAMPLES DELIVERED TO: _____

NOTES: _____

FINAL

Temp.:						
Ph:						

WESTSHORE ENGINEERING & SURVEYING, INC.
2534 BLACK CREEK ROAD
MUSKEGON, MICHIGAN 49444-2574
PH. (616) 777-3447

LOG OF SOIL BORING NO. MW-11

PROJECT McGill Landfill

LOCATION McGill Road
Jackson, MI

JOB NO. 222-1

SURFACE ELEV. _____ DATE 7/20/91

DEPTH	U.S.C.	SOIL DESCRIPTION
0	CL	0.9' Silty sand, medium brown, fine grained, clear, poorly sorted, rounded, with gravel and clay infilling.
5		
10	CL	9-22' Sand, medium brown, fine to medium grained, clear, rounded with gravel, silt and clay infilling. ▽ Static Water Level 11.5'
15		
20		
		TOTAL DRILLING DEPTH 22.0'
25		

TYPE OF SAMPLE
-DISTURBED
-SPLIT SPOON
-UNDIST. LINER
-THIN WALL TUBE

REMARKS well screen set from 17-22' with a 5' # 10 slot stainless steel well screen, dielectric couplings and 20' of 2" Galvanized pipe.

GROUND WATER OBSERVATIONS

G W ENCOUNTERED AT	FT	HRS
G W ENCOUNTERED AT	FT	HRS
G W AFTER COMPLETION	FT	HRS
G W AFTER	FT	HRS

WESTSHORE ENGINEERING & SURVEYING, INC.
2534 BLACK CREEK ROAD
MUSKEGON, MICHIGAN 49444-2874
PH. (616) 777-3447

LOG OF SOIL BORING NO. MONITORING WELL #12
PROJECT MOBIL LANDFILL
LOCATION McGILL ROAD
JACKSON, MI
JOB NO. 276-1
SURFACE ELEV. _____ DATE 01-09-92

Sample & Type	Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per 6"
D		SP	0-4' SILTY SAND, medium brown, fine grained, clear, poorly sorted, rounded	
D	5	SC	4-9' SILTY SAND, medium brown, fine grained, poorly sorted, clear, rounded with gravel and clay infilling	
D	10	SC	9-24' SAND, medium brown, fine to medium grained, clear, rounded, poorly sorted, with silt and clay infilling	
	15			
	20			
	25		TOTAL DRILLING DEPTH 24'	
	30			
	35			

TYPE OF SAMPLE
D - DISTURBED
SS - SPLIT SPOON
UC - UNDISTURBED CORE
TW - THIN WALL TUBE

REMARKS WELL SCREEN SET FROM 19-24' BELOW GRADE WITH 5-FOOT #7 SLOT STAINLESS STEEL WELL SCREEN, 23' OF 2" GALVANIZED STEEL PIPE AND A DIELECTRIC COUPLING

GROUND WATER OBSERVATIONS

	FT	INS
G W ENCOUNTERED AT	FT	INS
G W ENCOUNTERED AT	FT	INS
G W AFTER COMPLETION	FT	INS
G W AFTER HRS		

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 12

Sheet 1 of 1

Project Philip McGill Landfill

Location JACKSON

Date Completed 7-20-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 4¼" H.SA

Hole Plugged With Cement Bent

GROUNDWATER:
Encountered @ 21' ft.
After completion ft.
After hrs. ft.
Seepage ft.
Boring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap
Screen/Type
Size
Slot
Set @
Backfilled
Bentonite Seal
Grout/Type Cement Bent
Depth 37' to surface
Protective Casing
Materials Cleaned All Equipment
Development ~~Conditioning Screen Well Abandonment~~

REMARKS: Condition of well casing & screen 37' gal. well ABANDONMENT

LEGEND:
BlowCount-Blows per 6" w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	In Feet	SOIL DESCRIPTION
None				well ABANDONMENT well overdrilled by (4¼ H.SA / out of Landfill cell) @
			5	
			10	
			15	
			20	
			25	
			30	

37' F-OB

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 12R

Sheet 1 of 1

Project PHILIP McGILL LANDFILL

Location JACKSON

Date Completed 2-20-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 4¼ H.S.A.
Hole Plugged With ~~Bent~~ CEMENT GROUT

GROUNDWATER:
Encountered @ Appox 19' ft.
After completion ~~21~~ ft.
After ____ hrs. ____ ft.
Seepage ____ ft.
Boring Caved at ____ ft.

MONITOR WELL DATA:
Pipe/Type 2" PVC
Length 27.5'
Above Ground 2.5'
Cap J plug (~~BENTO~~ on site)
Screen/Type 2" PVC, ASTM 510
Size 2" x 5'
Slot .010
Set @ 25' to 20'
~~Backfilled~~ ~~Annpacked~~ 25' to 18'
Bentonite Seal Hole plug 18' to 16'
Grout/Type CEMENT/BENT
Depth 16' to SURFACE
Protective Casing 4"
Materials Cleaned All Equip.
Development BAILED 30 GALLONS OF WATER OUT OF WELL

REMARKS:

LEGEND:
BlowCount Blows per 6" w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
SS			0	BRN Fine to CSE SAND, LITTLE SILT
SS			5	SAME
			10	
			12'	
SS			15	BRN FINE SAND, some SILT
			17'	
SS			20	BRN SILTY SAND (very moist)
			21.5	
SS			25	BRN FINE SAND w/ SILT (wet)
				25' E.O.B.
			30	NO SAMPLE TAKEN

WELL ABANDONMENT LOG: MW-12R

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT

Installation Schematic			Plugging Procedure Detail	
ELEV. (FT)	WELL DETAIL	TOP OF WELL CASING ELEVATION: n/a	GROUND SURFACE ELEVATION: n/a	
		0.0		0.0
		Cement-Bentonite Grout		Bentonite Grout
		16.0		
		Bentonite Seal		
		18.0		
		Sand Pack		
		25.0		25.0
		Tip Elev: n/a		

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well casing was overdrilled with 6-1/4 inch inside-diameter, hollow-stem auger and removed from the ground. The borehole was tremmied with bentonite grout to surface.

[2] Original well construction details based on log of monitoring well by Stearns Drilling, dated 02/20/96.

Started:	*05/24/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/24/01*	Casing Length:	*22.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. A-3

ENVIRONMENTAL DRILLING, INC.
1730 MARION STREET
GRAND HAVEN, MI 49417
(616) 847-0553

PROJECT McGILL ROAD LANDFILL
JOB # 149-3
BORING # MW#13
DATE 7-8-92

Sample & Type	Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per 6"
			0-12'	
			CLAY FILLED SAND - FINE TO MEDIUM GRAINED	
			MEDIUM BROWN, POORLY SORTED	
D				
	5			
	10		*	
			12-27'	
	15		SAND - FINE TO MEDUIM GRAINED, POORLY SORTED	
			WITH SILT AND CLAY INFILLING	
D				
	20			
	25			
			TOTAL DRILLING DEPTH 27'	
	30			
			*NOTE: STATIC WATER LEVEL NOT TAKEN AWAITING WATER TABLE TO STABILIZE	
	35			

TYPE OF SAMPLE
D -DISTURBED
SS -SPLIT SPOON
UL -UNDIST. LINER
TW -THIN WALL TUBE

REMARKS SCREEN SET FROM 22' TO 27' BELOW GRADE. TOTAL LENGTH OF CASING AND SCREEN. 29.24'

GROUND WATER OBSERVATIONS

G W ENCOUNTERED AT		FT	INS
G W ENCOUNTERED AT		FT	INS
G W AFTER COMPLETION		FT	INS
G W AFTER	HRS	FT	INS

ENVIRONMENTAL DRILLING, INC.
1730 MARION STREET
GRAND HAVEN, MI 49417
(616) 847-0553

PROJECT McGILL ROAD LANDFILL
JOB # 149-3
BORING # MW#14
DATE 7-8-92

Sample & Type	Depth	USC	SOIL DESCRIPTION	Penetration Blows Per 6"
			0 - 16'	
			SILTY SAND, MEDIUM BROWN, FINE TO MEDIUM GRAINED AND POORLY SORTED	
	5			
D				
	10			
			*	
	15			
			TOTAL DRILLING DEPTH 16'	
	20		*NOTE: STATIC WATER LEVEL NOT TAKEN AWAITING WATER TABLE TO STABILIZE	
	25			
	30			
	35			

TYPE OF SAMPLE
D -DISTURBED
SS -SPLIT SPOON
UL -UNDIST. LINER
TW -THIN WALL TUBE

REMARKS SCREEN SET FROM 11' TO 16' BELOW GRADE. TOTAL LENGTH OF CASING & SCREEN 18.42

GROUND WATER OBSERVATIONS

▼ ENCOUNTERED AT		FT	INS
▼ ENCOUNTERED AT		FT	INS
▼ AFTER COMPLETION		FT	INS
▼ AFTER	HRS	FT	INS

ENVIRONMENTAL DRILLING, INC.
1730 MARION STREET
GRAND HAVEN, MI 49417
(616) 847-0553

PROJECT McGILL ROAD LANDFILL
JOB # 149-3
BORING # MW #15
DATE 7-9-92

Sample Type	Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per 5"
D			0-4' SAND - MEDIUM BROWN - FINE TO MEDIUM GRAINED	
	5		4-22' SAND - MEDIUM BROWN - FINE TO MEDIUM GRAINED ROUNDED, POORLY SORTED WITH SILTY CLAY INFILING	
D	10		*	
	15			
	20			
			TOTAL BORING DEPTH 22'	
	25		*NOTE: STATIC WATER LEVEL NOT TAKEN AWAITING WATER TABLE TO STABILIZE	
	30			
	35			

TYPE OF SAMPLE
D - DISTURBED
SS - SPLIT SPOON
UL - UNDIST. LINER
TW - THIN WALL TUBE

REMARKS SCREEN FROM 17' TO 22' BELOW GRADE. TOTAL LENGTH OF CASING & SCREEN 24.36

GROUND WATER OBSERVATIONS

▽ W ENCOUNTERED AT		FT	INS
▽ W ENCOUNTERED AT		FT	INS
▽ W AFTER COMPLETION		FT	INS
▽ W AFTER	HRS	FT	INS

ENVIRONMENTAL DRILLING, INC.
1730 MARION STREET
GRAND HAVEN, MI 49417
(616) 847-0553

PROJECT McGILL ROAD LANDFILL
JOB # 149-3
BORING # MW#16
DATE 7-9-92

Sample & Type	Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per 6"
			0 - 22'	
			SILTY SAND, MEDIUM BROWN, FINE GRAINED, CLEAR, POORLY SORTED	
	5			
	10			
D			*	
	15			
	20			
			22' - 34'	
	25		SILTY SAND, MEDIUM BROWN, MEDIUM TO FINE GRAINED WITH SILT AND ROCK INFILLING	
D				
	30			
	35		TOTAL BORING DEPTH 34'	
			*NOTE: STATIC WATER LEVEL NOT TAKEN AWAITING WATER TABLE TO STABILIZE	

TYPE OF SAMPLE
D - DISTURBED
SS - SPLIT SPOON
UL - UNDIST. LINER
TW - THIN WALL TUBE

REMARKS SCREEN SET FROM 29' TO 34' BELOW GRADE. TOTAL LENGTH OF CASING & SCREEN 35.20

GROUND WATER OBSERVATIONS

▽ W ENCOUNTERED AT		FT	INS
▽ W ENCOUNTERED AT		FT	INS
▽ W AFTER COMPLETION		FT	INS
▽ W AFTER	HRS	FT	INS

WELL ABANDONMENT LOG: MW-16

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT

Installation Schematic			Plugging Procedure Detail	
ELEV. (FT)	WELL DETAIL	TOP OF WELL CASING ELEVATION: 970.14	GROUND SURFACE ELEVATION: 968.8	
		0.0		0.0
960		(original well backfilling details unavailable)		Bentonite Grout
950				
940				
		34.0		34.0
		Tip Elev: 934.8'		
930				
920				
910				
900				

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well casing was overdrilled with 6-1/4 inch inside-diameter, hollow-stem augers and removed from the ground. The borehole was tremmied with bentonite grout to surface.

[2] Original well construction details based on tabulated data in "Monitoring Well Summary" by Strata Environmental Services, Inc.

Started:	*05/29/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/30/01*	Casing Length:	*34.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. A-4

ENVIRONMENTAL DRILLING, INC.
1730 MARION STREET
GRAND HAVEN, MI 49417
(616) 847-0553

PROJECT McGILL ROAD LANDFILL
JOB # 149-3
BORING # MW #17
DATE 7-8-92

Sample Type	Depth	U.S.C.	SOIL DESCRIPTION	Penetration Blows Per
			0 - 20' SILTY SAND - MEDIUM BROWN, FINE GRAINED, POORLY SORTED	
	5			
D				
	10		*	
	15			
	20			
			20 - 31' SILTY SAND, MEDIUM BROWN, FINE TO MEDIUM GRAINED, WITH ROCK INFILLING	
D				
	25			
	30			
			31 - 41' SAND MEDIUM BROWN, COURSE GRAINED WITH ROCK INFILLING AT 41' HIT VERY HARD CLAY LAYER	
D	35			
	40			
			TOTAL DRILLING DEPTH 41' *NOTE: STATIC WATER LEVEL NOT TAKEN AWAITING WATER TABLE TO STABILIZE	
	45			

TYPE OF SAMPLE
D -DISTURBED
SS -SPLIT SPOON
UL -UNDIST. LINER
TW -THIN WALL TUBE

REMARKS SCREEN SET FROM 33' TO 38' BELOW GRADE. TOTAL LENGTH OF CASING & SCREEN 40.23

GROUND WATER OBSERVATIONS

▽ W ENCOUNTERED AT	FT	INS
▽ W ENCOUNTERED AT	FT	INS
▽ W AFTER COMPLETION	FT	INS
▽ W AFTER HRS	FT	INS

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-10 ⇒ MW-18

SHEET 1 of 1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

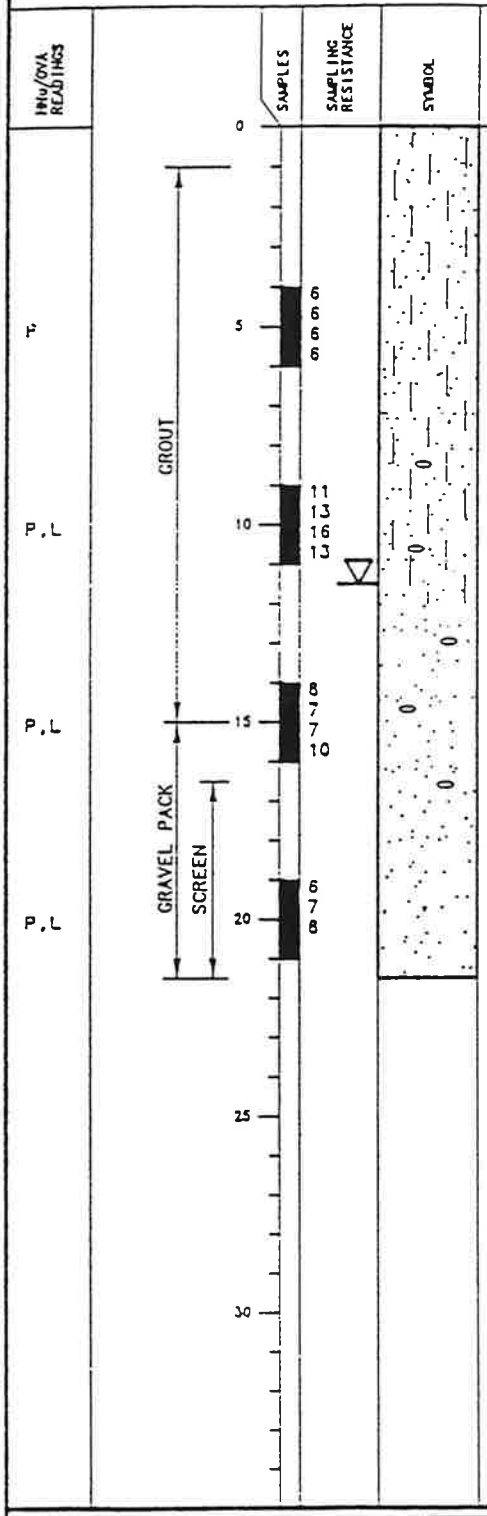
ELEVATIONS:
SURFACE: 951.2 TOP OF CASING: 952.86
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/03/91 3:00 PM

COMPLETION DATE: 4/03/91 5:30 PM



SAND, Gray & brown mottled, fine, silty, well sorted damp (sm)

SAND, Dark gray, very fine, well sorted, silty with a trace of fine to medium gravel, damp (sm)

SAND, Dark gray, very fine, well sorted, trace of coarse gravel, saturated (sp)

GRAVEL, SILT, ORGANIC, SHALE, MISC. FILL, SATURATED WATER LEVEL
SAND, CLAY, TILL, ROCK, TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2980 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-11U ⇒ MW-19

SHEET 1 of 1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

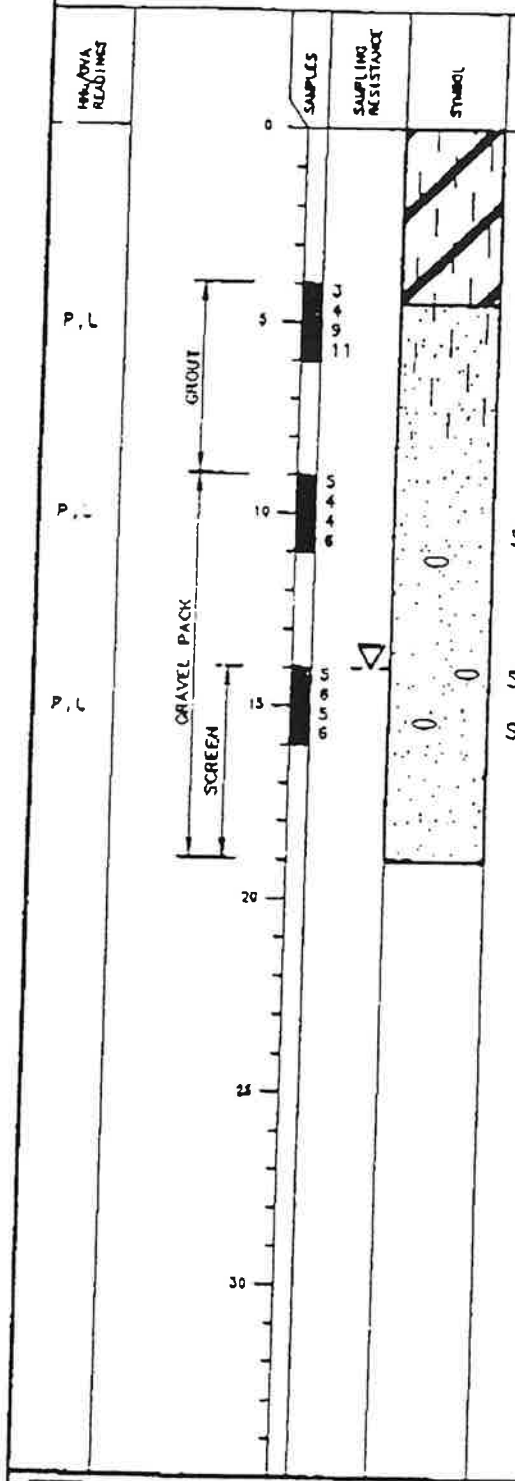
ELEVATIONS:
SURFACE: 948.9 TOP OF CASING: 950.30
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/02/91 5:30 PM

COMPLETION DATE: 4/02/91 8:45 PM



CLAY, Light gray/brck red mottled, silty, damp (cl)

SAND, very fine, well sorted, silty, saturated (sp)

SAND, Dark brown, very fine, well sorted, trace of cobbles, saturated (sp)

SAND, Dark brown, very fine, well sorted, cobbles, saturated (sp)

SAND, Dark gray, very fine, saturated (sp)

GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

MONITORING WELL NO: MW-19R

NTH CONSULTANTS, LTD.

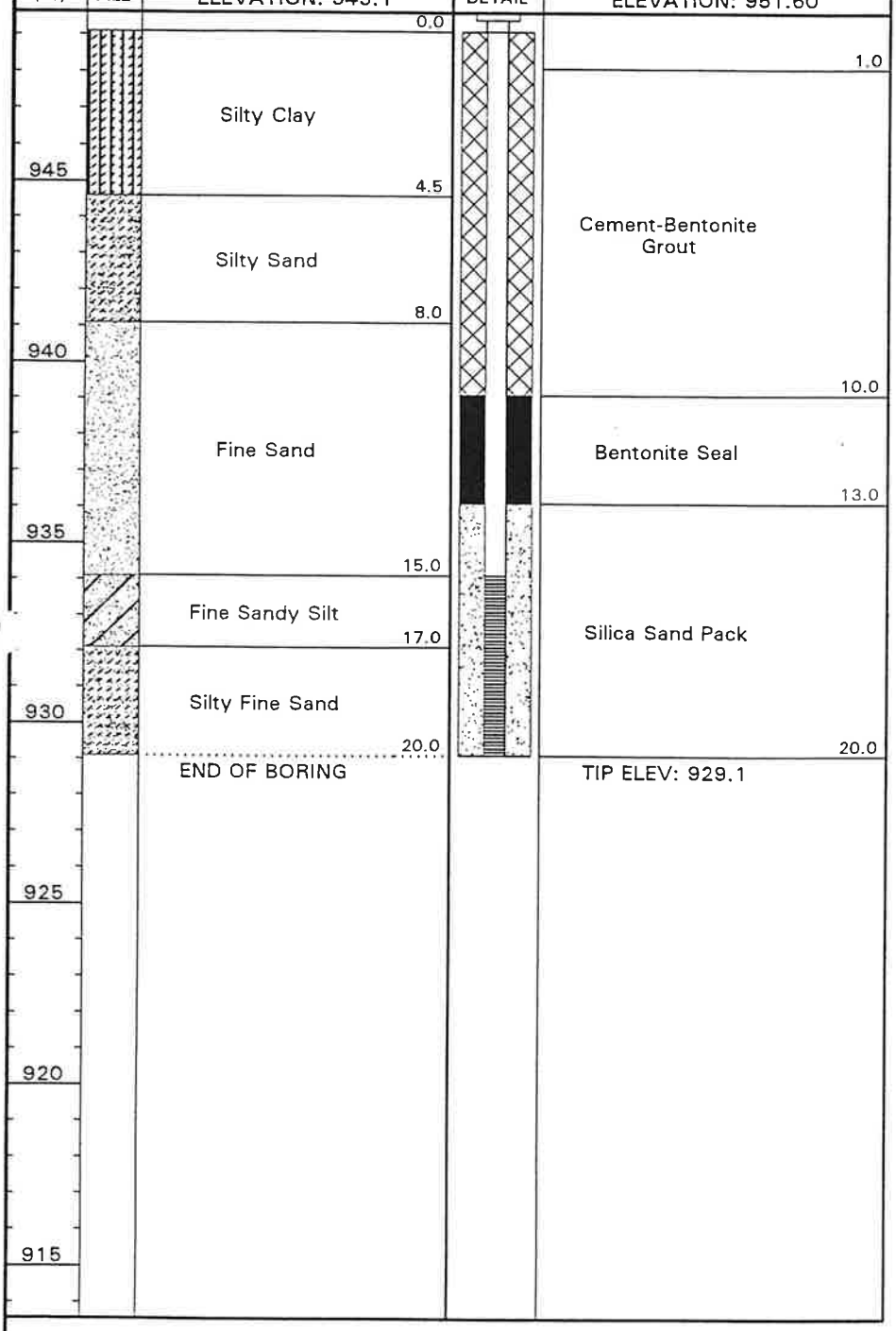
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-09-98	933.17	before development
06-12-98	932.08	10 min. after bailing
06-22-98	941.81	

NOTES

[1] Generalized subsurface profile developed from the original Log of Test Boring No. TMW-11U/MW-19.

[2] Developed well using a bailer--removed approximately 15 gallons.

[3] Coordinates:
E 13123468.9363 N 288121.9656

Started:	*06/09/98*	Casing Diameter:	*2.0 inches*
Completed:	*06/09/98*	Casing Length:	*17.5 feet*
Inspector:	*D. Hohner / A. Kesl*	Casing Type:	*PVC*
Contractor:	*Stearns Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*D. Daverman*	Screen Length:	*5.0 feet*
Equipment:	*4-1/4" ID Hollow-Stem Auger*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-11D ⇒ MW-20

SHEET 1 of 1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

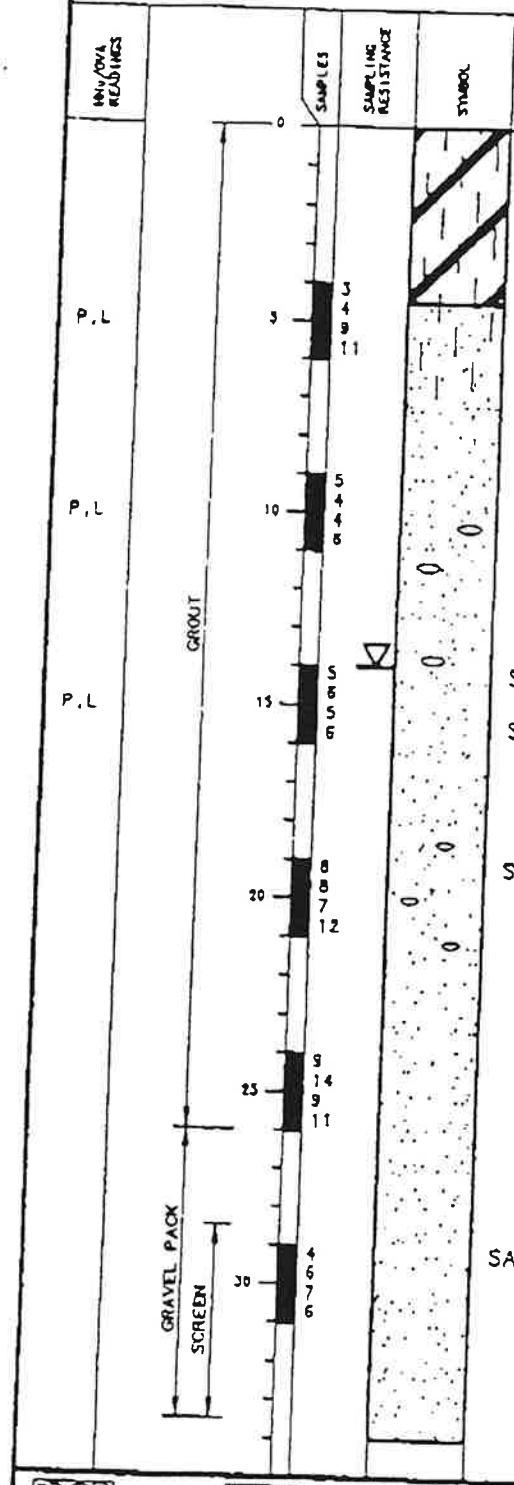
ELEVATIONS:
SURFACE: 949.1 TOP OF CASING: 950.45
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/03/91 9:00 AM

COMPLETION DATE: 4/03/91 1:30 PM



CLAY, Light gray/brick red mottled, silty, damp (cl)

SAND, very fine, well sorted, silty, saturated (sp)

SAND, Dark brown, very fine, well sorted, trace of cobbles, saturated (sp)

SAND, Dark brown, very fine, well sorted, cobbles, saturated (sp)

SAND, Dark gray, very fine, saturated (sp)

SAND, Dark gray, very fine, well sorted, with coarse gravel, saturated (sp)

SAND, Dark brown, very fine, well sorted, saturated (sp)

GRAVEL SAND SILT CLAY ORGANIC TILL SHALE ROCK MISC. FILL TOPSOIL SATURATED WATER LEVEL

MONITORING WELL NO: MW-20R

NTH CONSULTANTS, LTD.

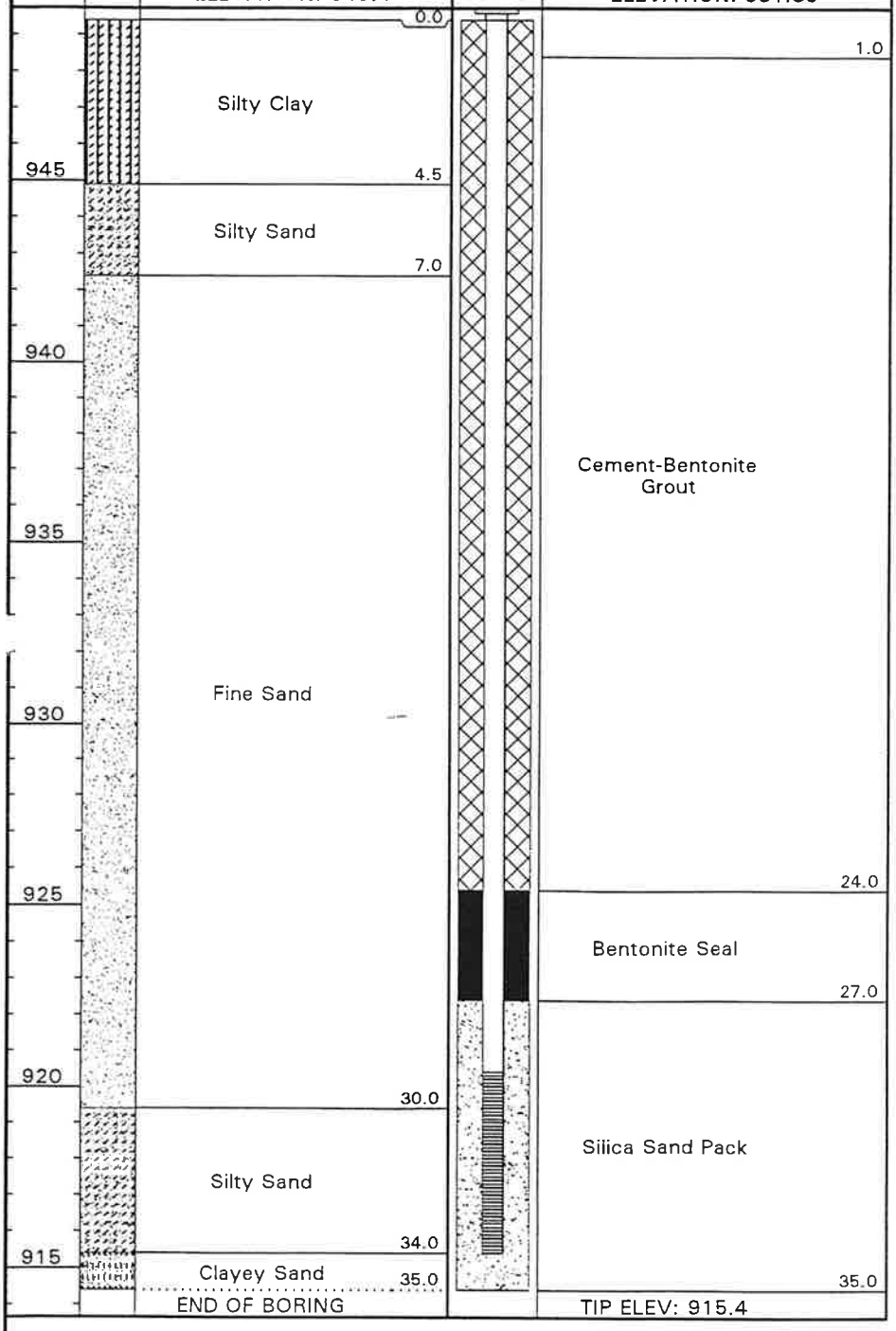
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-09-98	939.33	during drilling
06-12-98	941.91	
06-22-98	941.68	

NOTES

[1] Generalized subsurface profile developed from the original Log of Test Boring No. TMW-11D/MW-20.

[2] Developed well using a moinal pump--removed approximately 50 gallons.

[3] Coordinates:
E 13123474.6799 N 288120.5746

Started:	*06/09/98*	Casing Diameter:	*2.0 inches*
Completed:	*06/09/98*	Casing Length:	*31.5 feet*
Inspector:	*D. Hohner / A. Kesl*	Casing Type:	*PVC*
Contractor:	*Stearns Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*D. Daverman*	Screen Length:	*5.0 feet*
Equipment:	*4-1/4" ID Hollow-Stem Auger*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-12 ⇒ MW-21

SHEET 1 of 1

CLIENT: MCGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

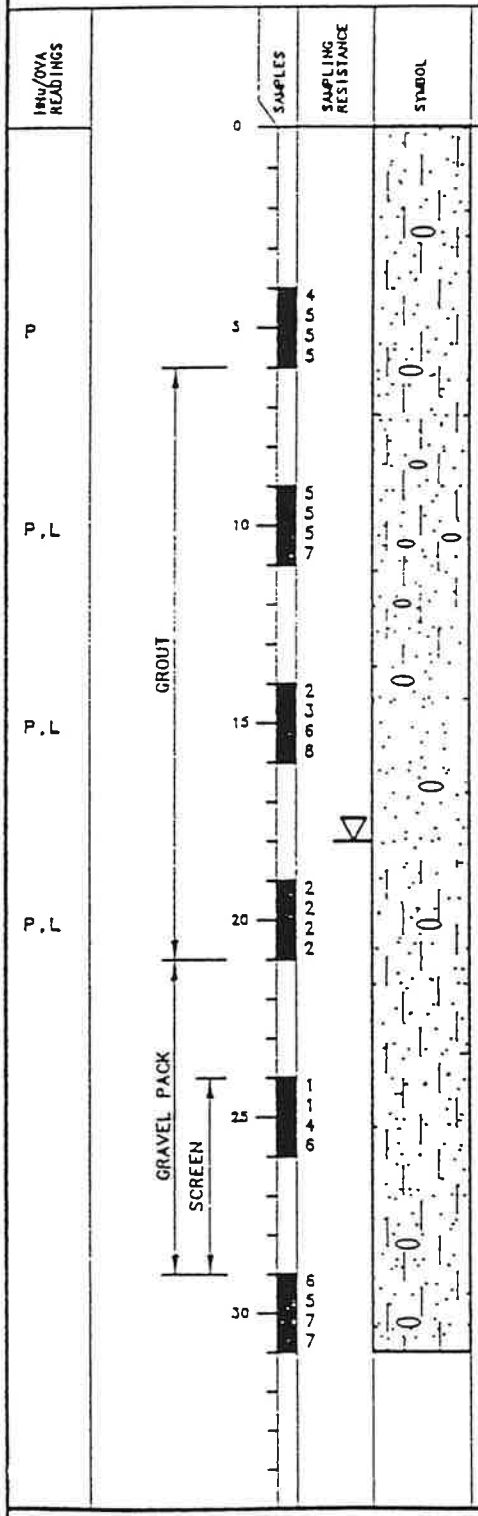
ELEVATIONS:
SURFACE: 958.1 TOP OF CASING: 959.70
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/09/91 10:10 AM

COMPLETION DATE: 4/09/91 12:00 PM



SAND, Light brown, very fine, well sorted, silty, trace of cobbles and carbon (sm)

SAND, very fine, silty, trace of fine gravel and carbon, saturated in tip (sm)

SAND, Dark brown, fine to medium, saturated with a trace of cobbles (sp)

SAND, Dark gray, very fine, very silty, with a trace of cobbles, saturated (sm)

SAND, Dark gray, very fine, silty, saturated (sm)

SAND, Dark gray, very fine, saturated, trace of cobbles (sp)

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-9 ⇒ MW-22

SHEET 1 of 1

CLIENT: MCGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

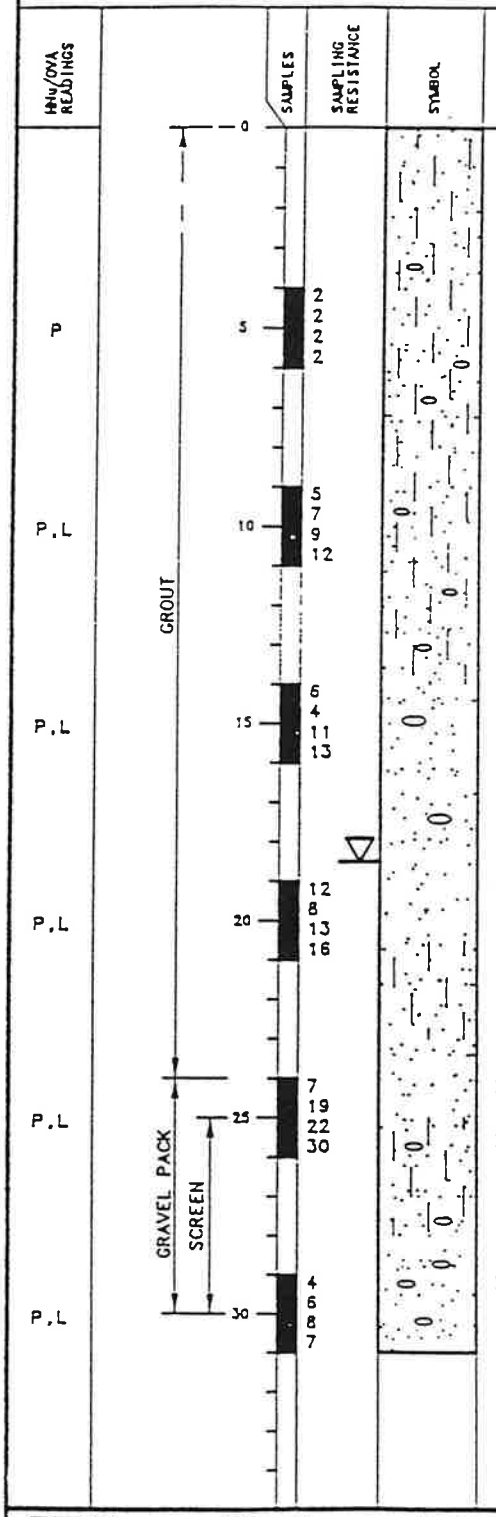
ELEVATIONS:
SURFACE: 964.4 TOP OF CASING: 966.04
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 4/08/91 9:00 AM

GEOLOGIST: EAB

COMPLETION DATE: 4/08/91 12:00 PM



GRAVEL · SAND · SILT · CLAY · ORGANIC · TILL · SHALE · ROCK · MISC. FILL · TOPSOIL · SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
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KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-6D ⇒ MW-23

SHEET 1 of 3

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 999.2 TOP OF CASING: 1001.43
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 3/27/91 2:30 PM

COMPLETION DATE: 3/28/91 3:30 PM

PID/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P	5	8 9 8 13		SILT, Dark brown, sand, damp (ml) SAND, Light brown, very fine, well sorted, dry (sp)
P,L	10	2 10 15 16		Band of iron stained silt, sand, and cobbles (ml) SILT, Brown, sandy with trace of fine gravel (ml)
P	15	10 14 12 14		SAND, Dark brown, very fine, silty with a trace of fine gravel (sm) SAND, Light brown, very fine, well sorted (sp)
P,L	20	7 23 34 60		SAND, Light brown, very fine, well sorted, with a trace of fine gravel (sp)
P,L	25	12 42 52 60		SAND, Light brown, very fine, silty with a trace of cobbles (sm)
P,L	30	7 15 26 38		SAND, Light brown, very fine, well sorted (sp)
P,L		14 32		SAND, Light brown, very fine, well sorted, trace of silt (sp)

GROUT

GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-6D ⇒ MW-23

SHEET 2 of 3

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

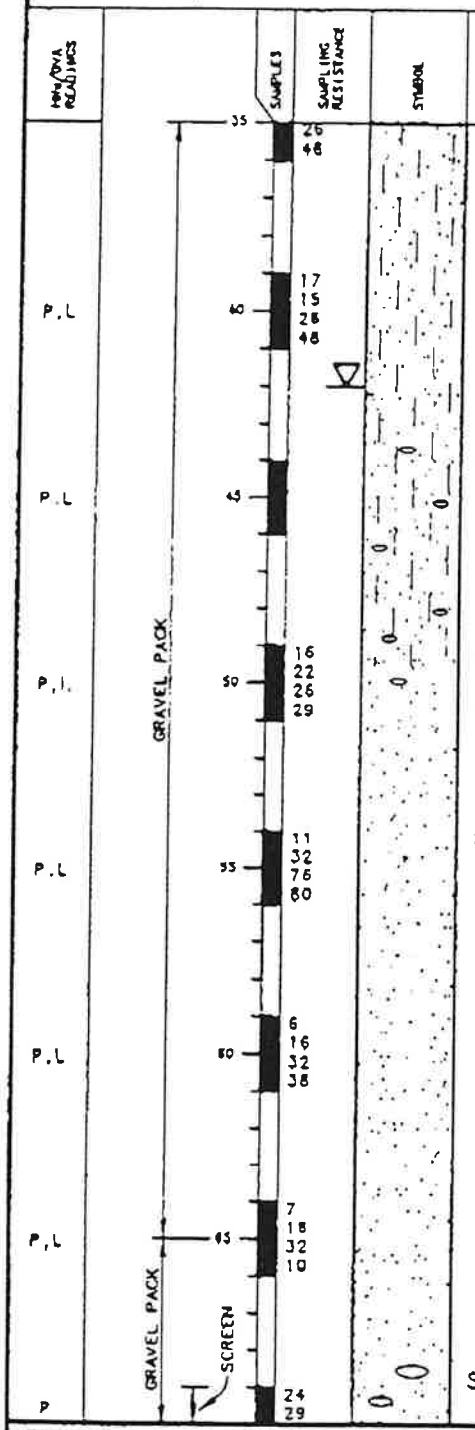
ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST:

START DATE: 3/27/91 2:30 PM

COMPLETION DATE: 3/28/91 3:30 PM



SAND, Light brown, very fine, well sorted, silty damp in tip (sm)

SAND, Fine to coarse, silty, with a trace of fine to medium gravel (sm)

SAND, Fine to coarse, silty, with a trace of fine to medium gravel (sm)
SAND, Dark gray, fine, well sorted, saturated (sp)

SAND, Dark gray, fine to medium, well sorted, saturated (sp)

SAND, Dark gray, fine to medium, well sorted, trace of cobbles (sp)

GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-6D ⇒ MW-23

SHEET 3 of 3

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/27/91 2:30 PM

GEOLOGIST: EAB

COMPLETION DATE: 3/28/91 3:30 PM

HNU/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
		35		
P.L	75	9 25 58 35		SAND, Dark gray, medium to coarse, with fine to coarse gravel, trace of silt, saturated (sw)
P.L	80	12 26 46 56		SAND, Dark gray, medium to coarse, with medium to coarse gravel (sw)
				GRAVEL & COBBLES, sandy, silty, with shale and sandstone chunks (gm)

GRAVEL PACK
SCREEN

65
80
85
100

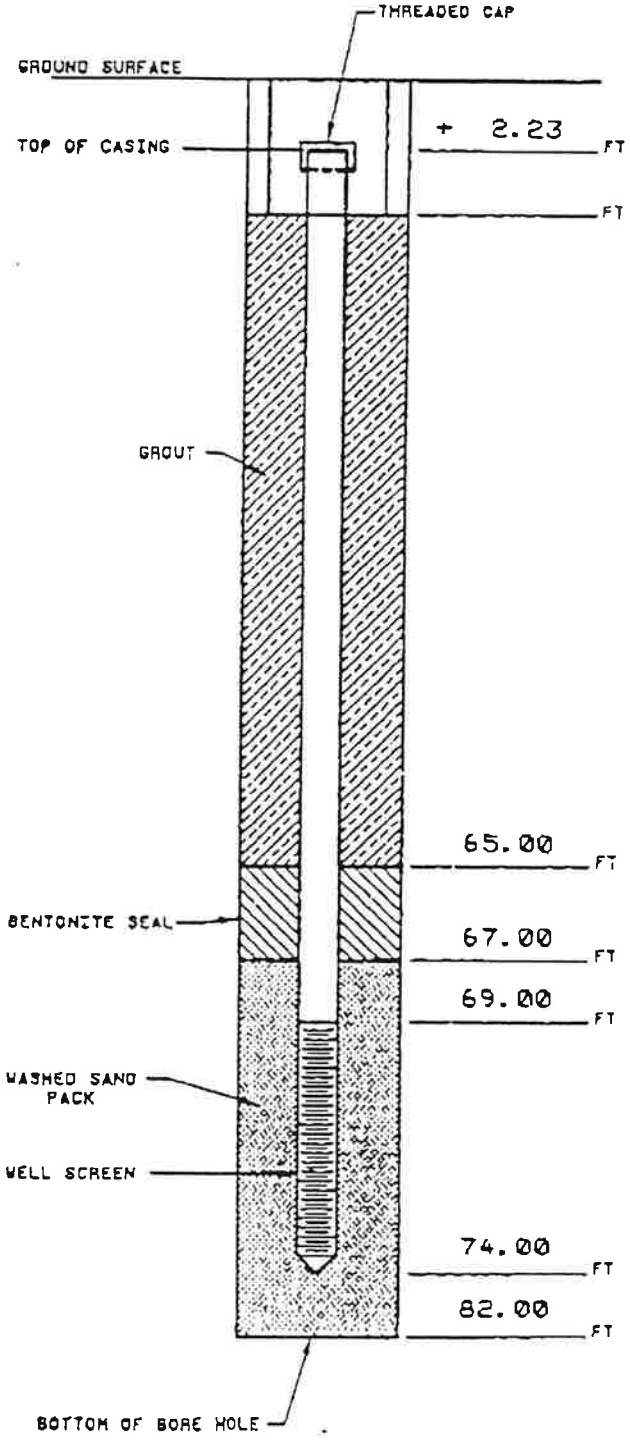
GRAVEL · SILT · ORGANIC · SHALE · MISC. FILL · SATURATED WATER LEVEL
SAND · CLAY · TILL · ROCK · TOPSOIL

MW-23

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

PROJECT NO: MCLSE
WELL NUMBER: TMW-6D
CLIENT: MCGILL
LOCATION: NESTED WITH TMW-6U

MONITORING WELL CONSTRUCTION



WELL NUMBER:	TMW-6D
WELL DIAMETER:	2.00
TIME & DATE STARTED:	03/27/91 2:30 PM
TIME & DATE COMPLETED:	03/28/91 3:30 PM
CASING MATERIAL:	GALVANIZED
SCREEN MATERIAL:	STAINLESS STEEL
SCREEN SLOT/MESH:	0.01
ELEVATION REFERENCE:	MW-5&6
GRADE ELEVATION:	999.20
TOP OF CASING ELEVATION:	1001.40

STATIC WATER LEVEL:

ELEV:	953.82	04/11/91
ELEV:	954.29	04/15/91
ELEV:	954.12	04/23/91

MONITORING WELL NO: MW-23R

NTH CONSULTANTS, LTD.

Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL

Generalized Subsurface Profile | Installation Schematic

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 999.4	WELL DETAIL	TOP OF WELL CASING ELEVATION: 1001.94
		0.0		1.0
		Sandy Silt 5.5		
990		Fine Sand 10.5		
		Silt 13.0		
		Silty Sand 15.0		
		Fine Sand 24.0		Cement-Bentonite Grout
975		Silty Fine Sand 29.0		
		Fine Sand 33.0		
		Silty Fine Sand 44.0		
960		Silty Sand 50.0		47.0
		Fine Sand 54.0		Caved Material
945		Fine to Medium Sand 70.0		65.0
				Bentonite Seal 68.0
930		Sand 76.0		Silica Sand Pack 76.0
		END OF BORING		TIP ELEV: 924.4
915				
900				

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-08-98	952.94	during drilling
06-12-98	951.92	
06-22-98	951.77	

NOTES

[1] Generalized subsurface profile developed from the original Log of Test Boring No. TMW-6D/MW-23.

[2] Developed well using a rod pump--removed approximately 110 gallons.

[3] Coordinates:
E 13123775.4739 N 287343.4383

Started:	*06/08/98*
Completed:	*06/08/98*
Inspector:	*D. Hohner / A. Kesl*
Contractor:	*Stearns Drilling Company*
Driller:	*D. Daverman*
Equipment:	*4-1/4" ID Hollow-Stem Auger*
Well Type:	*Monitoring*

Casing Diameter:	*2.0 inches*
Casing Length:	*72.5 feet*
Casing Type:	*PVC*
Screen Diameter:	*2.0 inches*
Screen Length:	*5.0 feet*
Screen Mesh:	*0.010 inch*
Screen Type:	*PVC*

FIGURE NO.

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-6U ⇒ MW-24

SHEET 1 of 2

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 999.5 TOP OF CASING: 1001 16
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/28/91 4:15 PM

GEOLOGIST: EAB

COMPLETION DATE:

HNu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
P	5	8 9 8 13		SILT, Dark brown, sand, damp (ml) SAND, Light brown, very fine, well sorted, dry (sp)
P,L	10	2 10 15 18		Band of iron stained silt, sand, and cobbles (ml) SILT, Brown, sandy with trace of fine gravel (ml)
P	15	10 14 12 14		SAND, Dark brown, very fine, silty with a trace of fine gravel (sm) SAND, Light brown, very fine, well sorted (sp)
P,L	20	7 23 34 60		SAND, Light brown, very fine, well sorted, with a trace of fine gravel (sp)
P,L	25	12 42 62 60		SAND, Light brown, very fine, silty with a trace of cobbles (sm)
P,L	30	7 15 26 36		SAND, Light brown, very fine, well sorted (sp)
P,L		14 32		SAND, Light brown, very fine, well sorted, trace of silt (sp)

GROUT

GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2860 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-6U ⇒ MG-24

SHEET 2 of 2

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

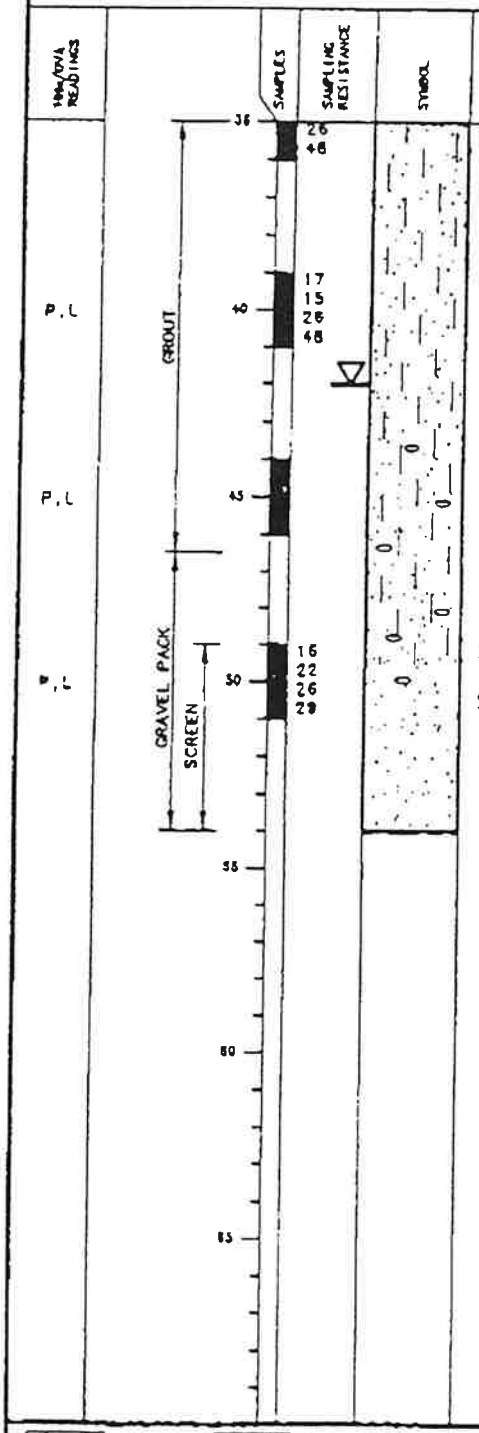
ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 3/28/91 4:15 PM

COMPLETION DATE:



SAND, Light brown, very fine, well sorted, silty damp in tip (sm)

SAND, Fine to coarse, silty, with a trace of fine to medium gravel (sm)

SAND, Fine to coarse, silty, with a trace of fine to medium gravel (sm)
SAND, Dark gray, fine, well sorted, saturated (sp)

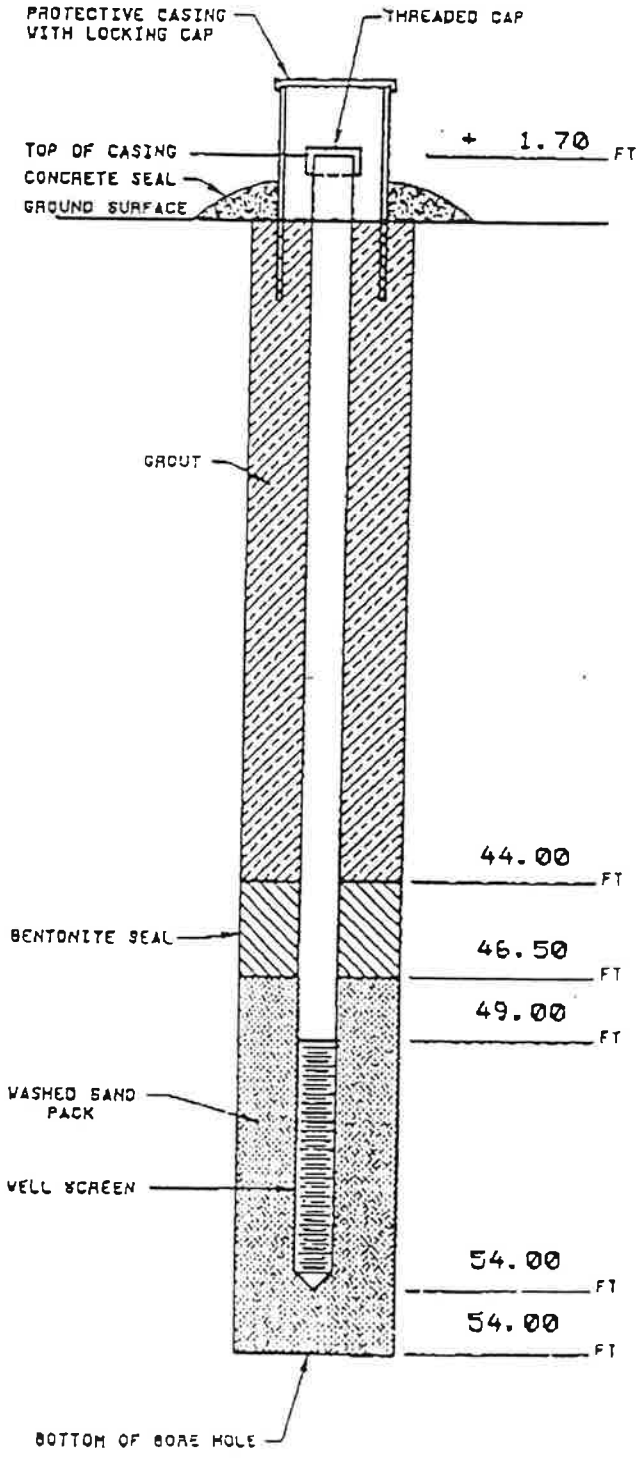
GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

MW-24

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

PROJECT NO.: MCLSE
WELL NUMBER: TMW-6U
CLIENT: PRUS CORPORATION
LOCATION: NE CORNER OF THE FIELD

MONITORING WELL CONSTRUCTION



WELL NUMBER:	TMW-6U
WELL DIAMETER:	2.00
TIME & DATE STARTED:	03/28/91 4:15 PM
TIME & DATE COMPLETED:	03/28/91 7:00 PM
CASING MATERIAL:	GALVANIZED
SCREEN MATERIAL:	STAINLESS STEEL
SCREEN SLOT/MESH:	0.01
ELEVATION REFERENCE:	MW-5&6
GRADE ELEVATION:	999.50
TOP OF CASING ELEVATION:	1001.20

STATIC WATER LEVEL:

ELEV:	953.83	04/11/91
ELEV:	954.30	04/15/91
ELEV:	954.14	04/23/91

MONITORING WELL NO: MW-24R

NTH CONSULTANTS, LTD.

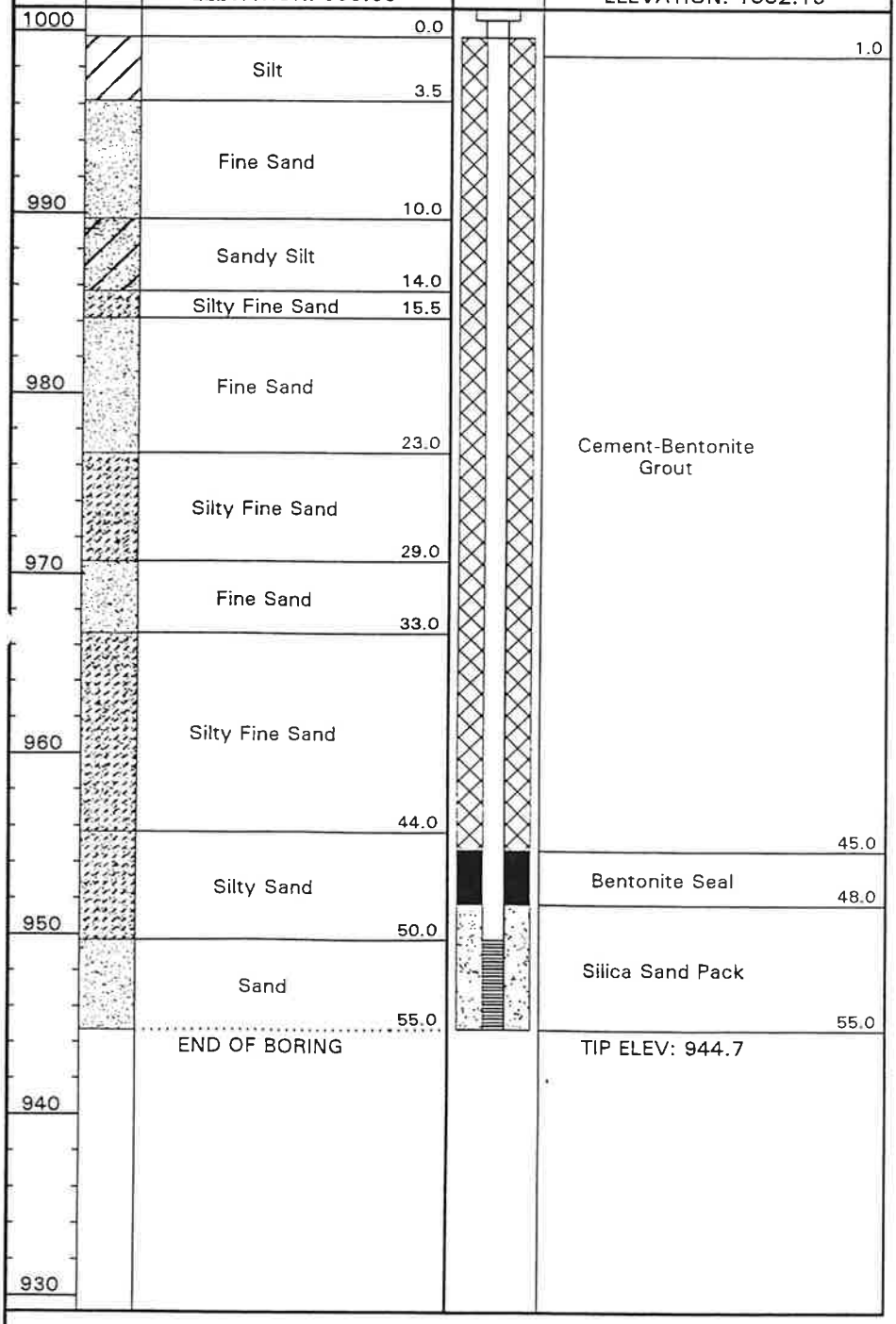
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-08-98	951.99	during drilling
06-12-98	951.93	
06-22-98	951.77	

NOTES

[1] Generalized subsurface profile developed from the original Log of Test Boring No. TMW-6U/MW-24.

[2] Developed well using a bailer--removed approximately 15 gallons.

[3] Coordinates:
E 13123771.8624 N 287339.7526

Started:	*06/08/98*
Completed:	*06/08/98*
Inspector:	*D. Hohner / A. Kesl*
Contractor:	*Stearns Drilling Company*
Driller:	*D. Daverman*
Equipment:	*4-1/4" ID Hollow-Stem Augers*
Well Type:	*Monitoring*

Casing Diameter:	*2.0 inches*
Casing Length:	*52.5 feet*
Casing Type:	*PVC*
Screen Diameter:	*2.0 inches*
Screen Length:	*5.0 feet*
Screen Mesh:	*0.010 inch*
Screen Type:	*PVC*

FIGURE NO.

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-3 ⇒ MW-25

SHEET 1 of 2

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 1000.5 TOP OF CASING: 1002.40
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 4/01/91 9:55 AM

GEOLOGIST: EAB

COMPLETION DATE:

INV/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
		3		TOPSOIL
P	5	9 6 7		SAND, Light brown, very fine, silty, trace of cobbles, damp (sm)
		4		
P	10	7 7 8		SAND, Light brown, very fine, silty, trace of cobbles, damp (sm)
		3		
P,L	15	6 7 7		SAND, Light brown, very fine to fine, trace of coarse gravel (sp)
		5		
P	20	9 10 13		SAND, Light brown, very fine, trace of cobbles, siltier toward tip (sp)
		4		
P,L	25	2 3 3		SAND, Dark brown, very fine, silty, trace of cobbles (sm)
		7		
P,L	30	20 31 49		SAND, Light brown, very fine, well sorted, trace of organic matter (sp)
		30		
P,L		44		SAND, Light brown, fine, well sorted, with rock fragments and medium gravel (sp)

GRAVEL · SILT · ORGANIC · SHALE · MISC. FILL · SATURATED WATER LEVEL
SAND · CLAY · TILL · ROCK · TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF TMW-3 ⇒ MW-25

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

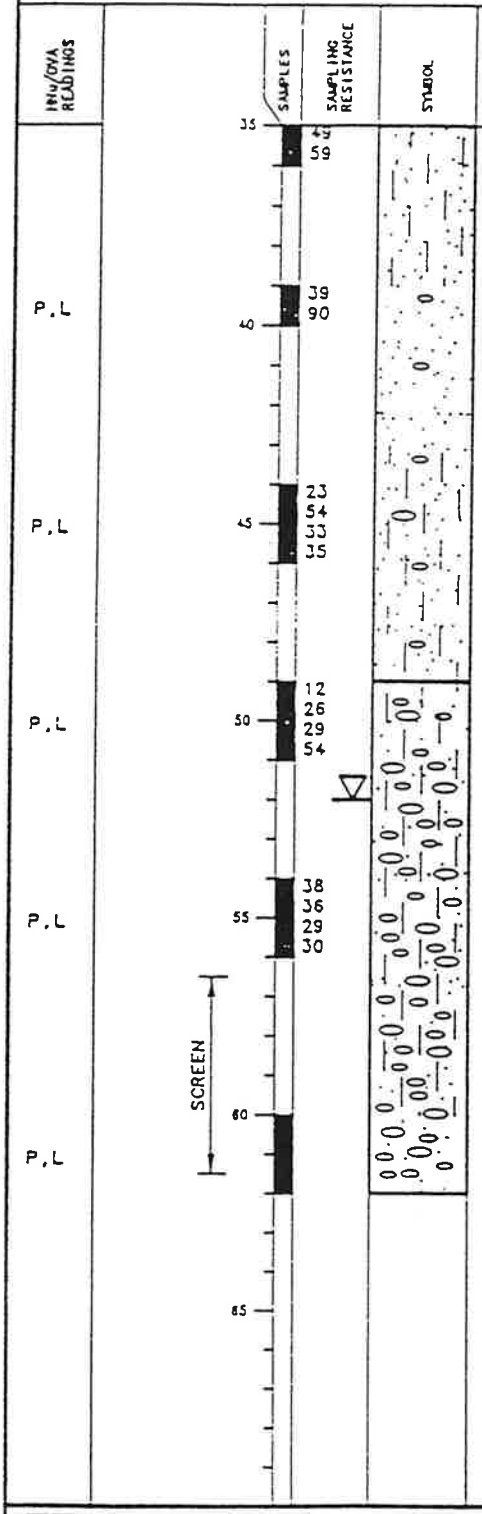
ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 4/01/91 9:55 AM

GEOLOGIST: EAB

COMPLETION DATE:



DESCRIPTION

SAND, Light brown, fine to medium, trace of silt & rock fragments (sp)

SAND, Light brown, well sorted, with rock fragments & medium gravel (sp)

SAND, Brown, fine, silty with gravel & cobbles (sm)

GRAVEL, Dark gray, fine to coarse, silty, fine to medium sand, damp at tip (gw)

GRAVEL, Dark gray, fine to coarse, with a trace of sand and silt, saturated (gw)

GRAVEL, Dark gray, fine to coarse, with a trace of sand and silt, boulders (gw)

GRAVEL SILT ORGANIC SHALE MISC. FILL ▽ SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 26

Sheet 1 of 1

Project McGill Road LANDFILL

Location JACKSON

Date Completed 2-16-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 6¼
Hole Plugged With Cement Bent

GROUNDWATER:
Encountered @ _____ ft.
After completion _____ ft.
After _____ hrs. _____ ft.
Seepage _____ ft.
Boring Caved at _____ ft.

MONITOR WELL DATA:
Pipe/Type _____
Length _____
Above Ground _____
Cap _____
Screen/Type _____
Size _____
Slot _____
Set @ _____
Backfilled _____
Bentonite Seal _____
Grout/Type Cement / Bent
Depth 64' to 34'
Protective Casing None
Materials Cleaned All Equip
Development None

REMARKS: Drilled to 64' & set MW 26 & well was good [illegible] due to drilling

LEGEND:
BlowCount: Blows per 6" w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
ABANDONMENT			0	Drill w/ 6¼ HSA & pulled well
			5	
			10	
			15	
			20	
			64'	64' E.O.B.
			25	
			30	

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 27

Sheet 1 of 1

Project McGill Road LANDFILL

Location JACKSON

Date Completed 2-15-96

Crew Chief DARRIN KRAUSE
Drill Rig CME 1050
Boring Method 6¼ H.S.A.
Hole Plugged With CEMENT GROUT

GROUNDWATER:
Encountered @ in well 49' approx ft.
After completion ft.
After hrs. ft.
Seepage ft.
Boring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap

Screen/Type
Size
Slot
Set @
Backfilled

Bentonite Seal
Grout/Type CEMENT/GROUT
Depth 50- to 30' FROM SURFACE
Protective Casing NONE
Materials Cleaned ALL EQUIP

Development

REMARKS: Drilled to 50' & pulled out MW 27
Backfilled with cuttings and cement grout

LEGEND:
BlowCount Blows per 6" w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
AUGERED			0	Drill w 6¼ H.S.A. & pulled well
			5	
			10	
			15	
			20	50'
			25	
			30	

STEARNS DRILLING

Dutton, MI 616/698-7770
Fenton, MI 810/750-5141

Job No. 96-6201-2

LOG OF TEST BORING NO. MW 28

Sheet 1 of 1

Project PH. 1,2 McGILL LANDFILL

Location Jackson Mi.

Date Completed 2-19-96

Crew Chief DARRYL KRAUSE
Drill Rig CME 1050
Boring Method 6¼
Hole Plugged With Cement / Bent

GROUNDWATER:
Encountered @ 46' ft.
After completion ft.
After hrs. ft.
Seepage ft.
oring Caved at ft.

MONITOR WELL DATA:
Pipe/Type
Length
Above Ground
Cap

Screen/Type
Size
Slot
Set @
Backfilled

Bentonite Seal
Grout/Type Cement / Bent
Depth 51' to 5'
Protective Casing None
Materials Cleaned All Equipment
Development None

REMARKS: Blocked in well CASING @ ± 41' BENTONITE & FINE GRAVEL in Bottom of SCREEN & 2" galv. CASING Good condition

GEND:
lowCount/Blows per 6"
w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample not recovered

Sample Type	REC	Blow Count	Depth In Feet	SOIL DESCRIPTION
None			5	Hole Drilled w/ 6¼ to 51 ABANDONMENT of MW28
			10	
			15	
			20	
			51'	51' F.D.P.
			25	
			30	

RAU DRILLING
1014 14th Street * Bay City, MI 48708
(517)893-8635

BORING NO 37' WELL JOB NO.
Ground Surface (Elev.)
Datum 4¼" I.D. HOLLOW STEM AUGERS
CLIENT S & S ENVIRONMENTAL

PROJECT MONITORING WELLS
MW #29
McGILL RD. LANDFILL
Location McGILL RD., JACKSON, MI
Started 5-21-93 Completed 5-21-93
Driller Richard E. Rau
RICHARD E. RAU

ELEV.	DEPTH IN FEET	SAMPLE TYPE	SAMPLE "N"	STRATA CHANGE	SOIL CLASSIFICATION	W.L.	W	γ_n	q_u
					MOIST, FINE BROWN SAND W/ SOME GRAVEL MIXED.		POSSIBLE FILL		
	5	P							
		R							
		O							
	10	F		10'0"					
		I			COMPACT, MOIST, FINE BROWN SILTY SAND				
		L							
	15	E							
							ENCOUNTERED H_2O 21'0"		
	20			21'0"					
					COMPACT, WET, FINE BROWN, VERY SILTY SAND.				
	30			30'0"					
					COMPACT, WET, VERY FINE, VERY SILTY GRAY SAND.				

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
C.S. - Cuttin Sample
W - H2O% of dry weight
γ_n - Natural Density lbs. cu. ft.
q_u - Unconfined Compression lbs sq. ft.
W.L. - Water Level
"H-N" - Hausel Penetration Resistance

Boring No. 37' WELL

RAU DRILLING
1014 14th Street * Bay City, MI 48708
(517)893-8635

BORING NO. 37' WELL (CONT.) JOB NO. _____ PROJECT MONITORING WELLS MW #29

Ground Surface (Elev.) _____ McGILL RD. LANDFILL

Datum 4¼" I.D. HOLLOW STEM AUGERS Location: McGILL RD., JACKSON, MI

CLIENT S & S ENVIRONMENTAL Started 5-21-93 Completed 5-21-93

Driller Richard E. Rau RICHARD E. RAU

ELEV	DEPTH IN FEET	SAMPLE TYPE	SAMPLE "N"	STRATA CHANGE	SOIL CLASSIFICATION	W. L.	W	γ_n	q_u
		PROFILE			COMPACT, WET, VERY FINE, VERY SILTY GRAY SAND.				
	35								
	37'			E.O.B.	SET WELL @ 37' BELOW GROUND SURFACE.				
	40								
	45								
	50								
	55								
	60								

SPT - Standard Penetration Resistance
SS - 2" O.D. Split Spoon Sample
UT - Sectional Liner Sample
ST - Shelby Tube Sample
CS - Cuttings Sample

W - H2O% of dry weight
γ_n - Natural Density-lbs. cu. ft.
q_u - Unconfined Compression lbs. sq. ft.
WL - Water Level
"H-N" - Hvorslev Penetration Resistance

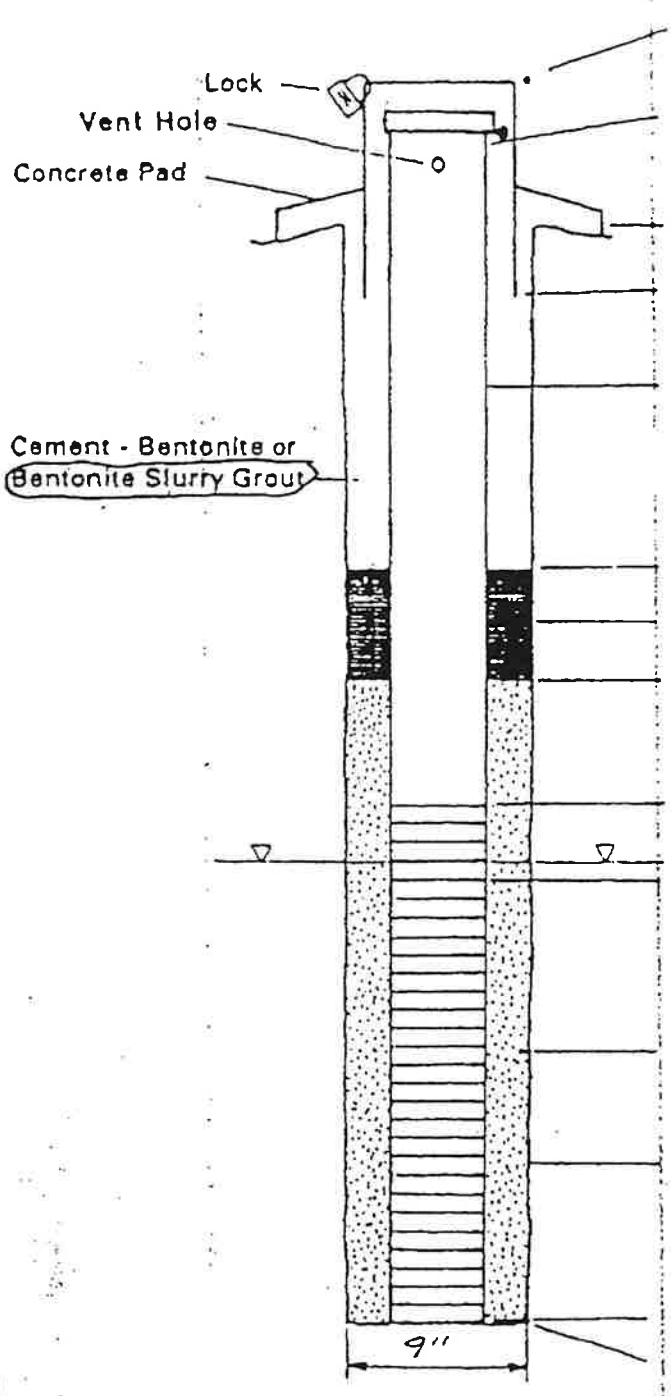
Boring No. 37' WELL

Project No. _____ Project Name MONITOR WELLS - MCGILL RD. LANDFILL BORING/MONITOR WELL NO 37' MCGILL RD.

Installed by RICK RAU Date Started/Completed 5-21-93 Project Location JACKSON, MI

Method 4¼" H.S.A.'s Total Depth 37' Inspected by _____ Logged By R. RAU

GROUND WATER MONITOR WELL DETAIL



Stick-up of Protective Steel Cover	3'0" ABOVE GROUND SURFACE
Stick-up of Riser	2'6" ABOVE GROUND SURFACE
Ground Elevation	
Bottom of Steel Cover	2'0" BELOW GROUND SURFACE
Riser: Inside Diameter	2"
Riser: Type of Material	PVC
Top of Bentonite Seal	28'0"
Thickness of Bentonite Seal	2'0"
Top of Sand	30'0"
Top of Screen	32'0"
Water Level upon Completion	NONE TAKEN
Screen: Inside Diameter (ID)	2"
Slot Size	.007
Type of Material	PVC
Type/Size of Sand	GLOBAL #5
Thickness of Sand Pack	7'0"
Bottom of Screen	37'
Total Depth of Borehole	37'

*Point at which elevation was surveyed

●Point from which water level was measured

RAU DRILLING
1014 14th Street * Bay City, MI 48708
(517)893-8635

BORING NO. 52' WELL JOB NO.
Ground Surface (Elev.)
Datum 4 1/4" I.D. HOLLOW STEM AUGERS
CLIENT S & S ENVIRONMENTAL

PROJECT MONITORING WELLS
MW #30
McGILL RD. LANDFILL
Location: McGILL RD., JACKSON, MI
Started 5-21-93 Completed 5-21-93
Driller Richard E. Rau
RICHARD E. RAU

ELEV.	DEPTH IN FEET	SAMPLE TYPE	SAMPLE "N"	STRATA CHANGE	SOIL CLASSIFICATION	W.L.	W	γ_n	q_u
				3'0"	MOIST, FINE BROWN SAND W/SOME GRAVEL, TRACE WOOD — FILL				
				4'6"	MOIST, BLACK, FOUNRY SAND — FILL				
	5	P			MOIST, FINE BROWN SAND W/ TRACE OF GRAVEL.				
		R		10'0"	— POSSIBLE FILL				
	10	O		—	COMPACT, MOIST, FINE BROWN SILTY SAND.				
		F							
	15	I					ENCOUNTERED H2O 20'6"		
		L							
	20	E		20'6"					
					COMPACT, WET, FINE BROWN, VERY SILTY SAND.				
	30			30'0"					
					COMPACT, WET, VERY FINE, VERY SILTY GRAY SAND.				

"N" - Standard Penetration Resistance
SS - 2" O.D. Split Spoon Sample
LS - Sectional Liner Sample
ST - Shelby Tube Sample
GS - Grab Sample

W - H2O% of dry weight
γ_n - Natural Density lbs. cu. ft.
c_u - Unconfined Compression lbs. sq. ft.
W.L. - Water Level
"H-N" - Houstel Penetration Resistance

Boring No. 52' WELL

RAU DRILLING
1014 14th Street * Bay City, MI 48708
(517)893-8635

BORING NO 52' WELL (CONT.) JOB NO. _____
Ground Surface (Elev.) _____
Datum 4 1/4" I.D. HOLLOW STEM AUGERS
_____
CLIENT S & S ENVIRONMENTAL
_____
_____

PROJECT MONITORING WELLS
MW#3D
_____
McGILL RD. LANDFILL
Location McGILL RD., JACKSON, MI
Started 5-21-93 Completed 5-21-93
Driller RICHARD E. RAU

ELEV.	DEPTH IN FEET	SAMPLE TYPE	SAMPLE "N"	STRATA CHANGE	SOIL CLASSIFICATION	W.L.	W	γ_n	q_u
					COMPACT, WET, VERY FINE, VERY SILTY GRAY SAND.				
	35	P							
		R							
		O							
	40	F							
		I							
		L							
	45	E							
	50								
	52'			E.O.B.	2" WELL SET @ 52' DEEP.				
	55								
	60								

"N" - Standard Penetration Resistance
S S - 2" O.D. Split Spoon Sample
L S - Sectional Liner Sample
S T - Shelby Tube Sample
B S - Bottle Sample
W - H2O% of dry weight
γ_n - Natural Density-lbs. cu. ft.
q_u - Unconfined Compression lbs. sq. ft.
W.L - Water Level
"H-N" - Hausel Penetration Resistance

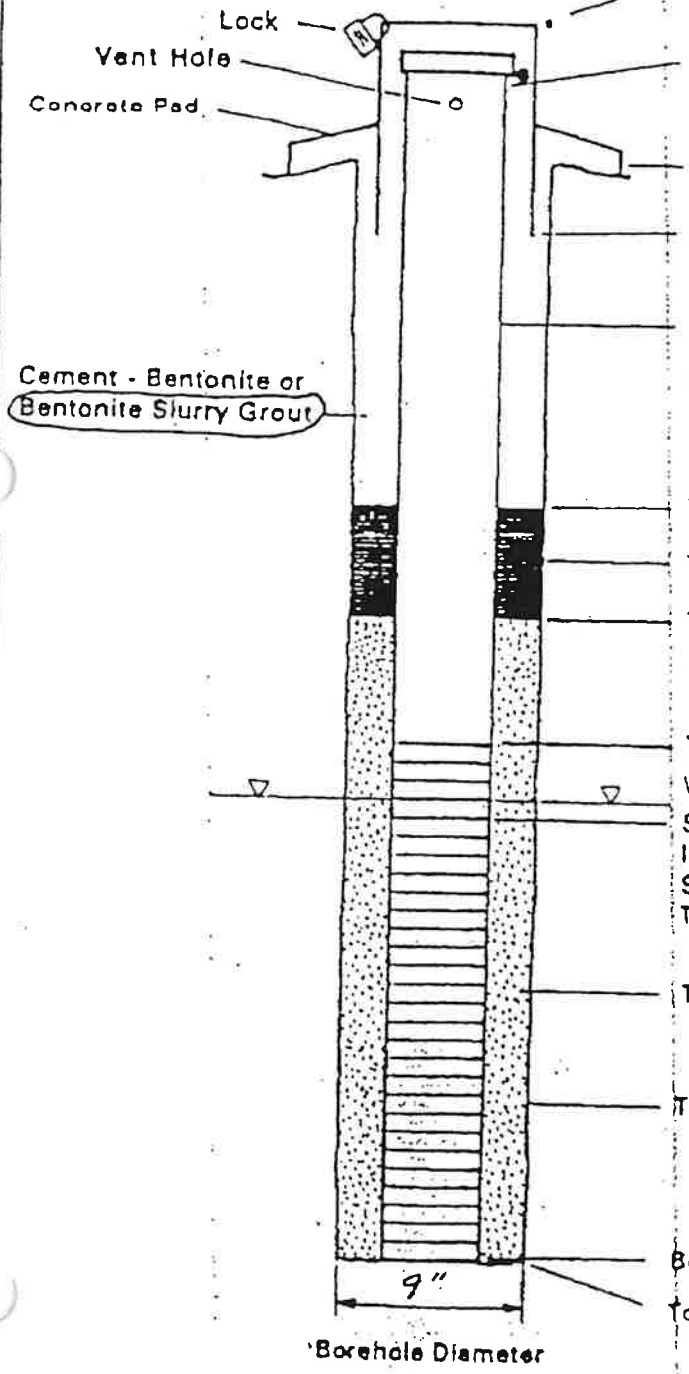
Boring No. 52' WELL
PG. 2 OF 2

Project No. _____ Project Name McGILL LANDFILL - MONITOR WELLS BORING/MONITOR WELL NO. 52'

Installed by RICK RAU RAU DRILLING Date Started/Completed 5-21-93 Project Location McGILL RD. LANDFILL JACKSON, MI.

Method 4¼" H.S.A.'S Total Depth 52' Inspected by _____ Logged By R. RAU

GROUND WATER MONITOR WELL DETAIL



Stick-up of Protective Steel Cover	3'0" ABOVE GROUND SURFACE
Stick-up of Riser	2'6" ABOVE GROUND SURFACE
Ground Elevation	
Bottom of Steel Cover	2'0" BELOW GROUND SURFACE
Riser:	
Inside Diameter	2"
Type of Material	PVC
Top of Bentonite Seal	43'0"
Thickness of Bentonite Seal	2'0"
Top of Sand	45'0"
Top of Screen	47'0"
Water Level upon Completion	NONE TAKEN
Screen:	
Inside Diameter (ID)	2"
Slot Size	.007
Type of Material	PVC
Type/Size of Sand	GLOBAL #5
Thickness of Sand Pack	7'0"
Bottom of Screen	52'0"
Total Depth of Borehole	52'0"

*Point at which elevation was surveyed

• Point from which water level was measured

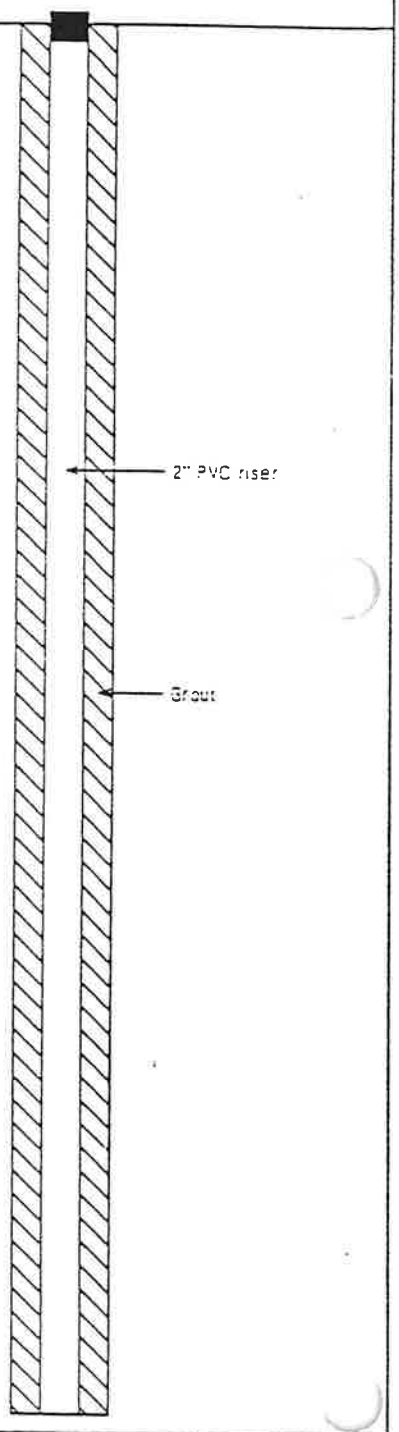
Monitoring Well No. 31

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/7/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 1004.40
HOLE ELEV.: 1002.33 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SAND, fine to medium grained, with clay and some gravel.			0–11		
SAND, medium brown, medium to fine grained with fine gravel, 12-inch recovery.	SM		12–13		26,32, 29,24
			14		
CLAY, medium to dark brown, with fine grained sand and occasional pebbles, 22-inch recovery.	SM		15–17		15,31, 40,41
			18–22		
SAND, light brown, fine grained, with gray gravel and occassional pebbles, some medium to coarse sand stringers.	SM		23–25		10,31, 38,39



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2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No.
276-8

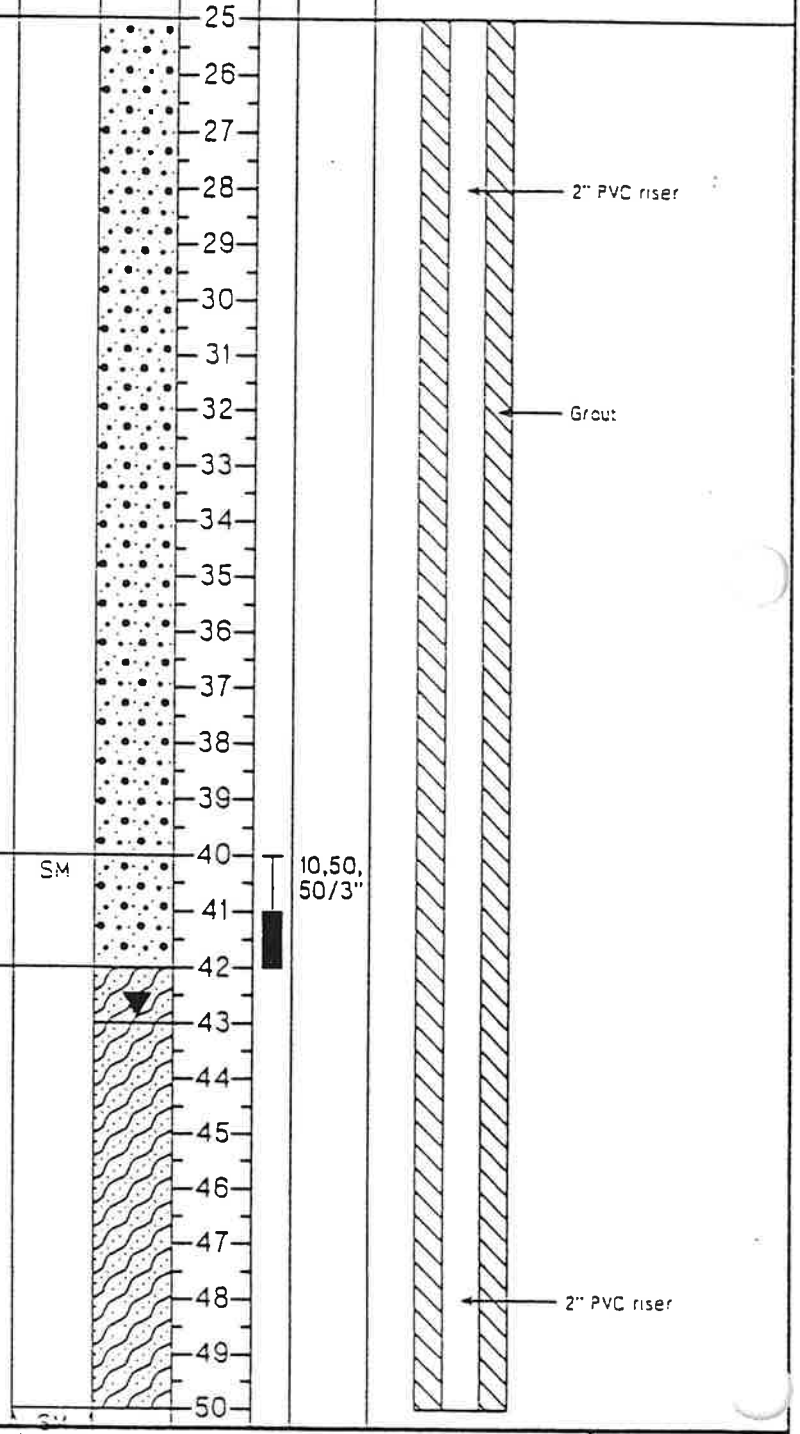
Monitoring Well No. 31

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/7/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 1004.40
HOLE ELEV.: 1002.33 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, light brown, very fine grained with some silt and clay, moist, 15-inch recovery.	SM		40		10,50, 50/3"	
Water at 43 feet.			42			



Notes:
USCS Classification based on composited samples.

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Muskegon, MI 49444

Project No.
276-8

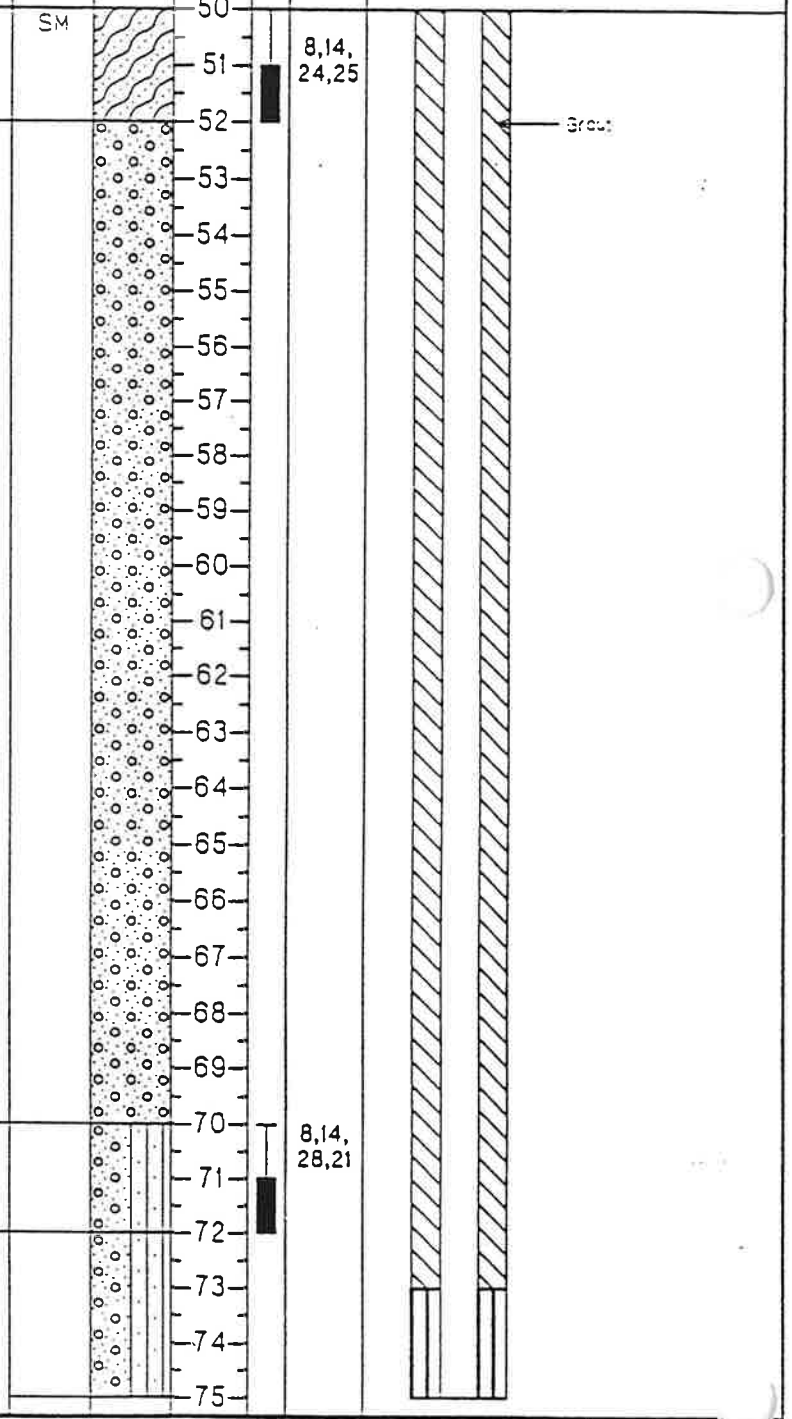
Monitoring Well No. 31

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/7/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 1004.40
HOLE ELEV.: 1002.33 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
Pea size gravel with light brown fine grained sand and gray clay, wet.	SM		50–52		8,14, 24,25	Grout
GRAVEL, coarse with gray clay, wet, 12-inch recovery.			70–72		8,14, 28,21	



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Notes:
USCS Classification based on composited samples.

Project No.
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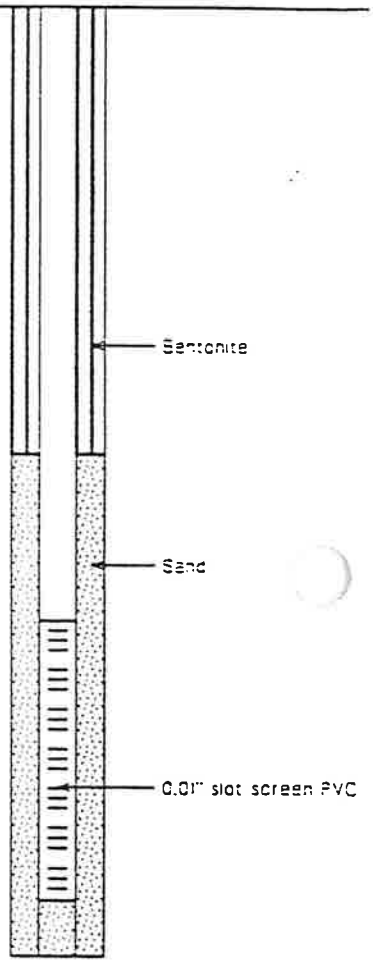
Monitoring Well No. 31

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/7/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 1004.40
HOLE ELEV.: 1002.33 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, very fine grained, gray, with abundant silt, sand becomes coarser with depth, sandstone, last one-inch.	SM		90		20, 90/5"	
END OF BORING AT 92 FEET.			92			



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Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No.
276-8

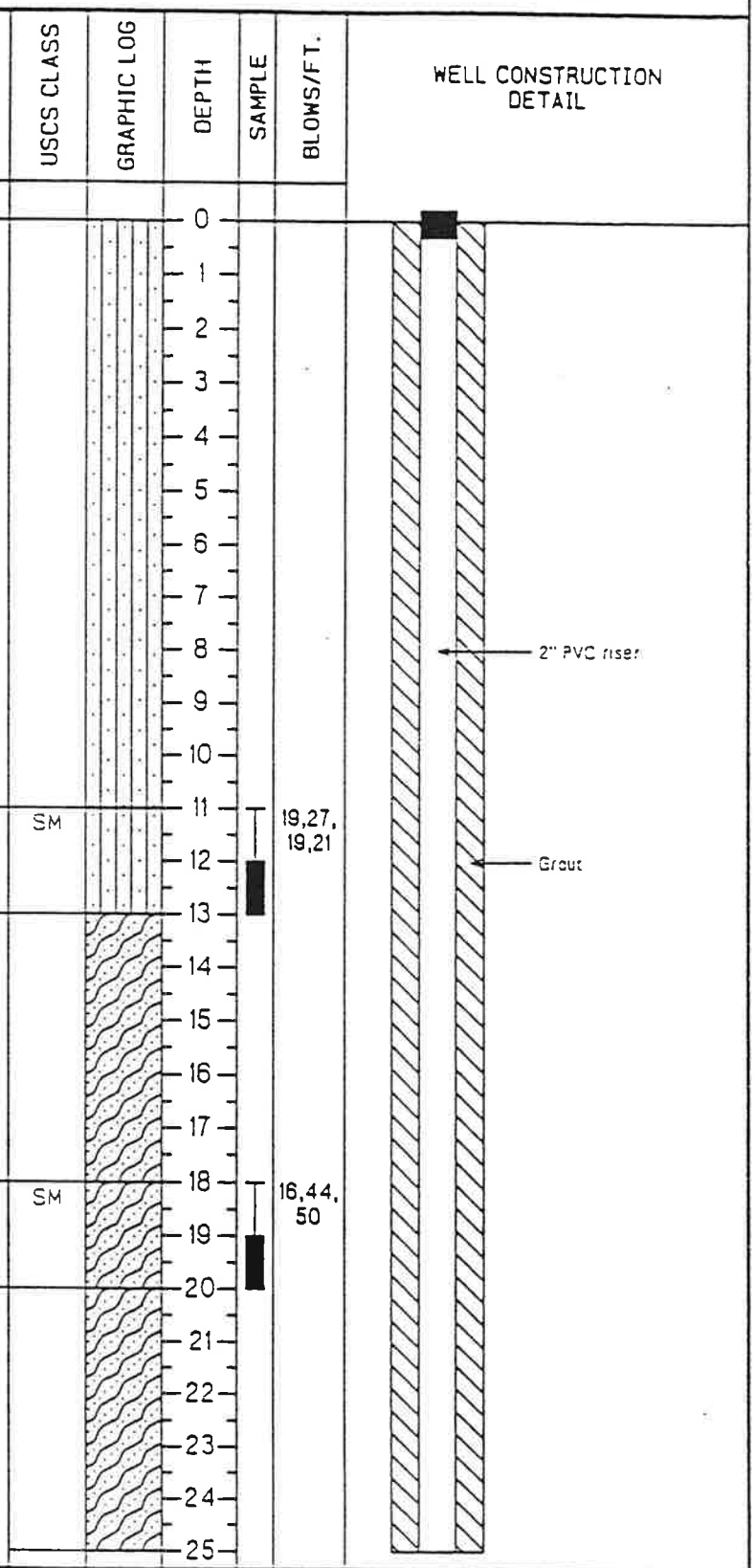
Monitoring Well No. 32/33

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 54 ft.

DATE: 3/11/94
HOLE DIA.: 8.25 in.
FINAL GW: 53 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1009.48 ft. MSL
HOLE ELEV.: 1006.88 ft. msl

DESCRIPTION	USCS CLASS	BLOWS/FT.
SAND, fine grained, with clay.		
SAND, fine grained, buff with silt and some clay, some gravel float.	SM	19,27, 19,21
SAND, fine grained with silt, moist, crumbly, non-plastic, brown.	SM	16,44, 50



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Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No.
276-8

Monitoring Well No. 32/33

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 54 ft.

DATE: 3/11/94
HOLE DIA.: 8.25 in.
FINAL GW: 53 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1009.48 ft. MSL
HOLE ELEV.: 1006.88 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
			26			
			27			
			28			2" PVC riser
			29			
SAND, with silt, non-plastic, moist and crumbly, brown, silt content increasing with depth.	SM		30			
			31			
			32			Grout
			33			
			34			
			35			
			36			
			37			
			38			
			39			
			40			
			41			
			42			
SAND, very fine grained with silt, very compact, brown, some rock	SM		43		-,16, 44,50	
			44			
			45			
			46			
			47			
			48			
			49			
SAND, very fine, with silt, rocks and gravel prevent further spooning, moist to dry, 4-inch recovery.			50		-,-, 8,70	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No. 276-8

Monitoring Well No. 32/33

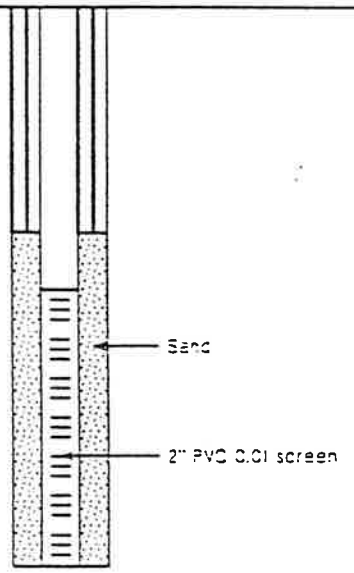
PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 54 ft.

DATE: 3/11/94
HOLE DIA.: 8.25 in.
FINAL GW: 53 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1009.48 ft. MSL
HOLE ELEV.: 1006.88 ft. msl

DESCRIPTION	USCS CLASS	BLOWS/FT.
Very hard and slow drilling to 54 feet.		
GRAVEL, gray with silt and sand, matrix, water bearing.	SM	13,25, 29,24
END OF BORING AT 60 FEET.		

GRAPHIC LOG / DEPTH / SAMPLE



WELL CONSTRUCTION DETAIL

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Notes:
USCS Classification based on composited samples.

Project No.
276-8

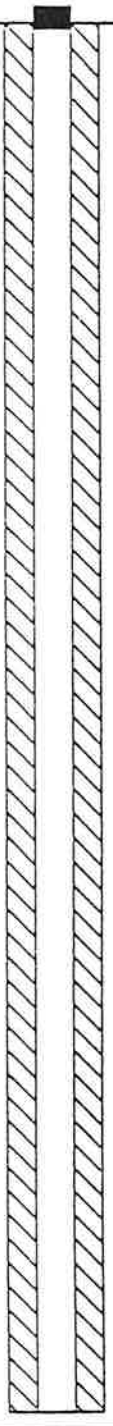
Monitoring Well No. 34

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 50 ft.

DATE: 3/14/94
HOLE DIA.: 8.25 in.
FINAL GW: 51.94 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1007.94 ft. MSL
HOLE ELEV.: 1005.41 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, light brown, powdery, fine grained.			0–9			
SAND, brown, fine grained, moist, little gravel.	SM		9–11		6,12, 13,13	
Gravel encountered.			11–19			
SAND, medium to coarse grained with gravel and clay lense. Moist, 12-inch recovery.	SM		19–21		3,5, 7,9	
			21–25			



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited inspection.

Project No.
276-8

Monitoring Well No. 34

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 50 ft.

DATE: 3/14/94
HOLE DIA.: 8.25 in.
FINAL GW: 51.94 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1007.94 ft. MSL
HOLE ELEV.: 1005.41 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
			26			
Sand, fine, little clay, dry.	SM		27		7,15,	
			28		15,15	
			29			
			30			
			31			
			32			
			33			
			34			
			35			
			36			
			37			
			38			
SAND, very fine grained, some gravel, 12-inch recovery, gravel blocking spoon.	SM		39		25,27,	
			40		35,35	
			41			
			42			
			43			
			44			Grout
			45			
			46			
			47			
			48			2" PVC solid riser
SAND, fine to medium grained, some gravel, very compact, wet, 16-inch recovery.	SM		49		9,20,	
			50		38,50	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited inspection.

Project No.
276-8

Monitoring Well No. 34

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 50 ft.

DATE: 3/14/94
HOLE DIA.: 8.25 in.
FINAL GW: 51.94 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1007.94 ft. MSL
HOLE ELEV.: 1005.41 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			50			
	SM		51			
			52			
			53			
			54			Sand
			55			
			56			10 slot, 2 inch PVC well screen
			57			
			58			
			59			
SAND and SILT, gray, moldable, wet, full recovery.	SM		60		6,7, 8,9	
			61			
			62			
			63			
			64			Cut
			65			
			66			
			67			
			68			
			69			
Gray fine sand (till) with bottom 4" of a gravel and sand.			70		8,11, 35,26	
			71			
END OF BORING AT 71 FEET.			72			
			73			
			74			
			75			

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Notes:
USCS Classification based on composited inspection.

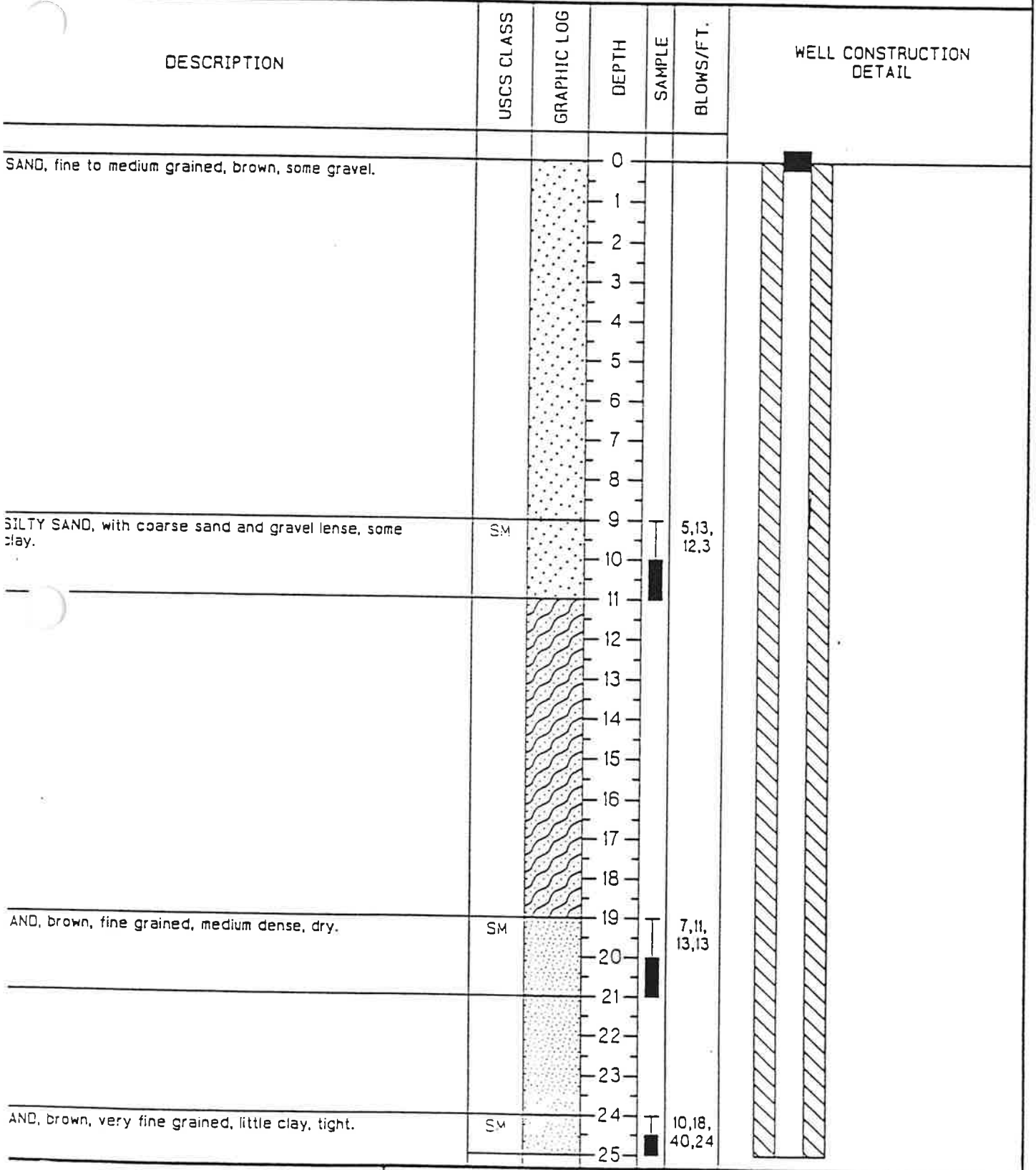
Project No.
276-8

Monitoring Well No. 35

)JECT: Philip McGill Road Landfill
:LL RIG: EDI
TIAL GW DEPTH: 43.5 ft.

DATE: 3/16/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1002.10
HOLE ELEV.: 999.38 ft. msl



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Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No. 276-8

Monitoring Well No. 35

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43.5 ft.

DATE: 3/16/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1002.10
HOLE ELEV.: 999.38 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
	SM		26			
GRAVEL encountered during drilling.			27 28 29 30 31 32 33			
No sample recovered.			34 35			
No sample recovered.			36 37			
			38 39 40 41 42 43			Hoteplug to surface
CLAY and SILT, tight, wet, appears dry at bottom, full recovery.			44 45		24,45, 52,54	
			46 47 48 49 50			Solid PVC riser

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No.
276-3

Monitoring Well No. 35

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43.5 ft.

DATE: 3/16/94
HOLE DIA.: 8.25 in.
FINAL GW: 50 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 1002.10
HOLE ELEV.: 999.38 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SILT, gray, full recovery, saturated.	SM		50–56			2" PVC screen
END OF BORING AT 56 FEET.			57–75			

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Notes:
USCS Classification based on composited samples.

Project No.
276-3

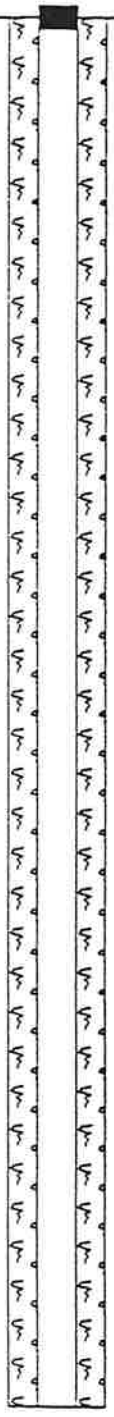
Monitoring Well No. 36

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/16/94
HOLE DIA.: 8.25 in.
FINAL GW: 44 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 998.56
HOLE ELEV.: 995.97 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, fine to medium grained, loose, clay content increases with depth.			0			
SAND, very fine grained, abundant silt, tight.	SM		9		7,14, 16,16	
SAND, brown, fine grained, abundant silt, moist, tight.	SM		19		5,10, 12,13	
			25			



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS based on composited samples.

Project No.
276-8

Monitoring Well No. 36

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 43 ft.

DATE: 3/16/94
HOLE DIA.: 8.25 in.
FINAL GW: 44 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 998.56
HOLE ELEV.: 995.97 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, fine to medium grained, some gravelly and coarse grained sand and clay lenses.	SM		25–50		29,50, 50,-	
Very hard drilling, very slow.						
GRAVEL and CLAY, very tight, very hard, some shale fragments, 6" recovery.					27,100, -,-	
SAND and GRAVEL, gray, loose.					5,12, 15,12	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS based on composited samples.

Project No.
278-3

Monitoring Well No. 37

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 23 ft.

DATE: 3/22/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 970.73
HOLE ELEV.: 968.11 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
HSA to 9', SAND, fine grained with some gravel, light brown.			0 1 2 3 4 5 6 7 8			
SAND, very fine grained, light brown.	SM		9 10 11		13,18, 20,19	
			12 13 14 15 16 17 18			Grout
Silt with clay, damp to wet, not saturated,	SM		19 20 21 22 23 24 25		7,12, 15,12	Sand pack 2" solid PVC riser

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No.
276-6

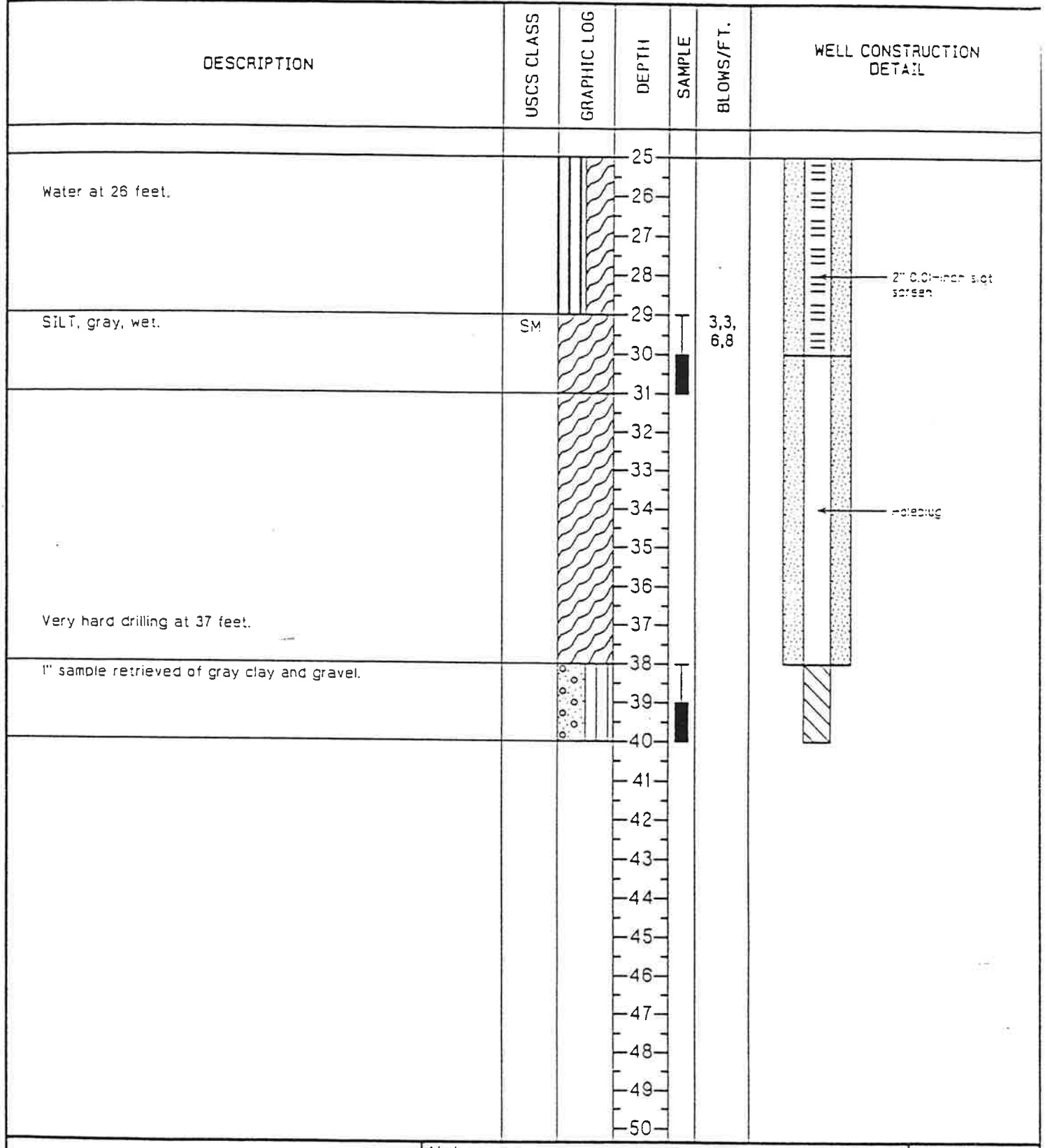
Monitoring Well No. 37

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 23 ft.

DATE: 3/22/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 970.73
HOLE ELEV.: 968.11 ft. msl

DESCRIPTION	USCS CLASS	BLOWS/FT.
Water at 26 feet.		
SILT, gray, wet.	SM	3,3, 6,8
Very hard drilling at 37 feet.		
1" sample retrieved of gray clay and gravel.		



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples.

Project No. 278-8

Monitoring Well No. 38

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 22 ft.

DATE: 3/22/94
HOLE DIA.: 8.25 in.
FINAL GW: 28 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 975.59
HOLE ELEV.: 973.14 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SILT and SAND with gravel, brown, sand is fine grained.			0–8			
SILT, brown, some sand, fine grained, 18" recovery.	SM		9–11		1,2, 5,10	
5" brown clay overlying, 1" tight gray till; dry, 6" recovery, hard slow drilling to 23'			19–21		8,10, 15,23	
CLAY, with some fine to medium grained sand, gray, wet, organic rich, full recovery.			24–25		6,8, 10,13	

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2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples. NR – Not Recorded

Project No. 276-6

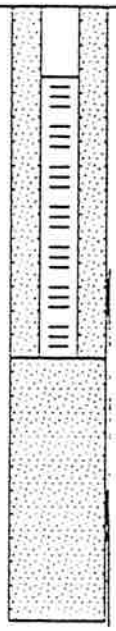
Monitoring Well No. 38

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 22 ft.

DATE: 3/22/94
HOLE DIA.: 8.25 in.
FINAL GW: 28 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 975.59
HOLE ELEV.: 973.14 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
2" CLAY, some shale fragments, 2" recovery, very hard drilling to 33' eases up at 33'.			29–31		NR	
SAND and GRAVEL, gray, full recovery.			34–35		13,15, 20,20	
END OF BORING AT 36 FEET.			36			



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on composited samples. NR – Not Recorded

Project No.
276-6

Monitoring Well No. 39

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 46 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 49 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 981.40 ft. MSL
HOLE ELEV.: 978.6 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
CLAY, light brown, with sand, fine grained.			0–9			
SILT, light brown to tan, mottled.	SM		9–11	4	4,4,6,7	
			11–19			
SILT, light brown to tan.	SM		19–21	8	8,8,8,9	
			21–25			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification on composited samples.

Project No.
278-3

Monitoring Well No. 39

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 46 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 49 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 981.40 ft. MSL
HOLE ELEV.: 978.6 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SILT, light brown to tan.	SM		25–31		7,11, 12,11	
SAND, medium brown, medium to fine grained, with gravel, some silt lenses.	SM		31–49		11,22, 38,22	
SAND, gray, fine to coarse grained, with gravel and fine stones, wet.	SM		49–50		4,7, 10,12	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification on composited samples.

Project No. 278-8

Monitoring Well No. 39

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 46 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 49 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 981.40 ft. MSL
HOLE ELEV.: 978.6 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			50			
	SM		51			
			52			
			53			
END OF BORING AT 54 FEET.			54			
			55			
			56			
			57			
			58			
			59			
			60			
			61			
			62			
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			74			
			75			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification on composited samples.

Project No.
278-8

Monitoring Well No. 40

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 12 ft.

DATE: 3/24/94
HOLE DIA.: 8.25 in.
FINAL GW: 17 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 949.47
HOLE ELEV.: 946.0 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
CLAY, medium brown, with sand.			0			
CLAY, medium brown, with abundant gravel and sand.			1 2 3 4 5 6 7 8 9			
SAND, tan to reddish brown, with abundant coarse grained sand and fine gravel rocks.			10		8,11, 11,11	
Rocks at 11 feet to 18 feet.			11 12			
Gravel			13 14 15 16 17 18 19			
SAND, medium gray, medium to fine grained, with clay.			20		9,11, 20,-	
SAND, medium gray, with fine gravel.			21			
END OF BORING AT 20 FEET.			22 23 24 25			

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Notes:

Project No. 276-8

Monitoring Well No. 41

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 8.2 ft.

DATE: 3/22/94
HOLE DIA.: 8.25 in.
FINAL GW: 8.5 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 939.10
HOLE ELEV.: 936.4 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, dark brown, medium to fine grained, topsoil			0			
SAND, light brown, medium grained, with gravel.			1			
			2			
			3			
			4			
SAND, medium gray, medium to fine grained.			5			
			6			
			7			
			8			
SAND, medium gray, medium to fine grained, with clay.			9		3,5,5,4	
SAND, medium gray, with gravel.			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			
			22			
			23			
			24			
			25			

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Notes:

Project No.
276-8

Monitoring Well No. 42

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 9 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 9.41 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 936.75 ft. MSL
HOLE ELEV.: 933.9 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, medium brown, fine grained, some silt stringers, some gravel, 18" recovery.	SM		0–4		3,3,4,4	Grout
SAND, gray, medium to coarse grained with some fine sand, silt and gravel, 12" recovery.			4–9		4,4,10,17	
			9–11			Sandpack
			11–17			10 slot PVC screen
			17–25			

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Notes:

Project No. 278-8

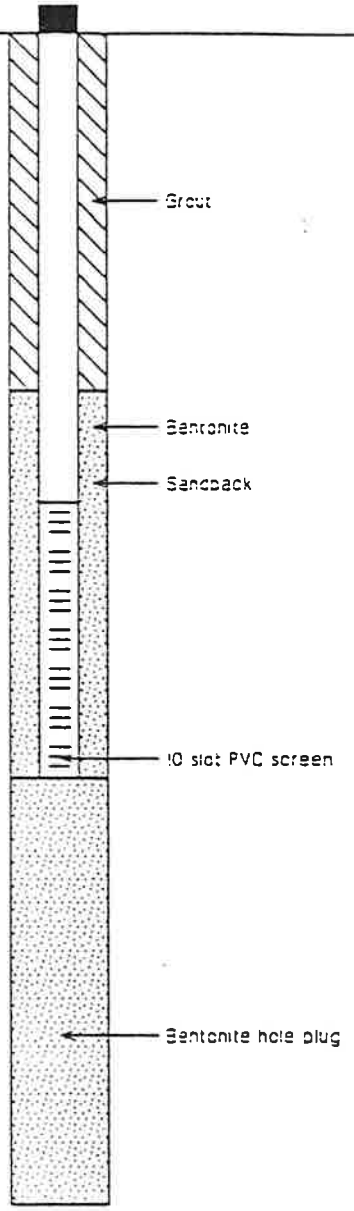
Monitoring Well No. 43

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 6 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 938.54 ft. MSL
HOLE ELEV.: 935.4 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SAND, wet, gray, fine grained, with clay, silt, and fine gravel.			0–9		
			9–11		5,5,5,5
			11–19		
SAND, dark brown, fine grained with clay and with gravel and clay lenses.			19–21		6,11, 11,12
END OF BORING AT 21 FEET.			21–25		



Westshore Engineering & Surveying, Inc.
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Notes:

Project No. 276-1

Monitoring Well No. 44

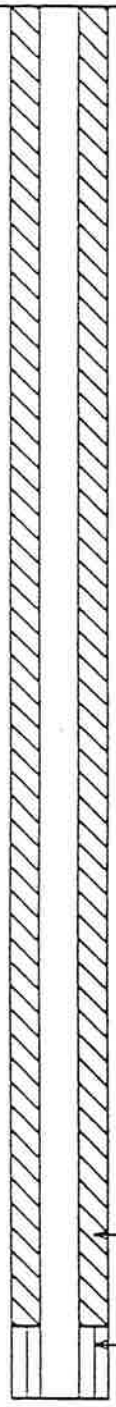
PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 21.5 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 22 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 958.03
HOLE ELEV.: 935.4 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
Topsoil			0		
			1		
SAND, light to dark brown, mottled, fine grained, with fine stones.			2		4,4,
			3		4,3
SAND, light brown, fine grained.			4		3,4,
			5		8,11
SAND, light brown, fine grained.			6		7,11,
SAND, light to dark brown, mottled, fine grained.			7		20,13
SAND, tan, fine grained, silt, with occasional pebbles.			8		7,8,
SAND, light brown, fine grained, with occasional pebbles and gravel.			9		5,4
SAND, light brown, medium to fine grained.			10		6,8,
SAND, medium brown, fine grained.			11		10,13
SAND, light to reddish brown, fine grained.			12		12,22,
SAND, medium brown, fine grained with small rocks and fine grained throughout.			13		50/5
SAND, medium brown, fine grained, with fine gravel and small stones throughout and rock at bottom.			14		10,12,
SAND, medium brown, medium to fine grained with occasional stones.			15		9,8
SAND, light brown, with abundant fine gravel.			16		0,12,15
SAND, tan, medium to fine grained.			17		50/5
SAND, medium brown, with clay.			18		16,18,
SAND, medium brown, medium to fine grained with occasional gravel.			19		16,15
SAND, light brown, fine grained.			20		8,12,
SAND, medium brown to black, mottled, fine grained.			21		12,12
SILT, medium brown.			22		4,10,
ROCK			23		12,13
SAND, medium brown, fine grained, with silt and fine gravel.			24		5,10,
SAND, light brown, fine grained, silt.			25		15,14
SILT, light brown, wet.					
SAND, silt, medium brown, wet.					
SILT, medium brown, wet.					

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
278-8

Monitoring Well No. 44

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 21.5 ft.

DATE: 3/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 22 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 958.03
HOLE ELEV.: 935.4 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
			26			
			27			
			28			
			29			
			30			well screen
			31			
SAND, light brown, fine grained, wet.			32		5,23,	
SAND, medium brown, fine grained with gray mottling.			33		19,22	
ROCK, blue gray, weathered sandstone.			34			
			35			
Spoon refusal			36		75/-,	
			37		1	
			38			
			39			
			40			
			41			
			42			
			43			
			44			
			45			
			46			
			47			
			48			
			49			
			50			

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2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
276-8

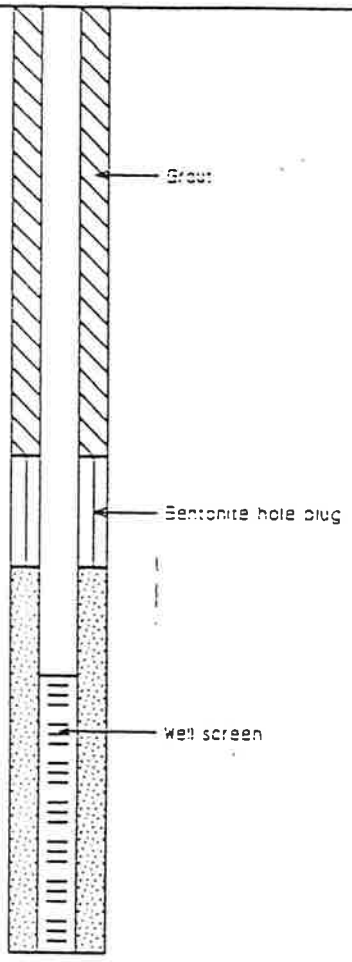
Monitoring Well No. 45

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 9 ft.

DATE: 3/31/94
HOLE DIA.: 8.25 in.
FINAL GW: 9 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 943.5 ft. MSL
HOLE ELEV.: 943.5 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, light brown, fine to medium grained, silt content increases with depth, moist.			0–8			Grout
SILT, some sand, gray, saturated, loose.			9–11		2,3, 2,3	Bentonite hole plug
Auger cuttings indicate gray silt and sand.			12–16			Well screen
END OF BORING AT 17 FEET			17–25			



Westshore Engineering & Surveying, Inc.
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Muskegon, MI 49444

Notes:

Project No. 276-8

Monitoring Well No. 46

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 12 ft.

DATE: 3/31/94
HOLE DIA.: 8.25 in.
FINAL GW: 15 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 945.77
HOLE ELEV.: 942.6 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, fine grained, brown.			0–2			
SILT, some clay, moist, moldable.			3–9			Grout
SILT, with sand stringer, some gravel, high clay content, brown, wet, loose.			10–12		2,2, 3,6	Bentonite hole plug
			13–19			Well screen
SILT, fine sand, loose.			20–22		2,2, 4,5	
END OF BORING AT 22 FEET.			23–25			

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Notes:

Project No. 278-8

Monitoring Well No. 47

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 21 ft.

DATE: 4/1/94
HOLE DIA.: 8.25 in.
FINAL GW: 24 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 968.05 ft. MSL
HOLE ELEV.: 965.3 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
TOPSOIL, clay, brown, moist.			0			
CLAY, some sand, stiff, dry.			9		-,2, 3,5	
Interbedded silts and clays, trace of sand.			18		3,5, 6,7	
			25			Grout; Bentonite hole plug

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Notes:

Project No. 276-8

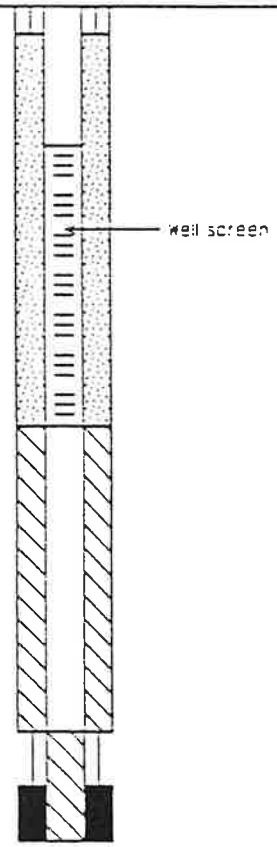
Monitoring Well No. 47

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 21 ft.

DATE: 4/1/94
HOLE DIA.: 8.25 in.
FINAL GW: 24 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 968.05 ft. MSL
HOLE ELEV.: 965.3 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
CLAY, with abundant silt and fine sand, dark gray.			25–30		3,5, 6,7	well screen
SAND, coarse grained with gravel, gray, loose.			30–40		2,3, 3,–	



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Notes:

Project No. 276-8

Monitoring Well No. 48

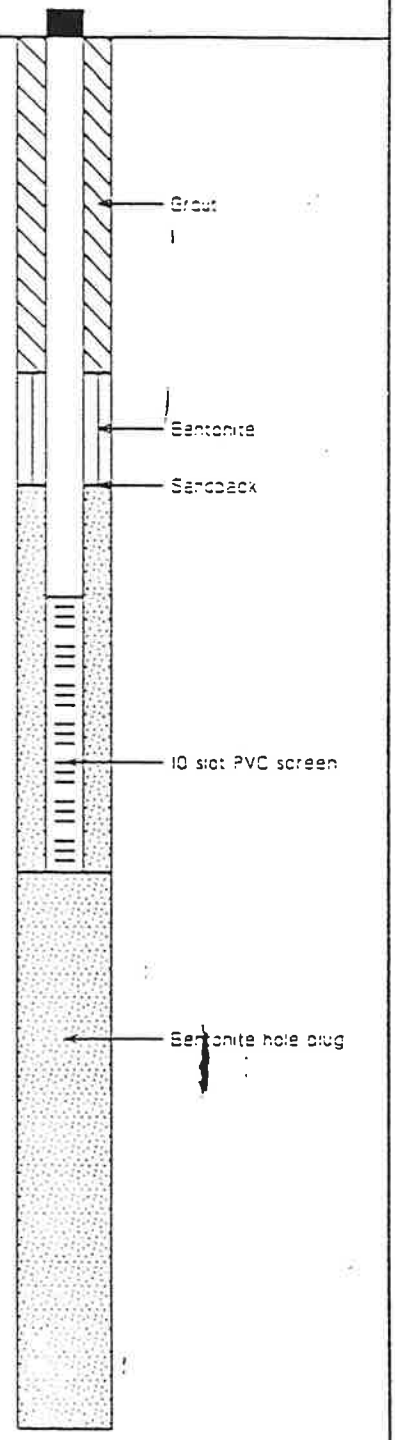
PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4/25/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 933.02 ft. MSL
HOLE ELEV.: 931.9 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
Grass and topsoil, brown, clayey silt with some gravel, wet.			0–5		
SAND, fine to coarse grained, brown, six inches of clay in bottom of spoon, saturated, full recovery.			5–7		4,5, 4,2
Hollow stem auger to 10 feet.			7–10		
SAND and SILT, grey.			10–12		2,3, 5,4
Hollow stem auger, auger cuttings are consistent with sand and silt, and appears to be siltier with depth.			12–20		
Auger returns indicate a grey sand and silt. Continue to drill to 30 feet.			20–25		

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-8

Monitoring Well No. 48

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4/25/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 933.02 ft. MSL
HOLE ELEV.: 931.9 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
Very fine grained sandstone, bluish white, soft.			25–32		5,9, 12,13	
END OF BORING AT 32.			32			END OF BORING AT 32 FEET.

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Notes:

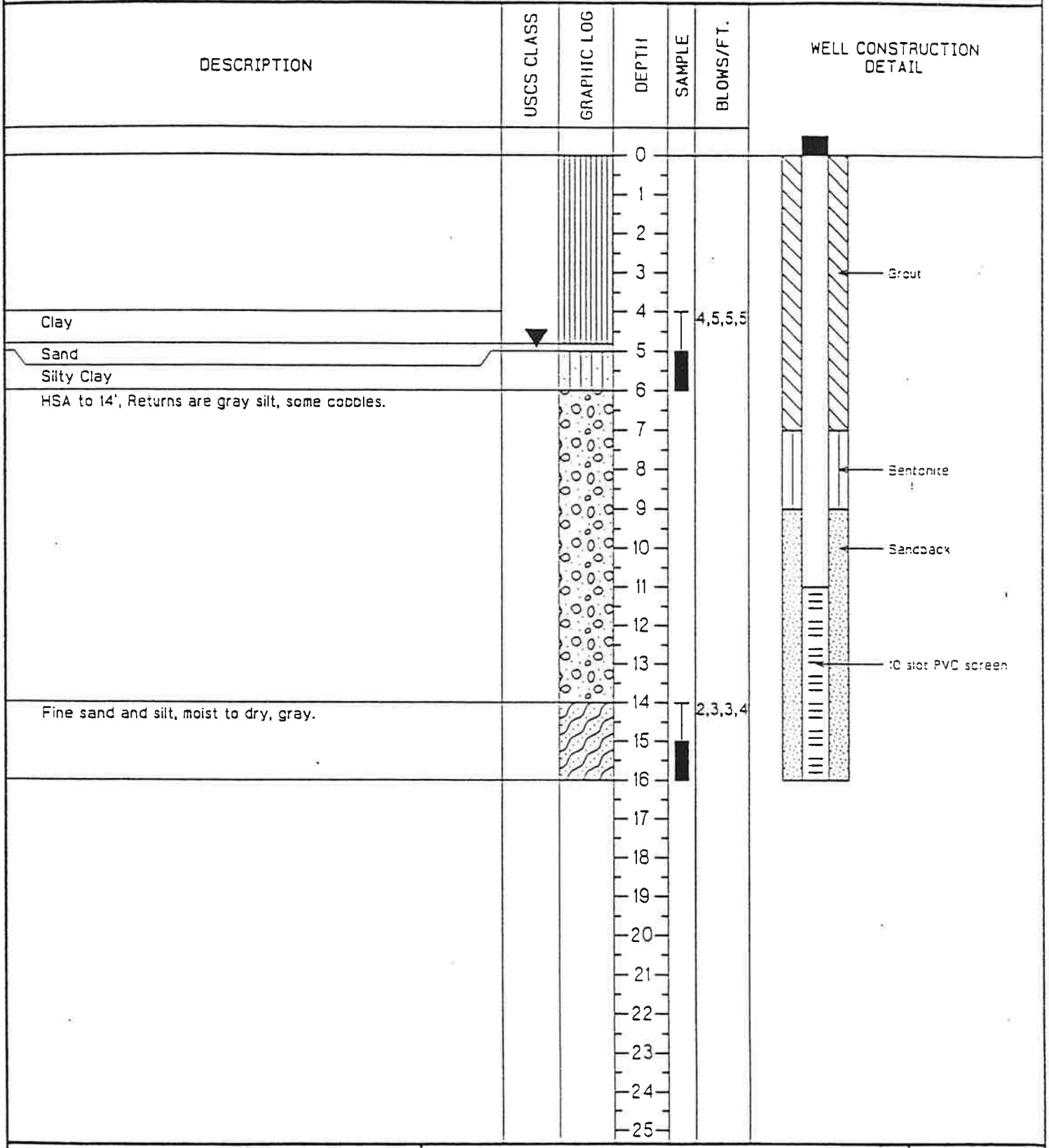
Project No. 276-3

Monitoring Well No. 49

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 5 ft.

DATE: 4/25/94
HOLE DIA.: 8.25 in.
FINAL GW: 5 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 934.50
HOLE ELEV.: 931.9 ft. msl



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Notes:

Project No.
276-8

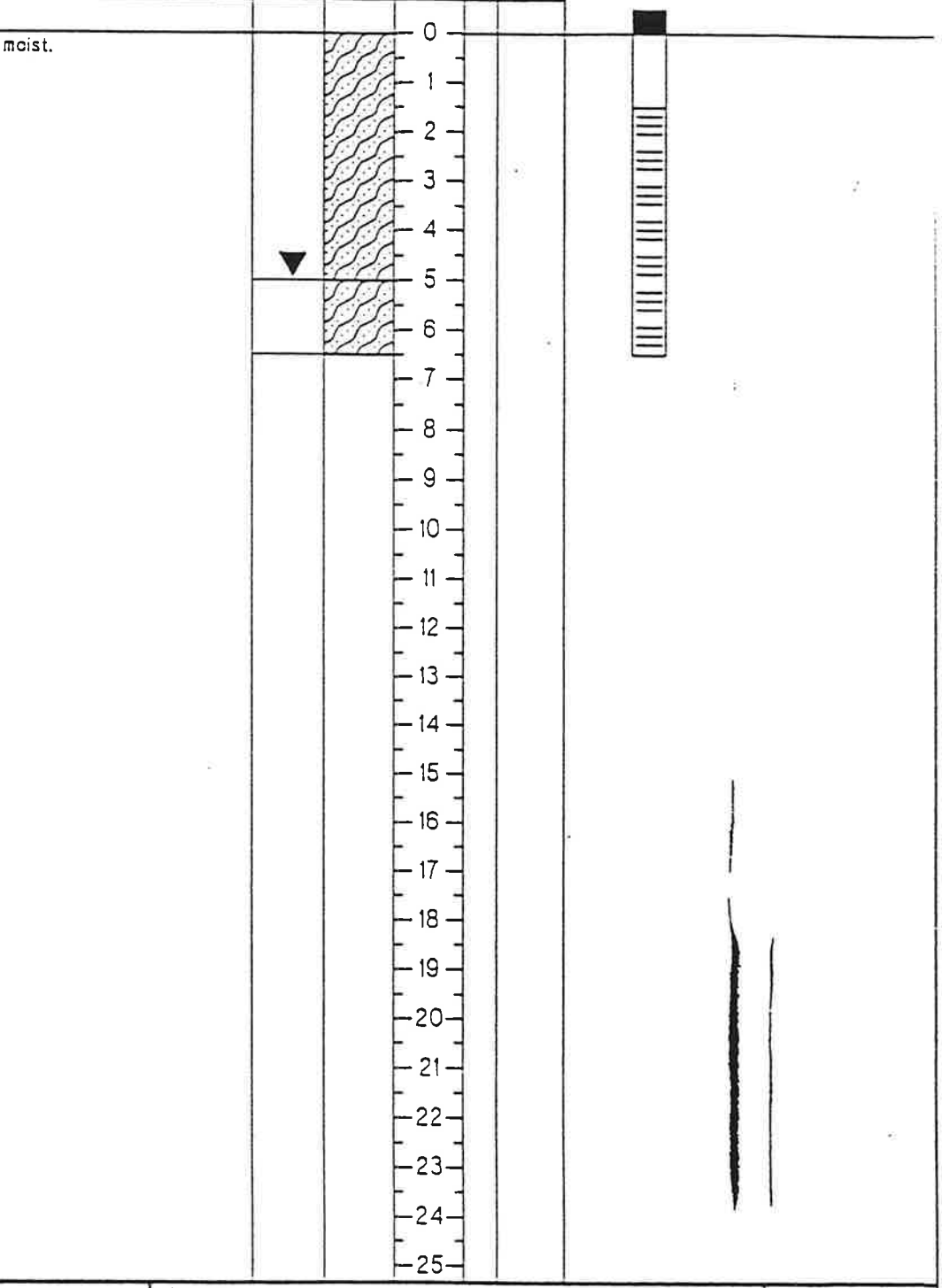
Monitoring Well No. 49a

PROJECT: Philip McGill Road Landfill
DRILL RIG: None – Boring hand augered
INITIAL GW DEPTH: 5 ft.

DATE: 10/3/94
HOLE DIA.: N/A in.
FINAL GW: ft.

LOGGED BY: Bill Pushaw
TOC ELEVATION: 934.34 ft. MSL
HOLE ELEV.: 931.0 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SILTY sand, some gravel to 5 feet, moist.			0–5			
SILTY sand, wet.			5–6.5			



Westshore Engineering & Surveying, Inc.

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Notes:
Hand Augered to 5.5'. Point drove to 6.5'. Adjacent to MW-49.

Project No.
278-8

Monitoring Well No. 49b

PROJECT: Philip McGill Road Landfill
DRILL RIG: Hand Augered
INITIAL GW DEPTH: 5 ft.

DATE: 10/3/94
HOLE DIA.: N/A in.
FINAL GW: ft.

LOGGED BY: Bill Pushaw
TOC ELEVATION: 927.68 ft. MSL
HOLE ELEV.: N/A

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
Screen to submerged in Thompson Lake Drain.		▼	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25			

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Notes:
Located in Thompson Lake Drain.

Project No.
276-8

Monitoring Well No. 50

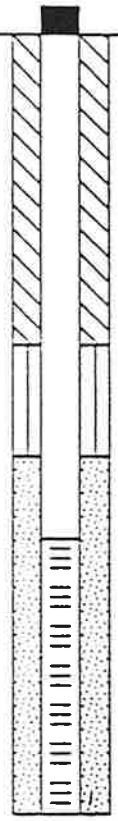
PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 4 ft.

DATE: 4/25/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 936.44
HOLE ELEV.: 933.4 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
Gray silt with sand and organic muck.			0–4		
Black organic muck, sandy silt, little clay, wet.			4–6		4,6,9,10
			6–9		
Saturated gray silty sand with gravel float, 8" recovery.			9–11		3,3,5,7
Gray silt with gravel.			11–15		
END OF BORING AT 15 FEET.			15–25		

WELL CONSTRUCTION DETAIL



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2534 Black Creek Road
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Notes:
Well recharged fast during development.

Project No.
276-8

Monitoring Well No. 51

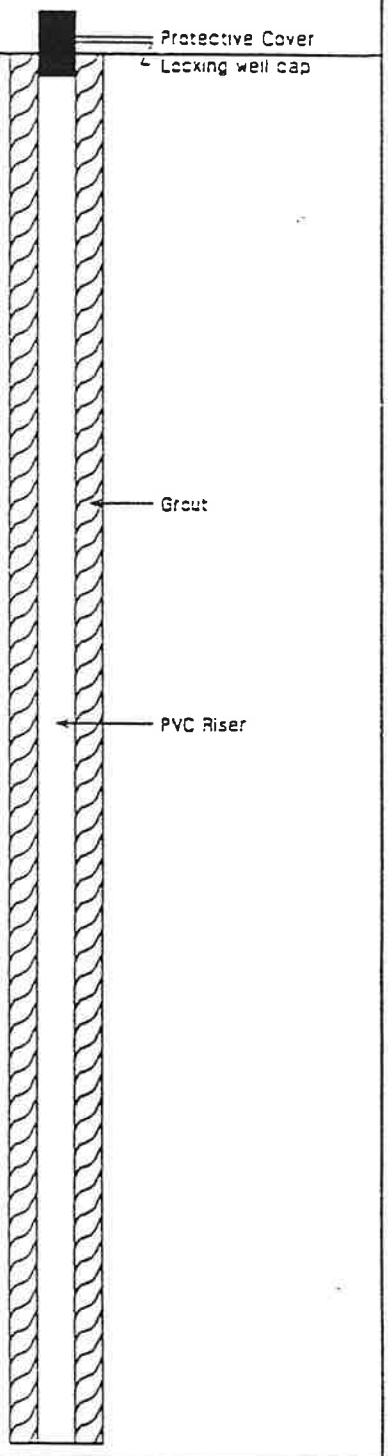
PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns; Brian and Mike
INITIAL GW DEPTH: 22 ft.

DATE: 11/7/94 & 11/8/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 978.53 ft. MSL
HOLE ELEV.: 976.02 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SILT, with fine to medium grained sand, light brown, full recovery.	SM		0–1		4,10, 8,8
SILT, with fine to medium grained sand, light brown, full recovery.	SM		2–3		
SILT and fine sand, brown, moist, full recovery.	SP-SM		4–5		10,9, 8,8
SILT and fine sand, fine sand stringer at 7 feet, full recovery.	SM		6–7		4,5, 5,6
SAND, fine grained, trace of pebble, SA to SR, float, full recovery, subangular to subrounded, some silt, buff.	SP-SM		8–9		4,5, 8,9
No recovery, used 3" spoon, fine sand and silt, brown, moist, some gravel float, 10" recovery.	SM		10–11		10,15, 16,16
SAND, fine grained, with silt, brown, full recovery.	SM		12–13		4,5, 6,7
SAND, fine grained, with silt, brown, full recovery.	SM		14–15		6,6, 7,9
SAND, fine grained, with silt, brown, full recovery.	SM		16–17		5,7, 8,9
SAND, fine grained, with silt, brown, full recovery, moist to dry.	SP-SM		18–19		6,6, 9,9
SAND, fine grained, with silt, brown, full recovery, moist to dry.	SP-SM		20–21		6,8, 6,7
SAND, fine grained, with silt, wet, grayish brown, full recovery.	SM		22–23		5,5, 6,7
Brass liners, top 2 empty, 6 full, 18" recovery. SAND, fine grained with silt, wet, grayish brown.	SM		24–25		

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
Soil boring completed at 70' (competent bedrock). USCS based on ASTM 2488 and 2499.

Project No. 278-S

Monitoring Well No. 51

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns; Brian and Mike
INITIAL GW DEPTH: 22 ft.

DATE: 11/7/94 & 11/8/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 978.53 ft. MSL
HOLE ELEV.: 976.02 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
	SM		26		7,10, 12,13	
SAND, fine to medium grained, with silt, gray, 2" clay lense at 26.5'.	SP		27			
SAND, fine grained with silt at top 18" of spoon, coarse sand with some pebbles last 6"	SM		28		7,5, 4,4	Grout
SAND, fine grained with silt, some lenses of coarse sand, (brass liners collected). Some small pebbles.	SW		29			
SAND, fine grained, with silt, gray, 6" of coarse sand at bottom of spoon, full recovery.	SP		30		3,4, 5,6	
SAND and fine silt, gray, 1" clay in tip, unable to collect liners because of loss.	SP-SM		31			
10" sample retrieved, 4" sand and 6" clay with gravel. Unable to split spoon further. Limestone/shale is plugging spoon.	SP-SM		32		2,2, 3,3	PVC Riser
Top is gray silt, bottom is gray sand, and gravel with abundant gray silt, brass liners collected.	SW-SM		33			
SILT, gray, with abundant pebbles and gravel.	SW		34		15,3, 3,3	
SAND, fine to coarse grained, with pebbles and small gravel, gray silt matrix, 1" clay lens at top of spoon, full recovery.	SW		35			
SILT, with abundant sand and some pebbles, occasional gravel, full recovery.	SM		36		34,50, 1	
SILT, with abundant sand and some pebbles, occasional gravel, full recovery.	SW		37			
SILT, with abundant sand and some pebbles, occasional gravel, full recovery.	SM		38		5,9, 11,10	
			39			
			40			
			41			
			42		4,9, 9,11	
			43			
			44		9,6, 10,11	
			45			
			46		12,10, 9,9	
			47			
			48		2,2, 4,7	Grout
			49			
			50		9,9 9,13	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
Soil boring completed at 70' (competent bedrock). USCS based on ASTM 2488 and 2499.

Project No. 276-3

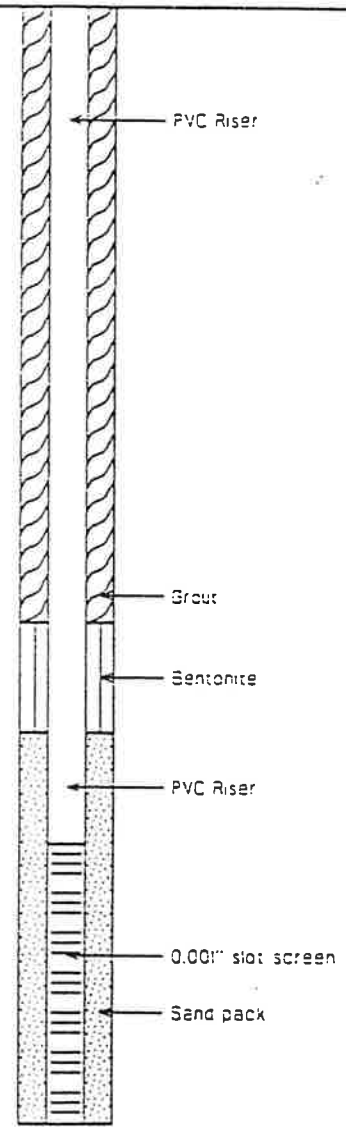
Monitoring Well No. 51

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns; Brian and Mike
INITIAL GW DEPTH: 22 ft.

DATE: 11/7/94 & 11/8/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 978.53 ft. MSL
HOLE ELEV.: 976.02 ft. MSL

DESCRIPTION	USCS CLASS	BLOWS/FT.
SILT, gray, with fine to coarse sand, full recovery.	SP	
SILT, gray, with fine to coarse sand, brass liners used.	SM	13,3, 5,7
SILT, gray, with fine to coarse sand, full recovery.	SM	
SAND, fine to coarse grained, with abundant gray silt, bottom 2" is a gray clay with sand.	SP	8,5, 7,13
SAND, fine to coarse grained, with gray silt, last 4" is limestone, full recovery, brass liners.		9,15, 29,18
Top 12" is gravel, bottom 12" is a very fine grained sand, blueish white, possible weathered.		12,11, 21,29
Weathered sandstone, blue, very fine, full recovery, brass liners used.		16,18, 30,36
Weathered sandstone, light blue, very fine, bottom is fractured limestone.		30,100 for 2
Blueish green sandstone, very fine grained, four" recovery.		100 for 4
Grayish sandstone, very fine grained, lightly cemented, brass liners collected.		100 for 4
END OF HSA AT 70 FEET.		



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
Soil boring completed at 70' (competent bedrock). USCS based on ASTM 2488 and 2499.

Project No.
276-8

WELL ABANDONMENT LOG: MW-51

NTH CONSULTANTS, LTD.

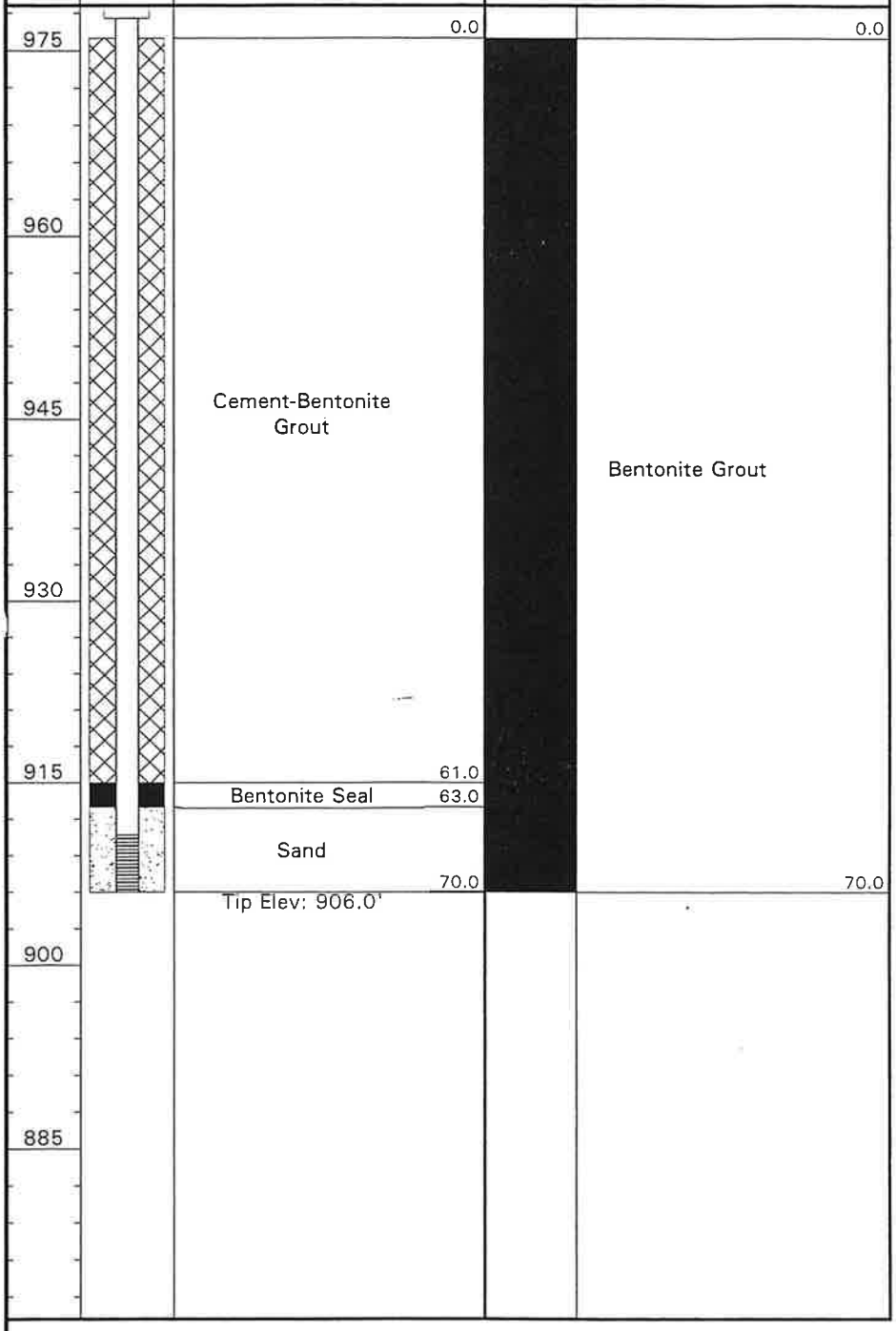
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well casing was overdrilled with 6-1/4 inch inside-diameter, hollow-stem augers and removed from the ground. The borehole was tremmied with bentonite grout to surface.

[2] Original well construction details from monitoring well log by Westshore Engineering & Surveying, Inc., dated 11/08/94.

Started:	*05/31/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/31/01*	Casing Length:	*70.0 feet*
Inspector:	*J. Allgeier*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	*0.001 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

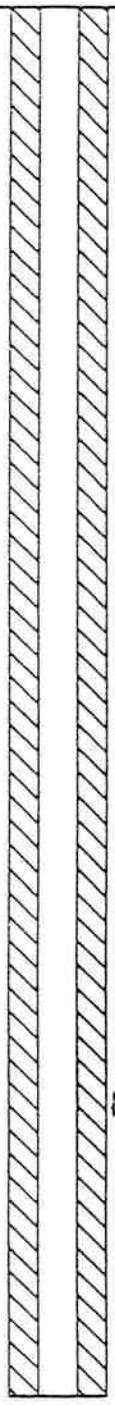
FIGURE NO. A-5

Monitoring Well No. 52

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns
INITIAL GW DEPTH: 37 ft.

DATE:
HOLE DIA.: 8.25 in.
FINAL GW: 37.25 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 978.81
HOLE ELEV.: 976.18 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
Refer to log MW-51 for soil description's.			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25			

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Muskegon, MI 49444

Notes:

Project No.
276-8

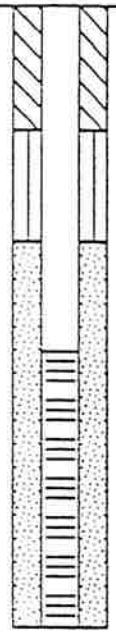
Monitoring Well No. 52

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns
INITIAL GW DEPTH: 37 ft.

DATE:
HOLE DIA.: 8.25 in.
FINAL GW: 37.25 ft.

LOGGED BY: Judy Sorvari
TOC ELEVATION: 978.81
HOLE ELEV.: 976.18 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
278-8

WELL ABANDONMENT LOG: MW-52

NTH CONSULTANTS, LTD.

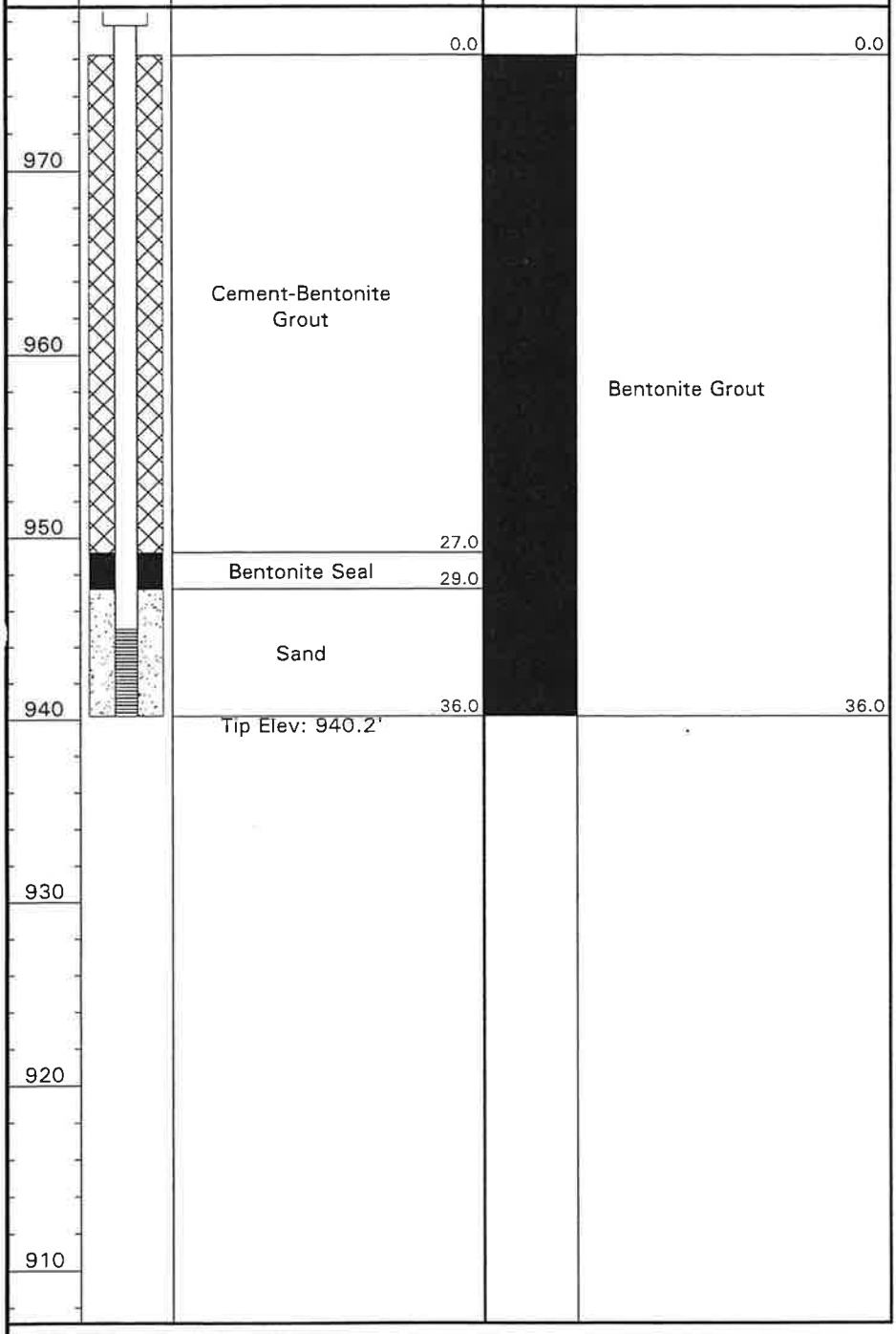
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well casing was overdrilled with 6-1/4 inch inside-diameter, hollow-stem augers and removed from the ground. The borehole was tremmied with bentonite grout to surface.

[2] Original well construction details from monitoring well log by Westshore Engineering & Surveying, Inc.

Started:	*06/01/01*	Casing Diameter:	*2.0 inches*
Completed:	*06/01/01*	Casing Length:	*36.0 feet*
Inspector:	*J. Allgeier*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. A-6

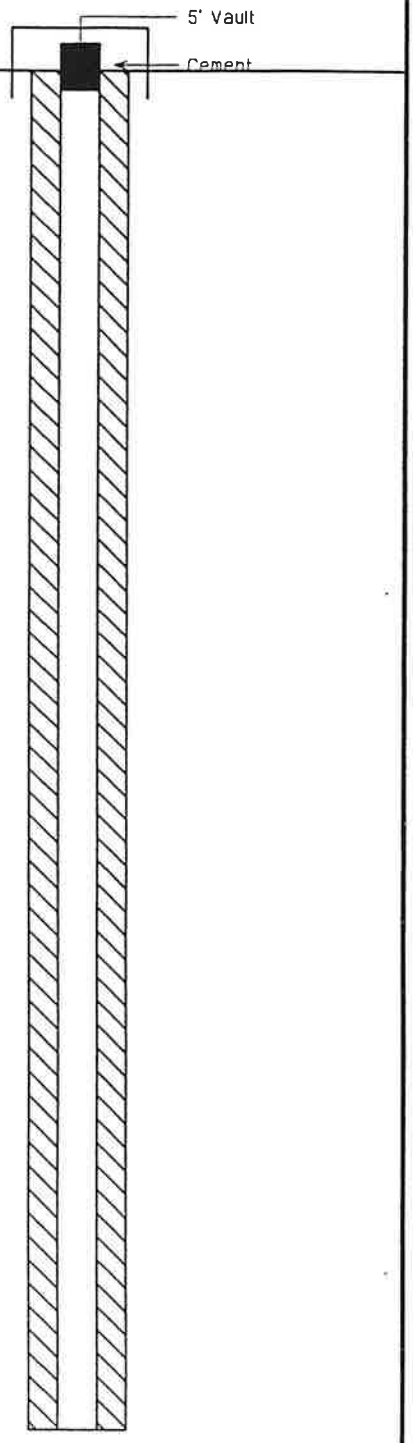
Monitoring Well No. 53

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling, Inc.
INITIAL GW DEPTH: 40 ft.

DATE: 11/22/94
HOLE DIA.: 8.5 in.
FINAL GW: 45 ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 999.17
HOLE ELEV.: 996.72 ft. msl

DESCRIPTION	USCS CLASS	BLOWS/FT.
SILTY SAND, very fine, subrounded, top 2" is organics, moderate yellow brown (10 yr 5/4).		
SILTY SAND, very fine, subrounded, top 2" is organics, moderate yellow brown (10 yr 5/4).	(SM)	5,7,8,11
SILTY SAND, very fine, subrounded, top 2" is organics, moderate yellow brown (10 yr 5/4).		7,7,7,7
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles.		13,24, 24,20
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles.		4,10, 10,9
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles.	(SM)	6,10, 13,15
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4).		5,8, 10,12
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4).		
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.		7,6, 12,14
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.	(SM)	7,12, 16,16
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.		5,7,11,11
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.		5,8,9,9
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.		5,7,8,9
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist, gravel stringer.		4,8,11,15



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Muskegon, MI 49444

Notes:
USCS Classification based on seive analysis.

Project No.
276-8

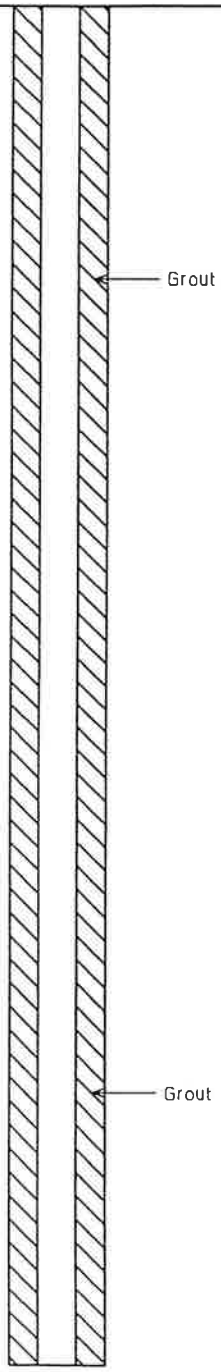
Monitoring Well No. 53

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling, Inc.
INITIAL GW DEPTH: 40 ft.

DATE: 11/22/94
HOLE DIA.: 8.5 in.
FINAL GW: 45 ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 999.17
HOLE ELEV.: 996.72 ft. msl

DESCRIPTION	USCS CLASS	DEPTH	BLOWS/FT.
SILTY SAND, very fine, subrounded, moderate yellow brown (10 yr 5/4), some rounded pebbles, moist.	(SM)	25–27	7,11, 26,26
SILTY SAND, very fine to medium with rounded, elongated pebbles, moderate yellow brown, (10 yr 5/4), dry.	(SM)	28–29	7,17, 80,51
SILTY SAND, with gravel, fine to medium grained, gravel clasts are subrounded, grayish orange (10 yr 7/4).	SP	30–31	10,28, 28,22
SAND, fine to medium grained, rounded, well sorted, some rounded pebbles, moderate yellow bronw (10 yr 5/4).		32–33	4,11, 19,31
SAND, fine to medium grained, rounded, well sorted, some rounded pebbles, moderate yellow bronw (10 yr 5/4).	(SM)	34–35	4,11, 19,31
SILTY SAND, fine to medium, yellow brown (10 yr 5/4).			
SILTY SAND, dark yellow brown (10 yr 4/2).	SM	36–37	10,23, 39,60
SAND, some silt, subrounded, dark yellow brown (10 yr 4/2).			
SILTY SAND, dark yellow brown (10 yr 4/2), wet.		38	10,30, 50,30
SILT, dark yellow brown (10 yr 4/2), wet.			
SAND, medium, dark yellow brown (10 yr 4/2), subrounded.		39	
ROCK, siltstone	SM		
SAND, medium, dark yellow brown (10 yr 4/2), subrounded.		40–41	12,30, 35,38
SILTY SAND, with gravel, dark yellow brown (10 yr 4/2).			
SAND, with gravel, organic debris, dark yellow brown (10 yr 4/2).	SW	42–43	7,11,11,12
GRAVEL, dark gray (N3), subangular to subrounded, wet.	SW	44–45	2,7,9,12
GRAVEL, gray (N4), subangular to subrounded, wet.	SW	46–47	2,5,8,10
GRAVEL, with coarse sand, subrounded, gray (N4), wet.		48–49	3,6,40, 72
SHALE, hard gray.	GW-GM	50	5,18,100



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2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on seive analysis.

Project No.
278-5

Monitoring Well No. 53

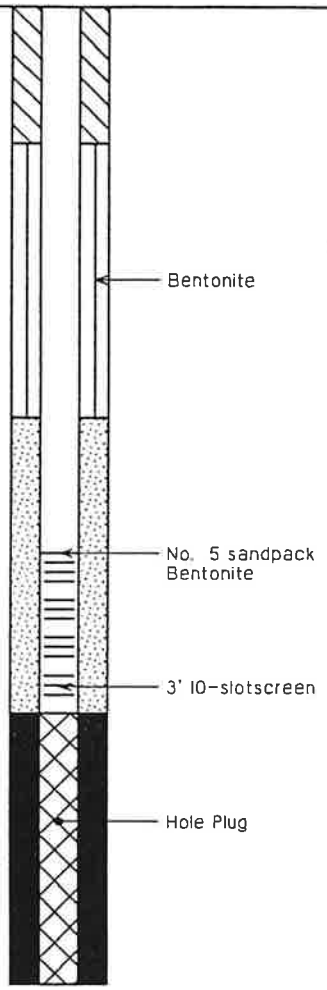
PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling, Inc.
INITIAL GW DEPTH: 40 ft.

DATE: 11/22/94
HOLE DIA.: 8.5 in.
FINAL GW: 45 ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 999.17
HOLE ELEV.: 996.72 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
GRAVEL, sand rock, 4 inch recovery.	GW-GM		50		
2" gravel/coarse sand 4" rock 10" Mud/silt blow out 6".			51		
			52		1,5,122, 111
Interbedded gray shale/mudrock and coarse sandy gravel.			53		
			54		54,27, 17,79
Interbedded gray shale/mudrock and coarse sandy gravel.			55		
			56		8,14, 24,18
3" recovery -- fine to caorse gravel.			57		
			58		11,13, 11,10
4" recovery greenish-gray, sandstone, traces of gravel.			59		
			60		4,17, 37,77
6" fine to medium sand 6" coarse sand to gravel 6" dark grayish black shale.			61		
			62		4,36, 13,11
18" recovery of busted up lime stone.			63		
			64		19,25, 25,38
18" recovery of lime stone.			65		
			66		16,25, 48,43
END OF BORING AT 68 FEET.			67		
			68		
			69		
			70		
			71		
			72		
			73		
			74		
			75		

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification based on seive analysis.

Project No.
276-8

Monitoring Well No. 54

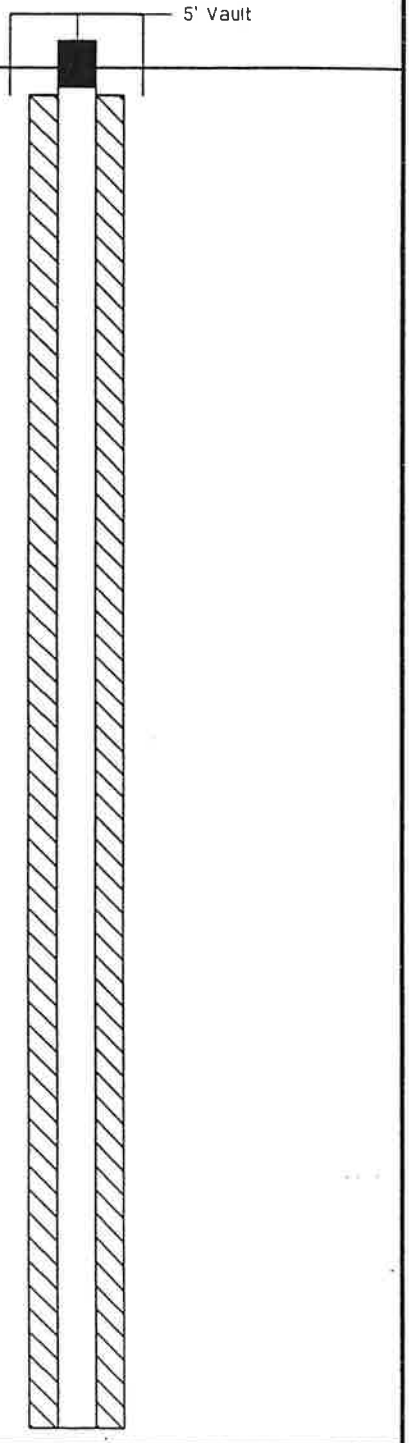
PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling (CME 750)
INITIAL GW DEPTH: 33.6 ft.

DATE: 11/23/94
HOLE DIA.: 9 in.
FINAL GW: ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 970.97
HOLE ELEV.: 968.33 ft. msl

DESCRIPTION	USCS CLASS	DEPTH	BLOWS/FT.
SILTY SAND, fine grained, subrounded, moderate brown (5 yr 4/4), rootlets.	SP-SM	0–2	4,5,4,5
SILTY SAND, fine grained, subrounded, moderate brown (5 yr 4/4), rootlets.		2–4	3,3,3,5
SILTY SAND, fine grained, subrounded, moderate brown (5 yr 4/4), rootlets.		4–6	2,2,2,2
SAND, with some silt, fine to medium grained, subrounded, moderate brown (5 yr 4/4).		6–8	1,2,1,1
SAND, fine to medium grained, moderate brown (5 yr 4/4).	SP-SM	8–10	2,2,3,3
SAND, fine to medium grained, moderate brown (5 yr 4/4).		10–12	2,2,4,5
SAND, fine to medium grained, moderate brown (5 yr 4/4), (with a 2" layer of tan medium fine grained layer at 13 feet).	SP-SM	12–14	3,4,4,4
SAND, fine grained, subrounded, moderate brown (5 yr 4/4).	SP	14–16	4,5,5,5
SAND, medium grained, moderate brown (5 yr 4/4).			
SAND, interbedded fine sand and silt layers, brown (5 yr 4/4).			
SILTY SAND, fine grained, subrounded, moderate brown (5 yr 4/4).		16–18	4,4,5,5
	ML	18–20	3,6,6,6
SAND, fine grained, subrounded, moderate brown (5 yr 4/4).	SM	20–22	5,6,11,11
SILTY SAND, fine grained, subrounded, moderate yellowish brown (10 yr 5/4).		22–24	4,5,6,8
	SM	24–25	

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
276-8

Monitoring Well No. 54

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling (CME 750)
INITIAL GW DEPTH: 33.6 ft.

DATE: 11/23/94
HOLE DIA.: 9 in.
FINAL GW: ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 970.97
HOLE ELEV.: 968.33 ft. msl

DESCRIPTION	USCS CLASS	DEPTH	BLOWS/FT.
SILTY SAND, fine grained, moderate yellow brown (10 yr 5/4).	SM	25–26	
SILTY SAND, fine grained, moderate yellow brown (10 yr 5/4).	SM	26–27	5,5,6,6
SILTY SAND, with fine sand, moderate yellow brown (10 yr 5/4).	ML	27–28	
SILT SAND, with fine sand, moderate yellow brown (10 yr 5/4).	ML	28–29	4,7,8,9
SAND, fine grained, moderate yellowish brown (10 yr 5/4).	ML	29–30	
SILTY SAND, fine grained, brown (5 yr 5/2).	ML	30–31	12,8,7,7
SILTY SAND, fine grained, wet at 33.6 feet, brown (5 yr 5/2).	SP	31–32	
	SP	32–33	1,3,5,4
	SP	33–34	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	ML	34–35	3,4,3,6
	ML	35–36	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	ML	36–37	1,4,7,7
	ML	37–38	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	SP-SM	38–39	2,2,4,5
	SP-SM	39–40	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	SP-SM	40–41	1,1,2,3
	SP-SM	41–42	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	SP-SM	42–43	1,1,1,2
SAND, wet, fine grained, dark gray (N3).	SP-SM	43–44	
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	SP-SM	44–45	1,1,1,1
	SP-SM	45–46	
SAND, wet, fine grained, dark gray (N3).	SP-SM	46–47	1,1,2,2
SILTY SAND, wet, fine grained, brown (5 yr 5/2).	SP-SM	47–48	
SILTY SAND, gray (N4), fine grained, silty.	SP-SM	48–49	2,3,3,4
	SP-SM	49–50	
	SP-SM	50	1,2,2,2

WELL CONSTRUCTION DETAIL: Cement Grout

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-8

Monitoring Well No. 54

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling (CME 750)
INITIAL GW DEPTH: 33.6 ft.

DATE: 11/23/94
HOLE DIA.: 9 in.
FINAL GW: ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 970.97
HOLE ELEV.: 968.33 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SILTY SAND, gray (N4), fine grained, pebbles, and dryer than above.			50–51			
SILTY SAND, gray (N4), fine grained.			52		4,3,4,4	
SAND, clayey, gray (N4), fine grained.			53			
SAND, dark gray (N3), fine grained, with clay.	SP–SM		54		4,4,8,10	
			55			
CLAY, dark gray (N3).			56		5,8,38,11	Bentonite hole plug
			57			
SHALE, dark competant rock layer.			58		6,9,13,17	No. 5 Well sand packing
CLAY, with sand and some gravel.			59			
SANDSTONE, light gray.			60		1,1,32,9	3' 10-slotscreen
SANDSTONE, gray.			61			
LIMESTONE						
SANDSTONE, green.			62			
END OF BORING AT 62 FEET.			63–75			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

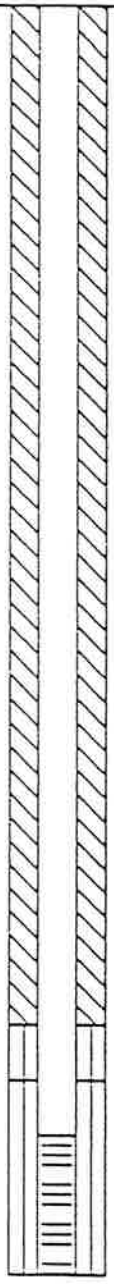
Project No. 276-1

Monitoring Well No. 55

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearns
INITIAL GW DEPTH: ft.

DATE:
HOLE DIA.: in.
FINAL GW: ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 970.70
HOLE ELEV.: 968.64 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
Refer to log MW-54 for soil description's.			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
276-8

Monitoring Well No. 56

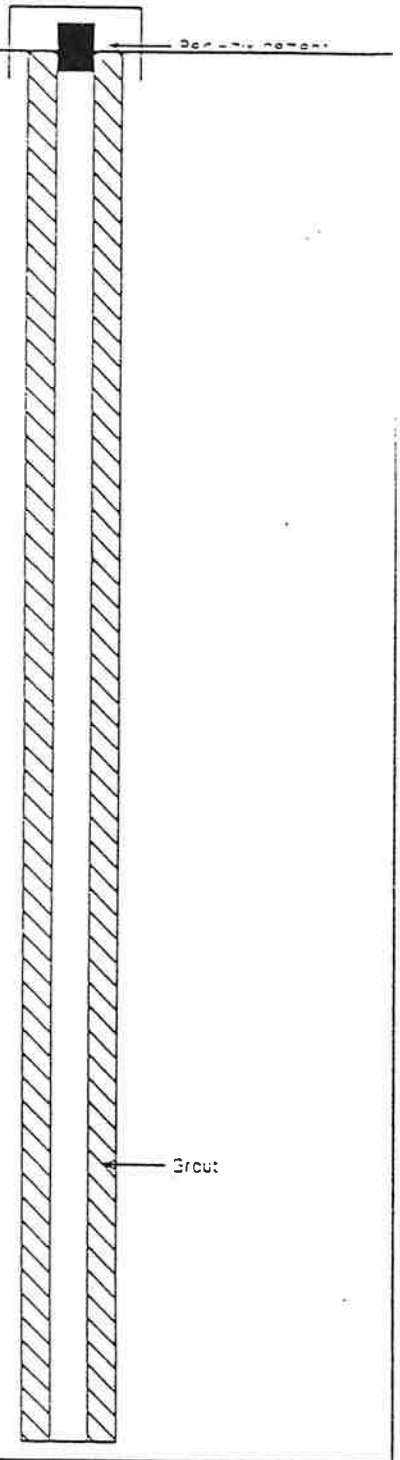
PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling, Inc.
INITIAL GW DEPTH: 11 ft.

DATE: 11/22/94
HOLE DIA.: 8.25 in.
FINAL GW: 12.53 ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 943.77
HOLE ELEV.: 941.71 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SILTY SAND, very fine, subrounded, top 2" is organics, moderate yellow brown (10 yr 5/4).			0		
SILTY SAND	SP-SM		2		1,1,1,1
SILTY SAND, very fine, brown.			4		1,1,1,3
SILTY SAND, very fine.					
CLAY			6		
SAND, very fine, gray and brown.	SP				3,4,3,4
SILTY SAND, very fine, with silty layers.			8		3,6,6,7
SAND, very fine, brown, wet at 11 feet.	SM		10		3,7,9,11
SILTY SAND, fine to medium grained, tan.			12		1,4,4,5
SAND, fine to medium grained, tan to brown.	SP		14		1,2,4,4
SAND, fine with some medium, tan to brown.			16		1,1,3,4
SAND, fine with some medium, tan to brown.			18		2,4,4,5
SAND, fine with some medium, tan to brown.			20		2,3,3,4
SAND, fine with some medium, tan to brown.	SP-SM		22		4,9,13,1
SILTY CLAY, brown.			23		
SAND, gray, fine with gray silt at bottom.	SM		24		1,5,8,7
			25		

WELL CONSTRUCTION DETAIL



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
TOC Elevation: 943.77 2.2' PVC sticks up and expandable locking cap. Protected with steel well box.

Project No.
276-3

Monitoring Well No. 56

PROJECT: Philip McGill Road Landfill
DRILL RIG: Stearn's Drilling, Inc.
INITIAL GW DEPTH: 11 ft.

DATE: 11/22/94
HOLE DIA.: 8.25 in.
FINAL GW: 12.53 ft.

LOGGED BY: Adam Wygant
TOC ELEVATION: 943.77
HOLE ELEV.: 941.71 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			25			
	SM		26		1,4,7,7	
SAND, with some gravel, medium to coarse, some gravel			27			
SAND, gray, some silt.	SP-SM		28		1,1,1,2	
			29			
SAND, medium to coarse, gray.	SP-SM		30		1,1,3,2	
			31			
SAND			32		1,9,17,17	
SANDSTONE, gray.			33			
SANDSTONE			34		8,12, 16,21	
			35			2' of hole plug
Coarse sand gravel	SP-SM		36		1,5,6,8	
SANDSTONE, white.			37			No. 5 sandpack
SANDSTONE, white, a layer of silty sandstone and dry below that point.			38		11,28, 9,6	
			39			
SANDSTONE, hard white.			40		3,15, 56,35	
			41			
SANDSTONE, gray, wet, using liners here.			42		51,53, 35,44	
			43			
SANDSTONE, gray, wet.			44		12,18, 7,4	
			45			
SANDSTONE, light gray.			46		128,3	
			47			
			48		3,6,40, 72	
			49			
			50		5,18,100	

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
TOC Elevation: 943.77 2.2' PVC sticks up and expandable locking cap. Protected with steel well box.

Project No. 276-6

MONITORING WELL NO: MW-59

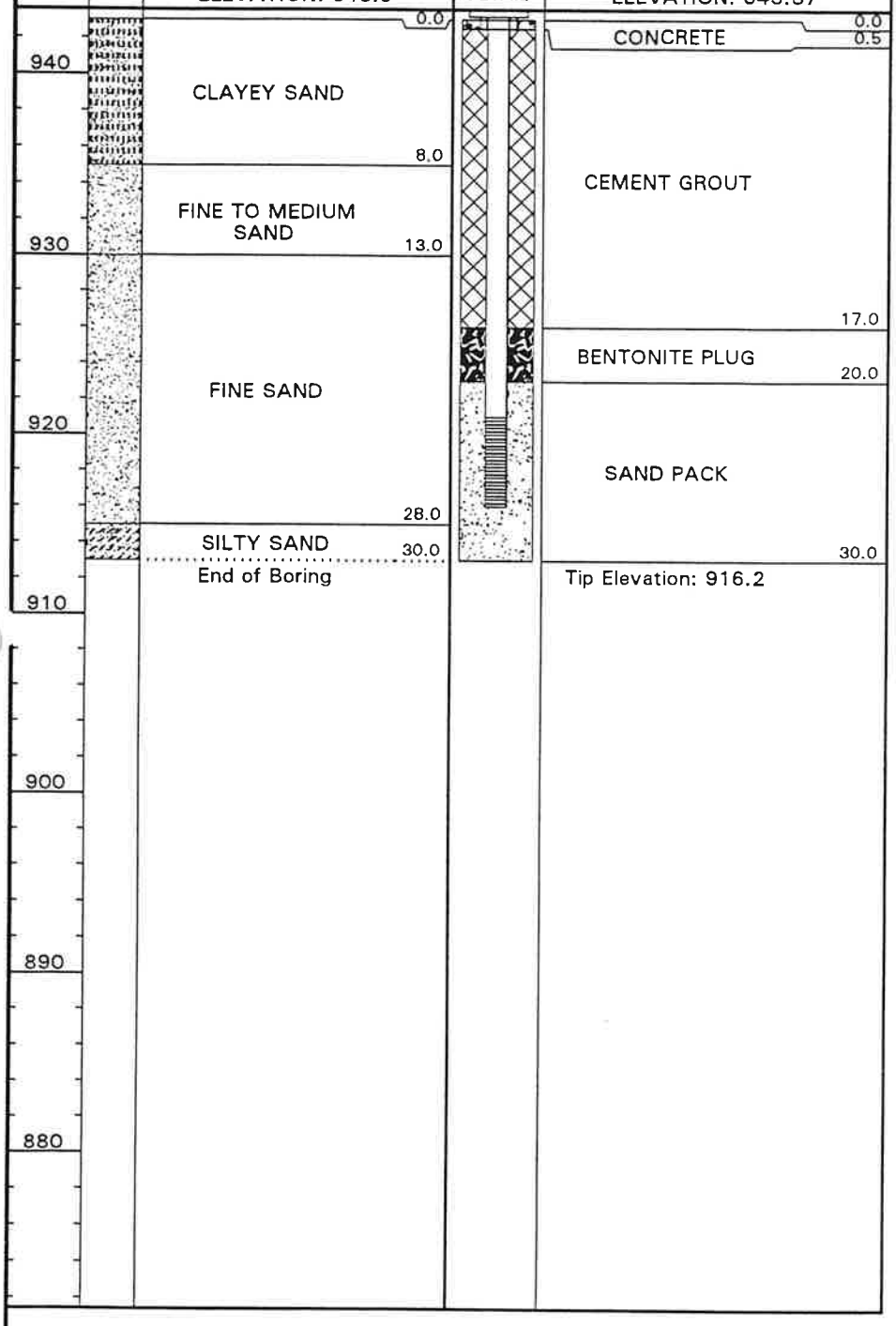
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
08-12-97	929.3	
09-15-97	929.11	3rd Quarter - 1997

NOTES

[1] Well logged by Soil & Materials Engineers, Inc. of Plymouth, Michigan.

[2] For details of surface strata, see Log of Test Boring No. B-59.

[3] Well was developed by removing 75 gallons of water.

[4] Elevations are referenced to USGS mean sea level.

[5] Coordinates: 288320.2247 N.
13122702.0551 E.

Started:	*08/12/97*	Casing Diameter:	*2.0"*
Completed:	*08/12/97*	Casing Length:	*24.7'*
Inspector:	*D. Hohner (SME)*	Casing Type:	*PVC*
Contractor:	*Stearns Drilling Company*	Screen Diameter:	*2.0"*
Driller:	*R. Bennett*	Screen Length:	*5.0'*
Equipment:	*CME-850 all-terrain drill rig*	Screen Mesh:	*0.010"*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

MONITORING WELL NO: MW-60

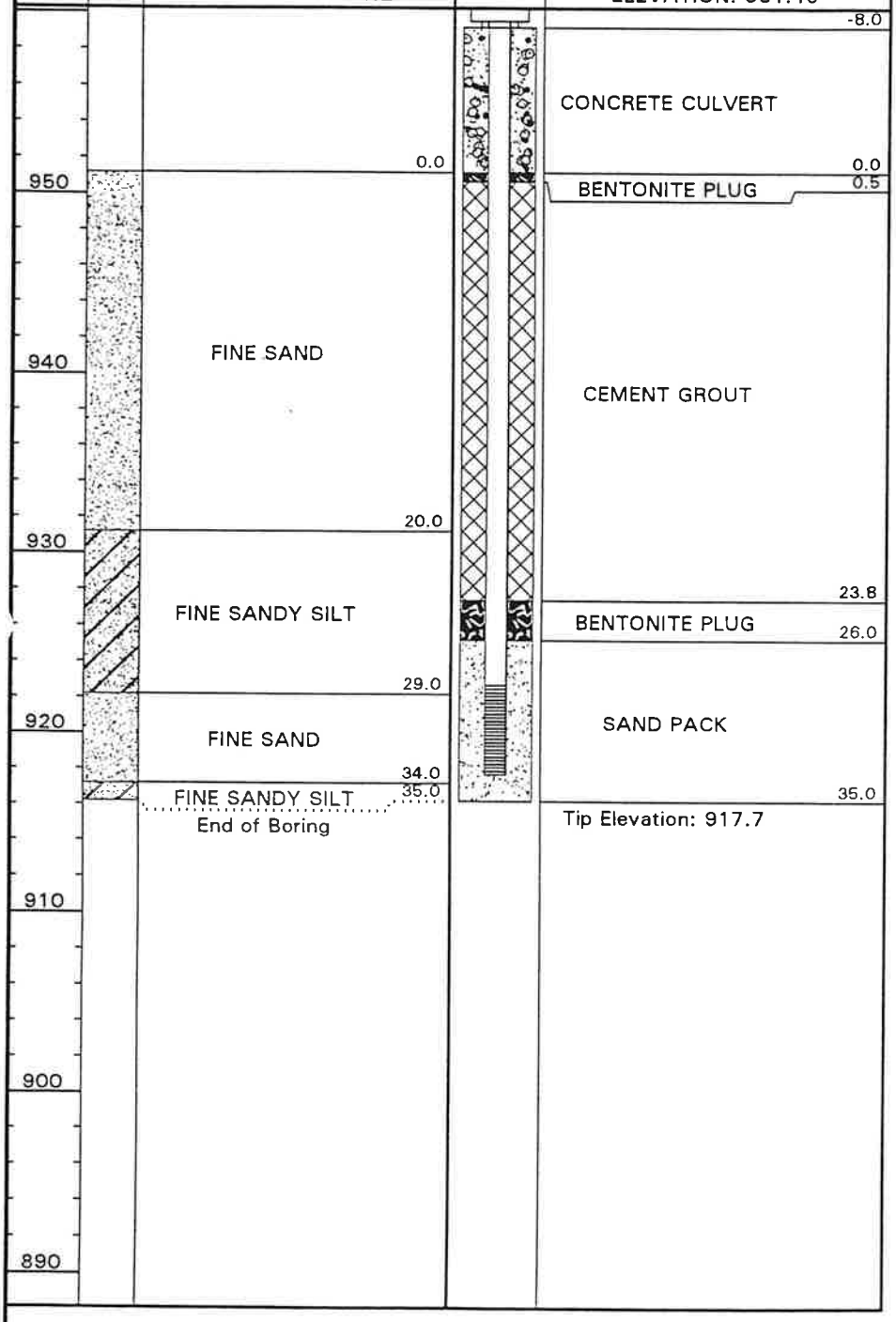
Project Name: *PHILIP McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
08-11-97	929.6	
09-15-97	929.34	3rd Quarter - 1997

NOTES

[1] Well logged by Soil & Materials Engineers, Inc. of Plymouth, Michigan.

[2] For details of surface strata, see Log of Test Boring No. B-60.

[3] Well was developed by removing 75 gallons of water.

[4] Elevations are referenced to USGS mean sea level.

[5] Coordinates: 288315.3379 N.
13122981.4593 E.

Started:	*08/11/97*
Completed:	*08/11/97*
Inspector:	*L. Henry (SME)*
Contractor:	*Stearns Drilling Company*
Driller:	*R. Bennett*
Equipment:	*CME-850 all-terrain drill rig*
Well Type:	*Monitoring*

Casing Diameter:	*2.0"*
Casing Length:	*38.8'*
Casing Type:	*PVC*
Screen Diameter:	*2.0"*
Screen Length:	*5.0'*
Screen Mesh:	*0.010"*
Screen Type:	*PVC*

FIGURE NO.

MONITORING WELL NO: MW-61S

NTH CONSULTANTS, LTD.

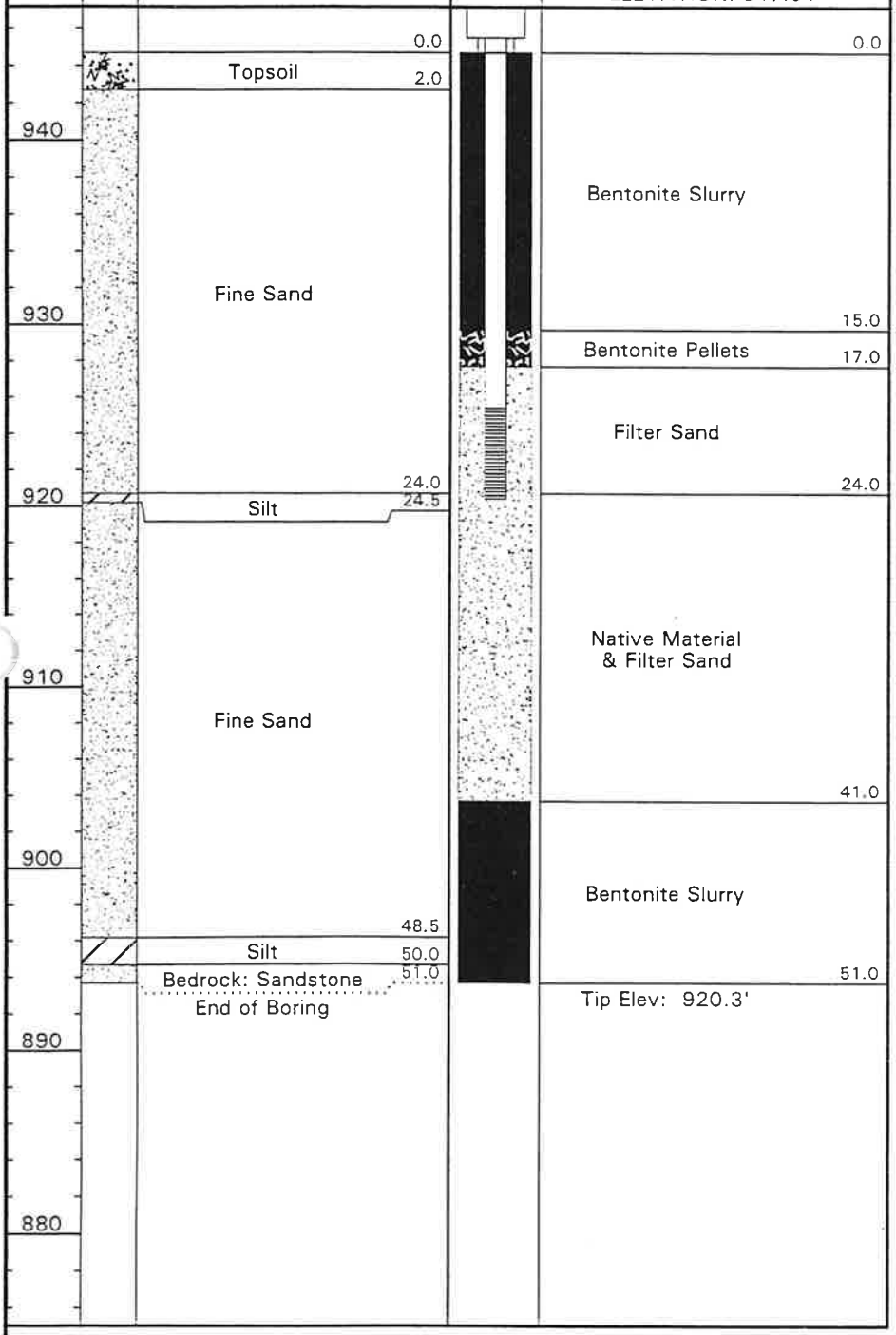
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
07/07/99	928.73	

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. TB-61D.

Started:	*07/07/19*	Casing Diameter:	*2.0 inch*
Completed:	*07/07/19*	Casing Length:	*21.7 feet*
spector:	*A. Kesl*	Casing Type:	*PVC*
Contractor:	*EDAC*	Screen Diameter:	*2.0 inch*
Driller:	*D. Dreyer*	Screen Length:	*5.0 feet*
Equipment:	*GP-1300 ATV rig*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

MONITORING WELL NO: MW-61D

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

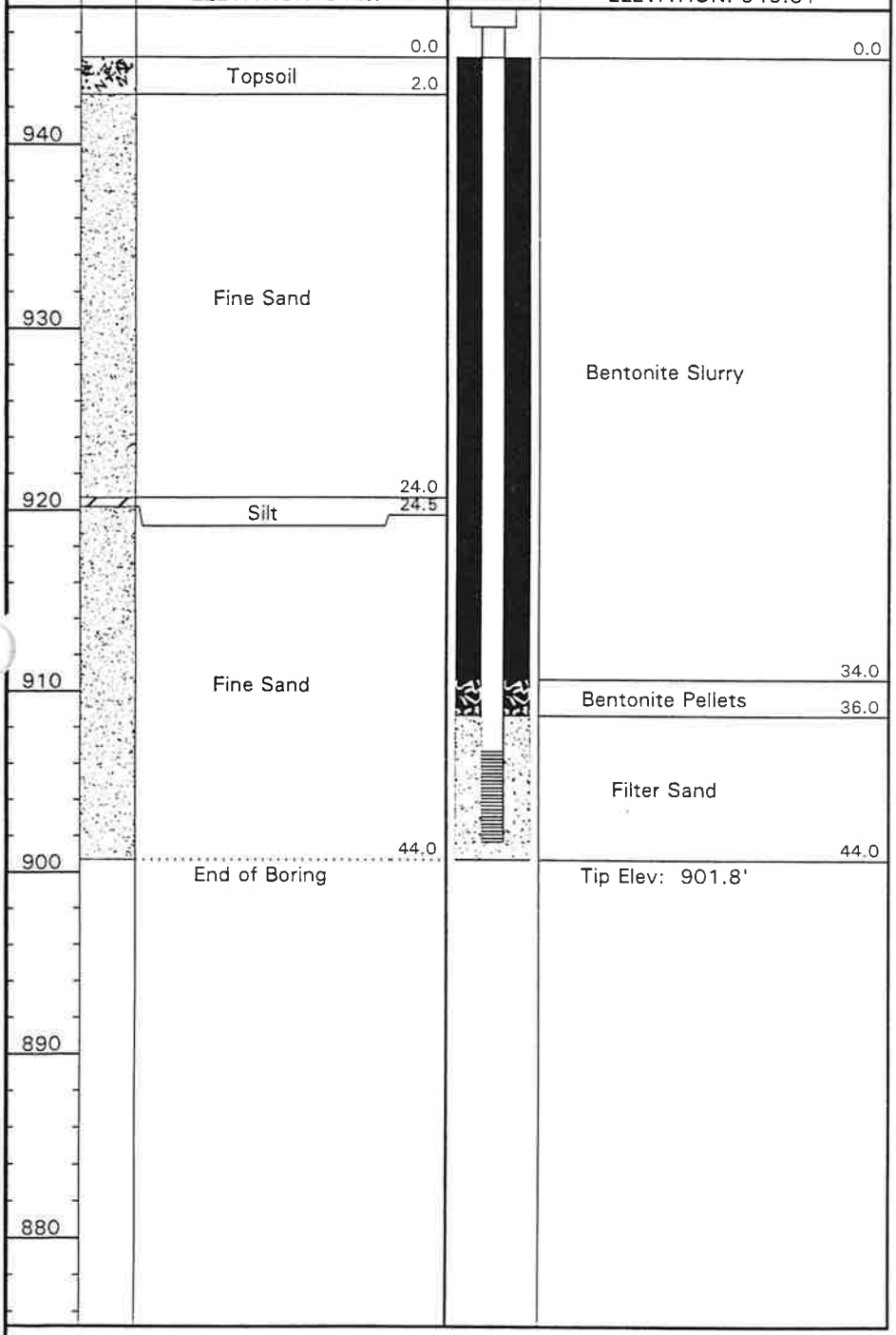
Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-17*

Checked By:

LOG OF MONITORING WELL

Generalized Subsurface Profile | Installation Schematic



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
07/07/99	928.73	

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. TB-61RD.

Started: *07/07/19*
Completed: *07/07/19*
spector: *A. Kesl*
Contractor: *EDAC*
Driller: *D. Dreyer*
Equipment: *GP-1300 ATV rig*
Well Type: *Monitoring*

Casing Diameter: *2.0 inch*
Casing Length: *40.0 feet*
Casing Type: *PVC*
Screen Diameter: *2.0 inch*
Screen Length: *5.0 feet*
Screen Mesh: *0.010 inch*
Screen Type: *PVC*

FIGURE NO.

MONITORING WELL NO: MW-62S

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-18*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF MONITORING WELL

Generalized Subsurface Profile | Installation Schematic

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 948.4	WELL DETAIL	TOP OF WELL CASING ELEVATION: 949.44
		0.0		1.0
940		Clayey Sand		Non-Shrinking Bentonite Grout
930				20.0 Hydrated Bentonite Pellets 22.0
		24.0 Silty Fine Sand 25.0		Sand
		Sandy Silt 26.5		
920		Silty Fine Sand 29.0		29.0
		End of Boring		Tip Elev: 919.4
910				
900				
890				
880				

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/15/99	927.74	

NOTES

[1] Well developed by surging and pumping.

Started:	*12/14/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/14/99*	Casing Length:	*25.0 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:	*B-6500 Drill Rig*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. 5

MONITORING WELL NO: MW-62D

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

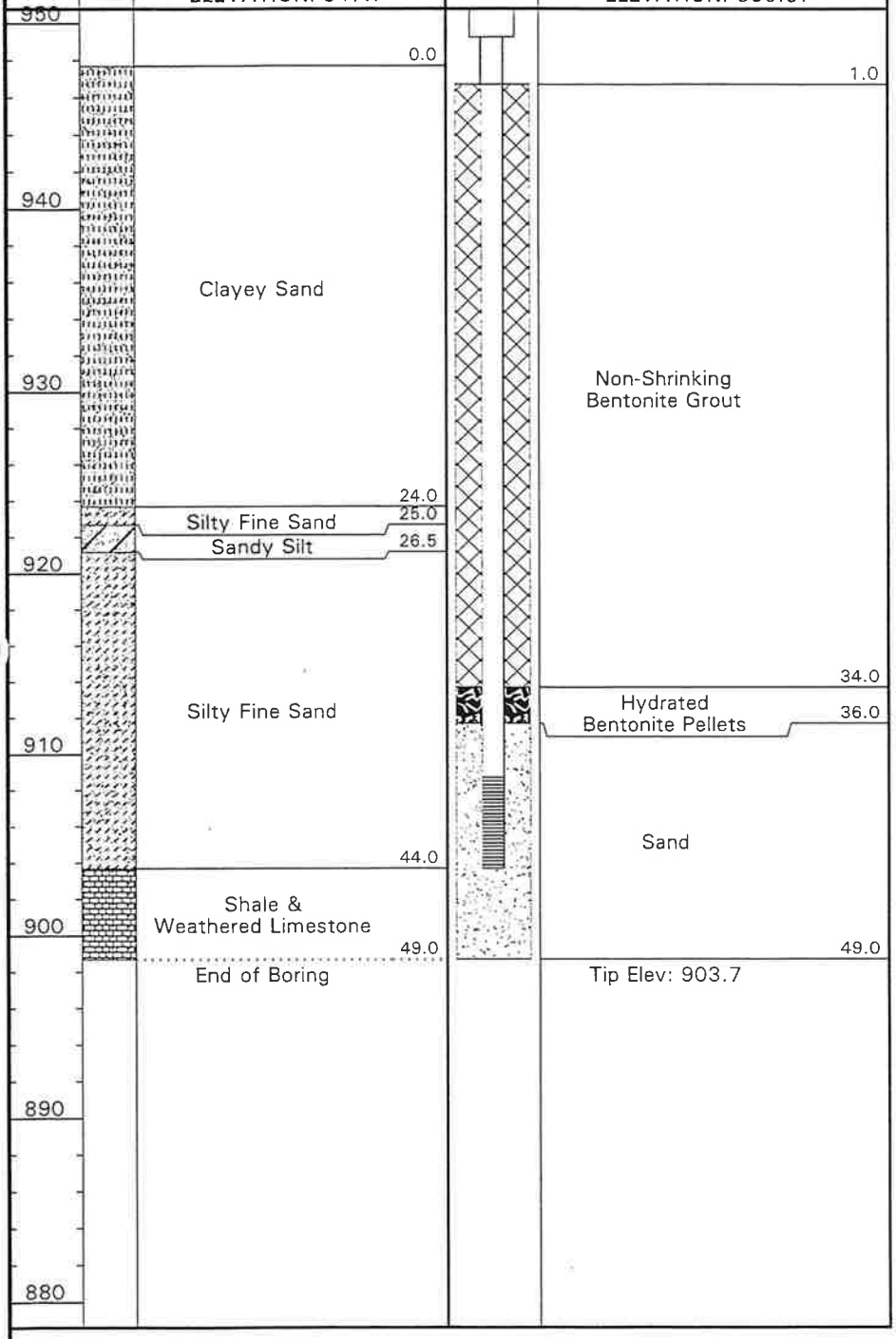
Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-18*

Checked By: ACE

LOG OF MONITORING WELL

Generalized Subsurface Profile | Installation Schematic



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/15/99	927.39	

NOTES

[1] Well developed by surging and pumping.

Started:	*12/14/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/14/99*	Casing Length:	*42.0 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:	*B-3500 Drill Rig*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

LOG OF TEST BORING NO: TB-63

NTH CONSULTANTS, LTD.

Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-18*

Checked By:

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: n/a	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
		FINE TO MEDIUM SAND with Little Silt & Clay Seams	10 20 30 40 50 60 70							
		49.0 End of Boring								

Total Depth: *49 FT*
Drilling Date: *12/13/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
Driller: *J. Ward*

Drilling Method:
CME-55 all-terrain drill rig with 4-1/4" inside diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Monitoring well no. MW-63 installed in borehole with screen tip set at 49.0 ft bgs.

Water Level Observation:
Groundwater at 47.02 ft below top of casing upon completion of well installation.

Notes:
Profile drilling from 0 to 40 ft bgs. Refer to Log of Test Boring TB-101 & TB-102 for details.

FIGURE NO.

MONITORING WELL NO: MW-63

NTH CONSULTANTS, LTD.

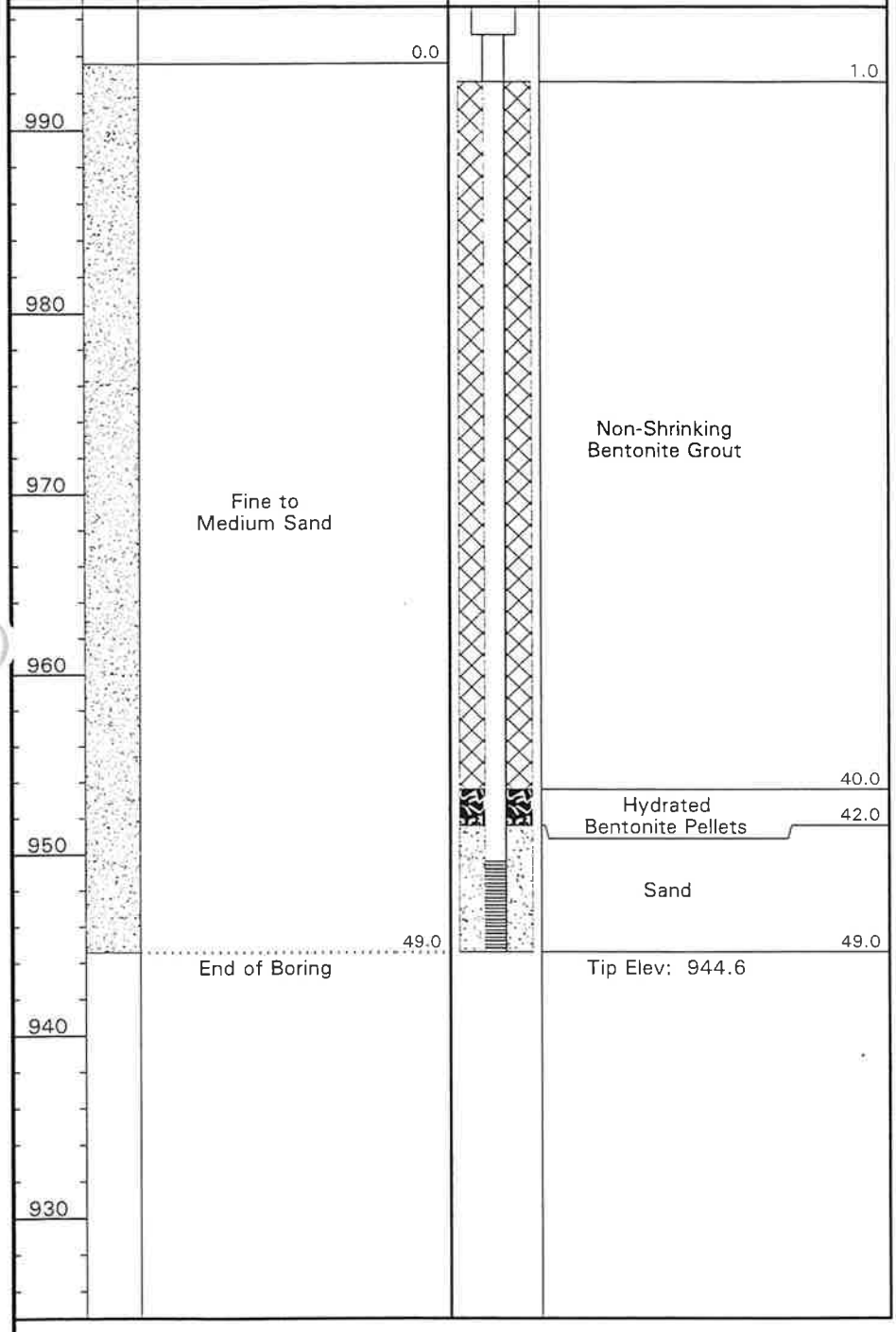
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-18*

Project Location: *JACKSON, MICHIGAN*

Checked By: ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/15/99	949.55	

NOTES

[1] Well developed by surging and pumping.

Started:	*12/13/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/13/99*	Casing Length:	*47.0 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:	*CME-55 ATV Drill Rig*	Screen Mesh:	*0.010 inch*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

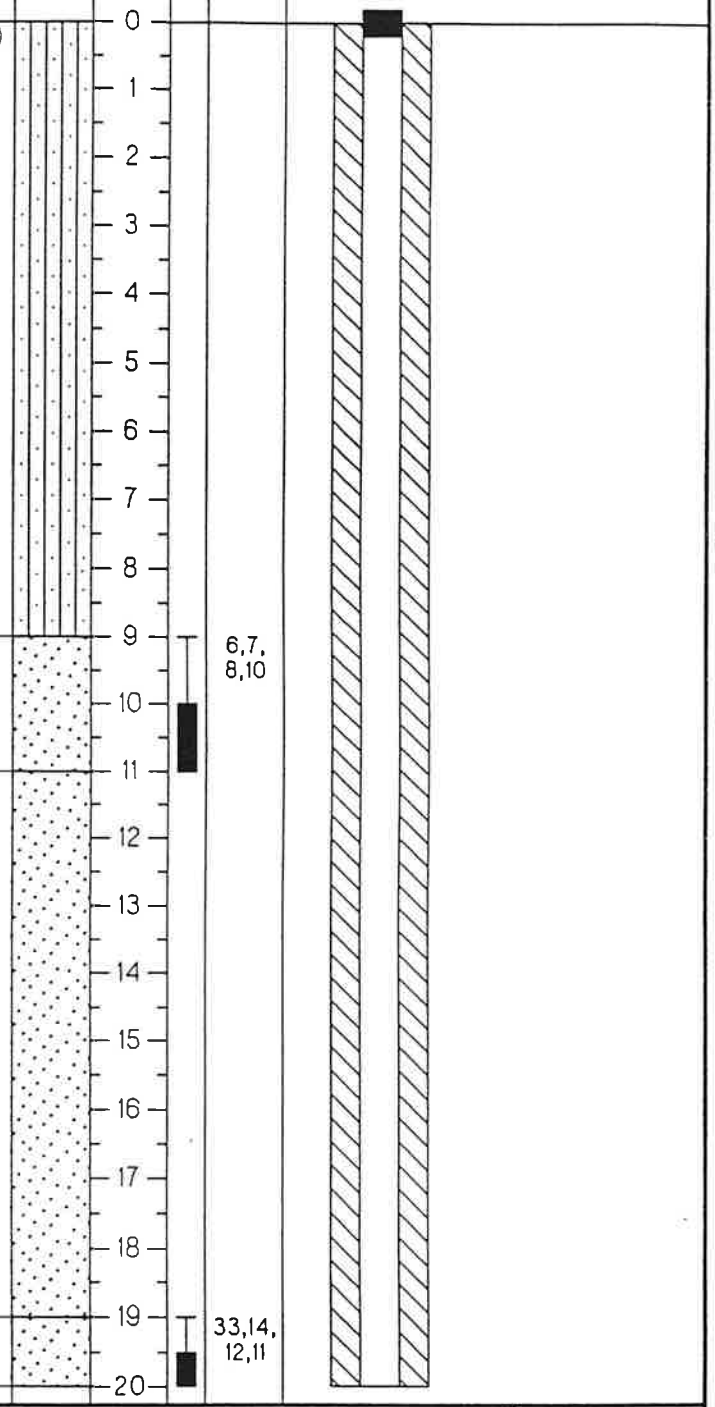
Monitoring Well No. 101

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl

DESCRIPTION	USCS CLASS	BLOWS/FT.
SAND, dark brown, medium to fine grained, with abundant clay and occassional pebbles.	(SM)	
SAND, dark brown, fine grained, with clay and pebbles.	(SM)	6,7, 8,10
SAND, brown, fine grained, with little clay.		
SAND, brown, fine grained, with clay.		
SAND, brown, fine grained, with small pebbles.		
SAND, reddish brown, fine grained, with clay.		
SAND, medium brown, fine grained, with clay.		
SAND, medium brown, fine grained, with abundant clay.		33,14, 12,11



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

Project No.
276-8

Monitoring Well No. 101

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
			20			
			21			
			22			
SAND, fine grained, having a higher clay content with depth, moist.			23			
			24			
			25			
			26			
CLAY			27			
			28			
			29		3,15, 17,18	
SAND, tan, medium to fine grained, with clay and gravel.	(SM)		30			
			31			
			32			
			33			
			34			
			35			
1/3/95 ▼			36			
			37			
			38			
Fine gravel and rocks, wet.			39		8,5, 7,9	
			40			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

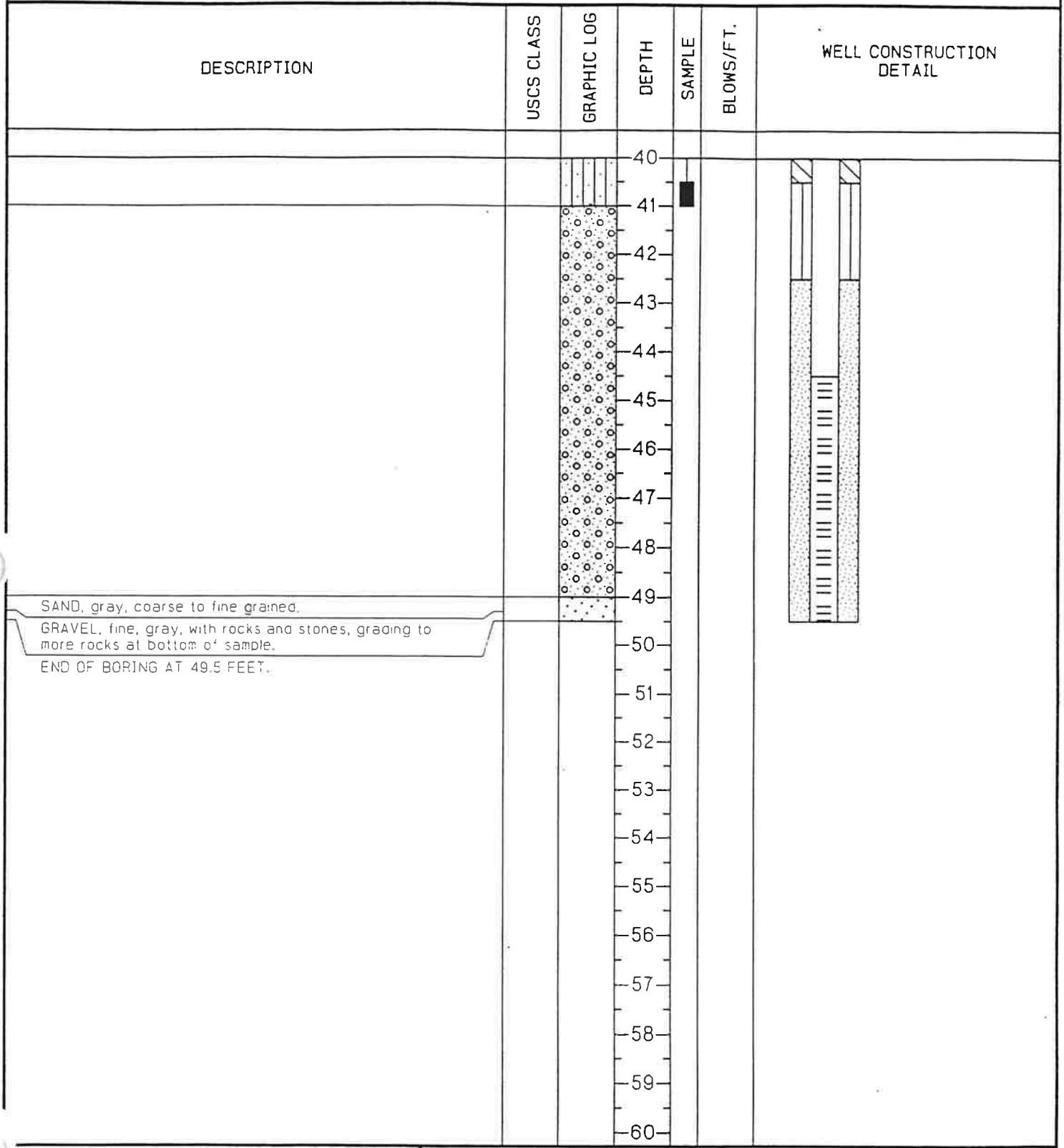
Project No.
276-8

Monitoring Well No. 101

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

Project No.
276-8

Monitoring Well No. 102

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, dark brown, medium to fine grained, with abundant clay and occassional pebbles.	(SM)		0–9			Grout; PVC riser
SAND, dark brown, fine grained, with clay and pebbles.	(SM)		9			
SAND, brown, fine grained, with little clay.					6,7,	
SAND, brown, fine grained, with clay.			10		8,10	
SAND, brown, fine grained, with small pebbles.			11			
SAND, reddish brown, fine grained, with clay.			11–19			
SAND, medium brown, fine grained, with clay.						
SAND, medium brown, fine grained, with abundant clay.			19		33,14,	
			20		12,11	
			21–24			
SAND, fine grained, having a higher clay content with depth, moist.						

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

Project No.
276-8

Monitoring Well No. 102

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
CLAY			24–29			
SAND, tan, medium to fine grained, with clay and gravel.	(SM)		29–31		3,15, 17,18	
			31–39			
Fine gravel and rocks, wet.			39–41		8,5, 7,9	
			41–48			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

Project No. 276-8

Monitoring Well No. 102

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 38 ft.

DATE: 3/2/94
HOLE DIA.: 8.25 in.
FINAL GW: 37 ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: 990.15 ft. MSL
HOLE ELEV.: 992.89 ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, gray, coarse to fine grained.			48			
GRAVEL, fine, gray, with rocks and stones, grading to more rocks at bottom of sample.			49		15,18, 12,17	
			50			
			51			
			52			Grout
			53			
			54			PVC riser
			55			
			56			Gravel pack
			57			
			58			2" PVC well screen
SAND, gray, very coarse grained.			59		17,22, 18,13	
Rock plugging nose.			60			
END OF BORING AT 61 FEET.			61			
			62			
			63			
			64			
			65			
			66			
			67			
			68			
			69			
			70			
			71			
			72			

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2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classification is from composited samples.

Project No.
276-8

WELL ABANDONMENT LOG: MW-102

NTH CONSULTANTS, LTD.

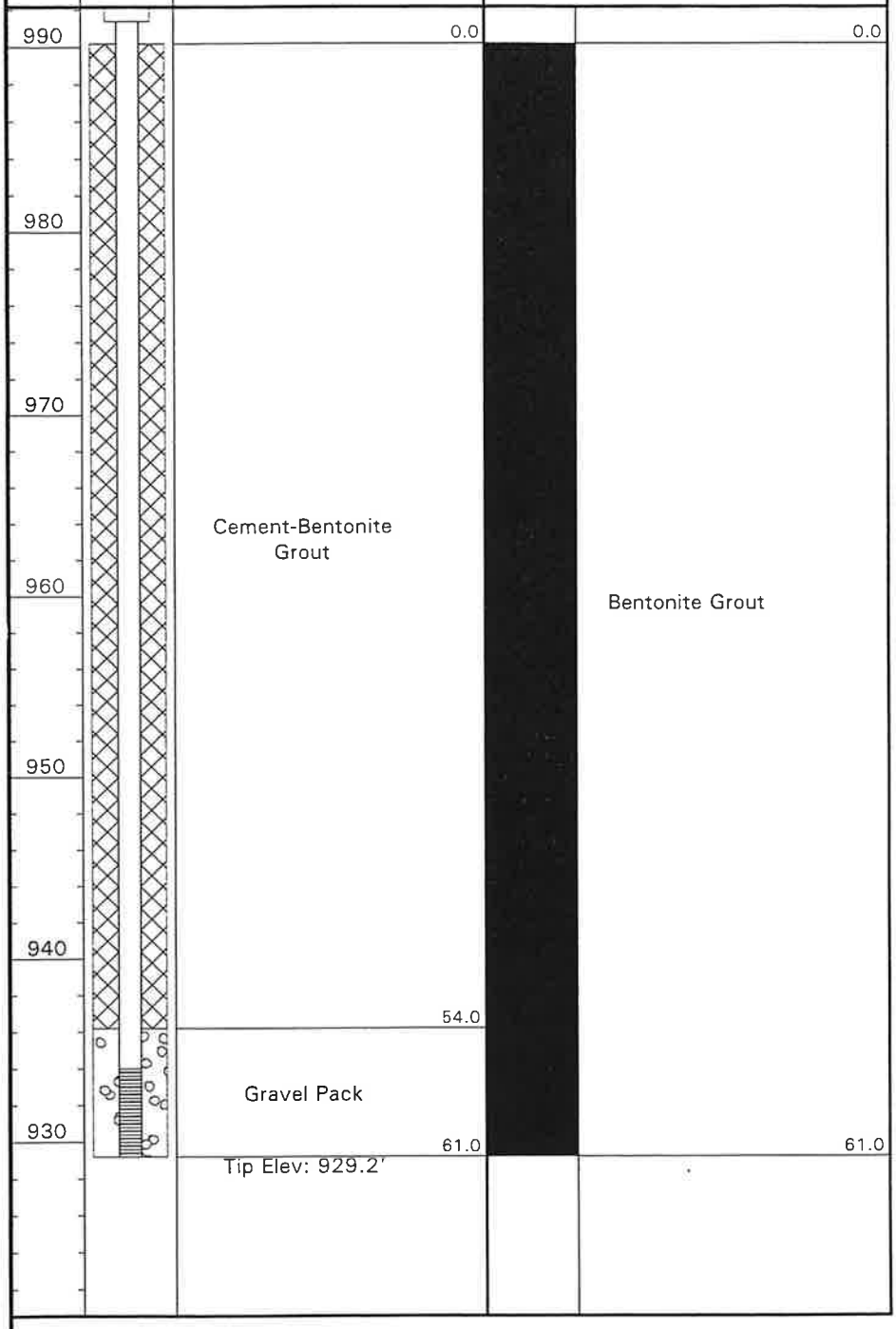
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Well casing was overdrilled with 6-1/4 inch inside-diameter, hollow-stem augers and removed from the ground. The borehole was tremmied with bentonite grout to surface.

[2] Original well construction details from monitoring well log by Westshore Engineering & surveying, Inc., dated 03/02/94.

Started:	*05/22/01*	Casing Diameter:	*2.0 inches*
Completed:	*05/23/01*	Casing Length:	*63.74 feet*
Inspector:	*S. Pratt*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	*2.0 inches*
Driller:	*J. Pitsch*	Screen Length:	*5.0 feet*
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO. A-7

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

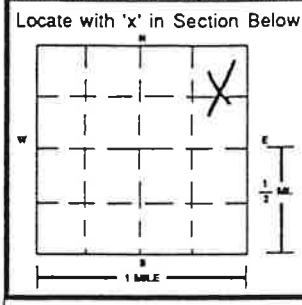
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

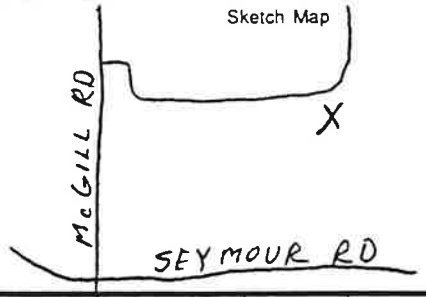
3/10ths North of Semour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 165 ft. | Date Completed 11/28/94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometer

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 71 ft. depth
4 in. to 160 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 70 ft. depth
3 7/8 in. to 165 ft. depth
Height: Above/Below Surface: 12" ☒
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Clay	32	32
Gray Clay / Gravel	14	46
Gravel	17	63
Sandstone	8	71
Sandstone / Limestone	66	137
Shale	4	141
Sandstone	8	149
Gray Shale	2	151
Gray-White Sandstone	14	165
USE A 2ND SHEET IF NEEDED		

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 160 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags ___ _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

16. REMARKS: (Elevation, Source of Data, etc.)
Halliburton grouted inner casing
#PZ-A

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Ron McCrimmon

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company 1686
REGISTERED BUSINESS NAME REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ Date 1/5/95
AUTHORIZED REPRESENTATIVE

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978 Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-A

NTH CONSULTANTS, LTD.

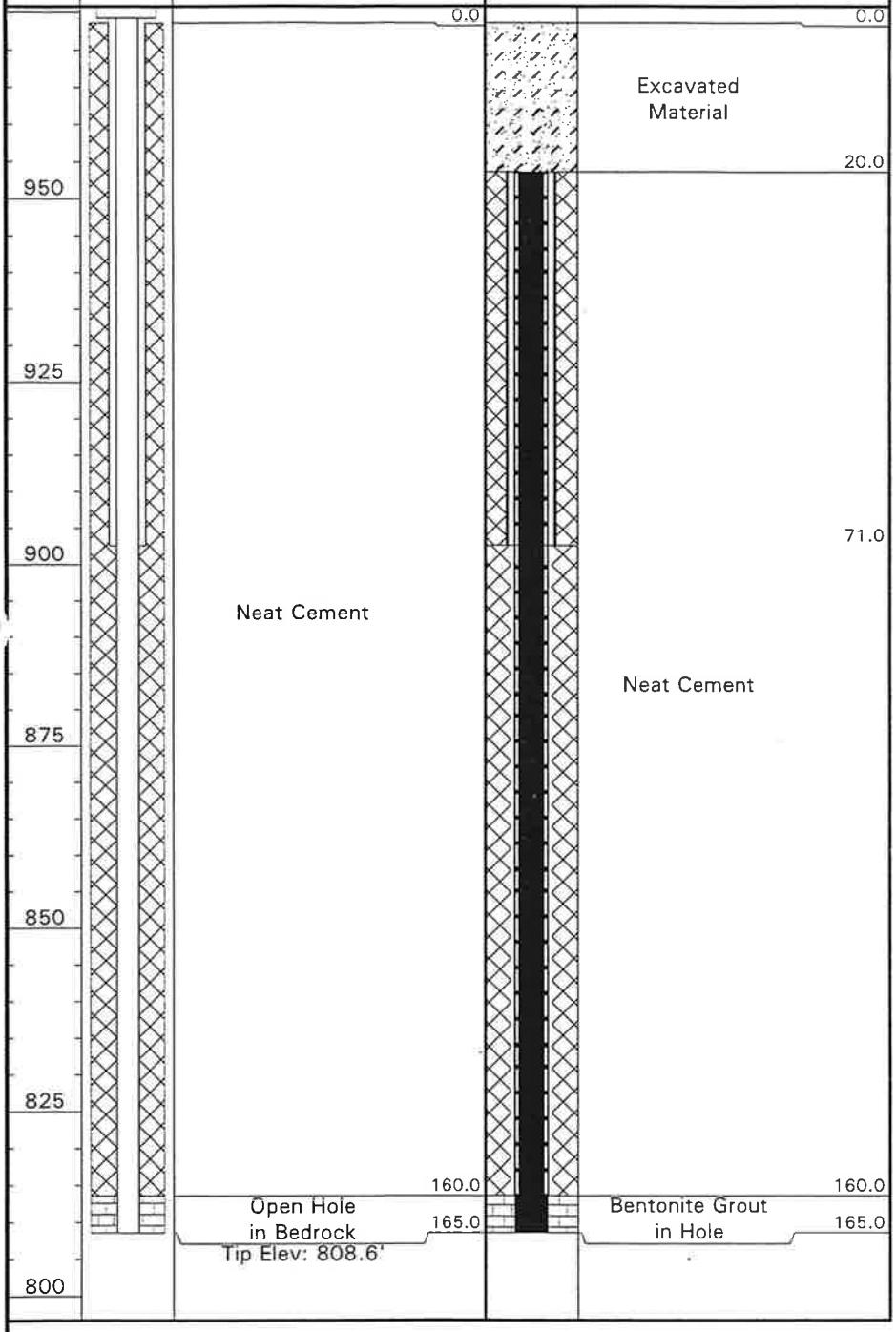
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 20 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 71 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/28/94.

Started:	*05/30/01*	Casing Diameter:	*4.0 inches*
Completed:	*05/30/01*	Casing Length:	*160.0 feet*
Inspector:	*J. Allgeier*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-8

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

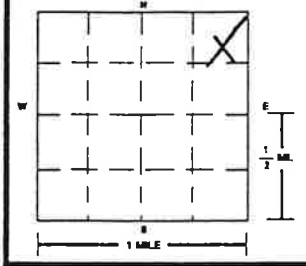
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

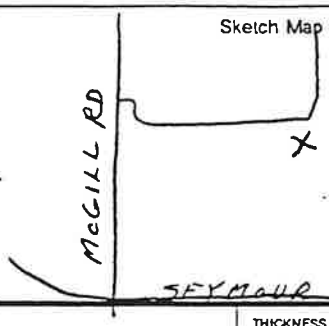
3/10ths North of Seymour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 105 ft. | Date Completed 11 / 23 / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometer

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 72 ft. depth
4 in. to 100 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 71 ft. depth
3 7/8 in. to 105 ft. depth
Height: Above/Below Surface: 12" ☒
Weight: _____ lbs./ft.
☒ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 100 ft. to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags ____ _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Top Soil	1	1
Sand	15	16
Brown Clay / Sand / Gravel	17	33
Sand / Gravel	30	63
Sandstone / Limestone - brown	42	105

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
Halliburton grouting operation
PZ-B

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company (REGISTERED BUSINESS NAME) 1686 (REGISTRATION NO)
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-B

NTH CONSULTANTS, LTD.

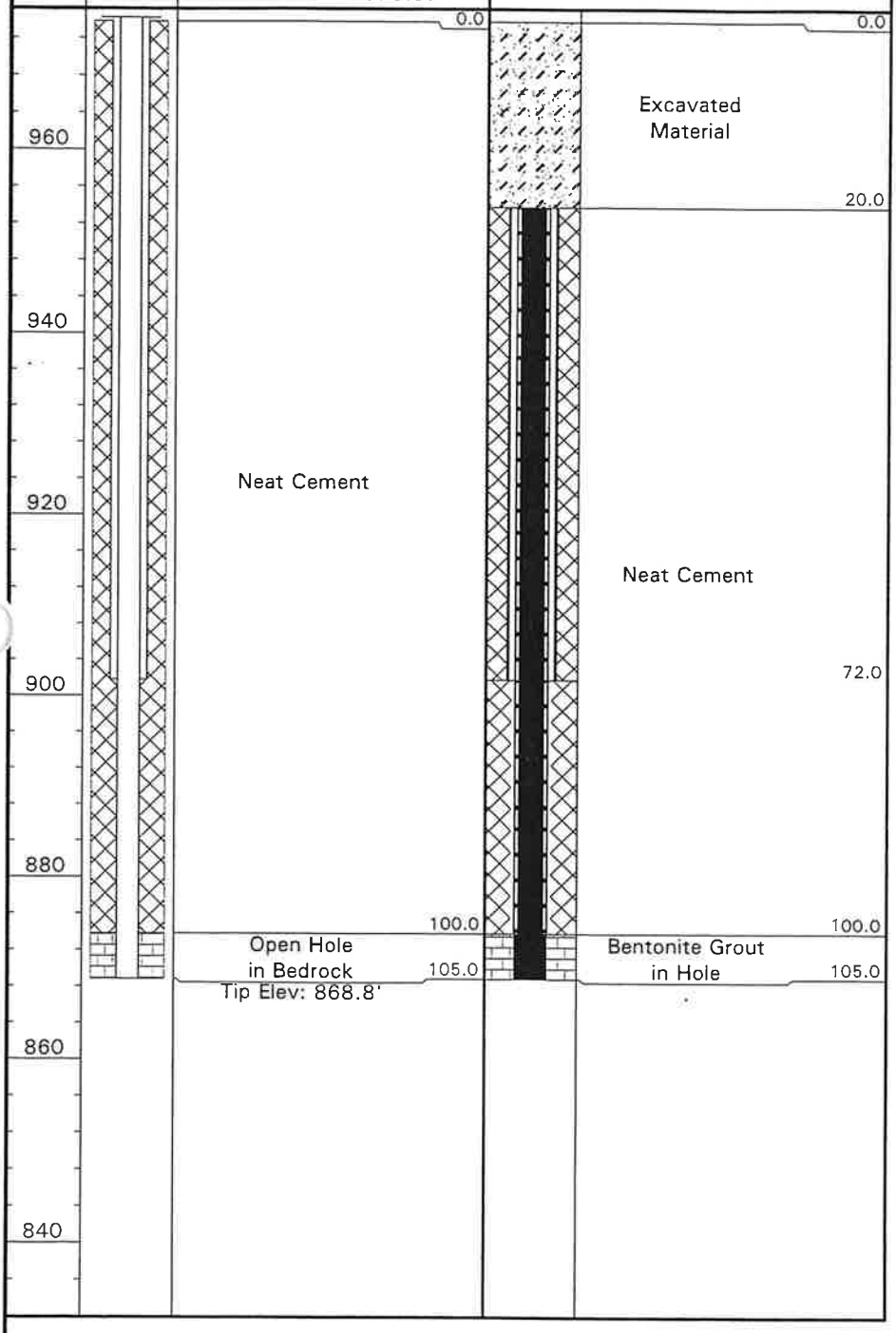
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 20 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 72 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/23/94.

Started:	*05/31/01*
Completed:	*05/31/01*
Inspector:	*J. Allgeier*
Contractor:	*Mateco Drilling Company*
Driller:	*J. Pitsch*
Equipment:	*CME-850*
Well Type:	*Piezometer*

Casing Diameter:	*4.0 inches*
Casing Length:	*100.0 feet*
Casing Type:	*Steel*
Screen Diameter:	---
Screen Length:	---
Screen Mesh:	---
Screen Type:	*Open Hole*

FIGURE NO. A-9

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

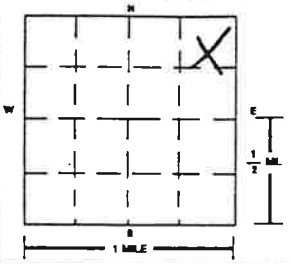
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

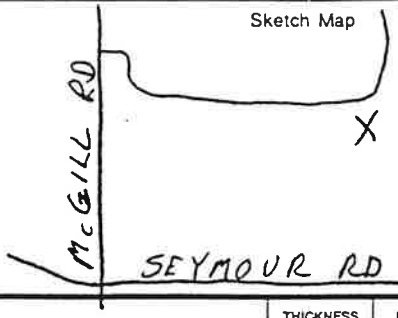
3/10ths North of Seymour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 137 ft. | Date Completed: / / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 71'8" depth
4 in. to 132 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 69'8" depth
3 7/8 in. to 137 ft. depth
Height: Above/Below Surface: 24" ft.
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Top Soil	1	1
Sand	15	16
Brown Clay - sandy	16	32
Sand/Gravel	29	61
Sandstone	5	66
Sandstone / Limestone	71	137

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 132' to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
#PZ-C Halliburton grouting operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company — REGISTERED BUSINESS NAME — 1686 REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ AUTHORIZED REPRESENTATIVE Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-C

NTH CONSULTANTS, LTD.

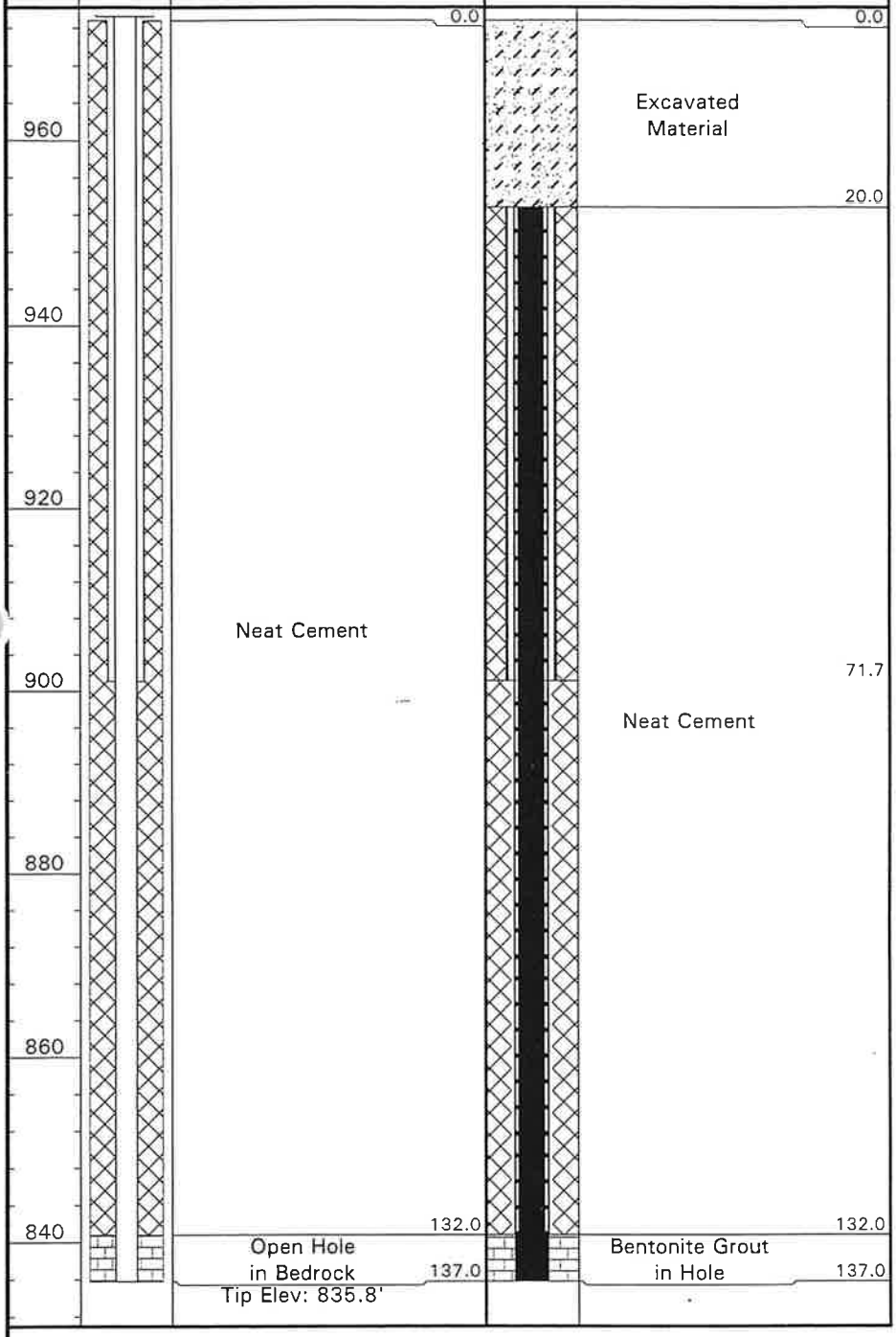
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 20 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 71.7 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/94.

Started:	*05/31/01*	Casing Diameter:	*4.0 inches*
Completed:	*05/31/01*	Casing Length:	*132.0 feet*
Inspector:	*J. Allgeier*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-10

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

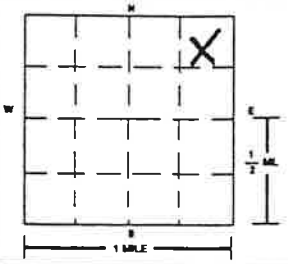
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

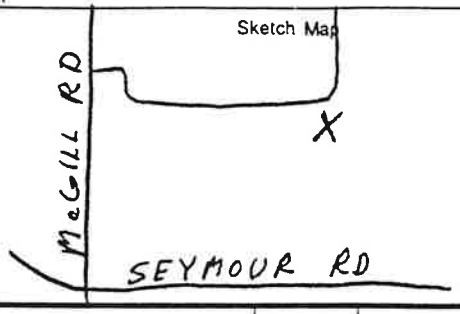
3/10ths North of Seymour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 147 ft. | Date Completed: 11/22/94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8" in. to 72 ft. depth
4" in. to 142 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 70'10" depth
3 7/8 in. to 147 ft. depth
Height: Above/Below Surface: 14" ±
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 142 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Top Soil	1	1
Sand	15	16
Brown Clay / Gravel / Sand	14	30
Gray Clay	3	33
Sand / Gravel	28	61
Sandstone / Limestone	76	137
Gray Shale	4	141
Sandstone / Limestone	6	147
USE A 2ND SHEET IF NEEDED		

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
Halliburton grouting operation #PZ-D

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Hart Well Drilling Company (REGISTERED BUSINESS NAME) 1686 (REGISTRATION NO)
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-D

NTH CONSULTANTS, LTD.

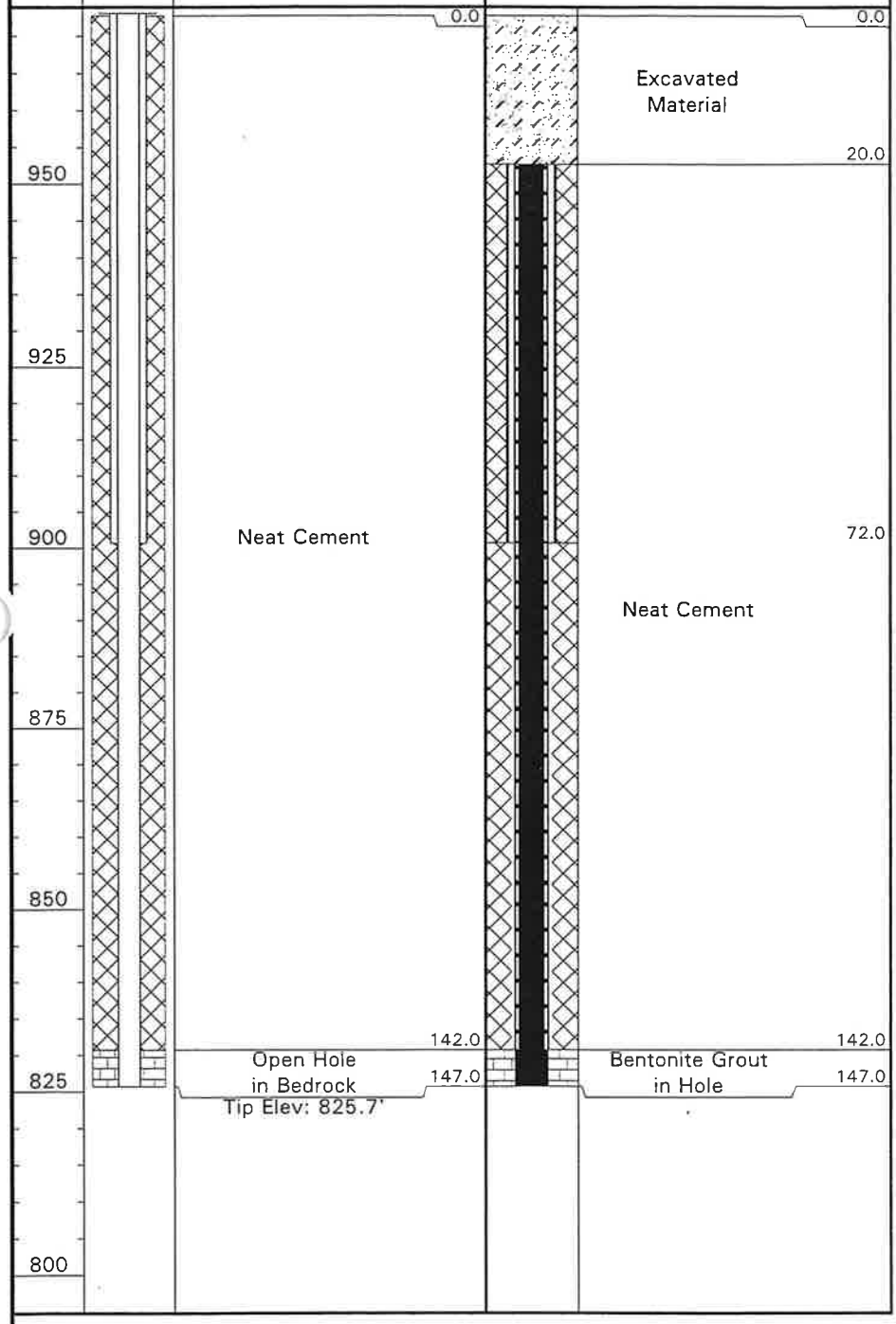
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 20 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 72 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/22/94.

Started:	*05/30/01*	Casing Diameter:	*4.0 inches*
Completed:	*05/30/01*	Casing Length:	*142.0 feet*
Inspector:	*J. Allgeier*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-11

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

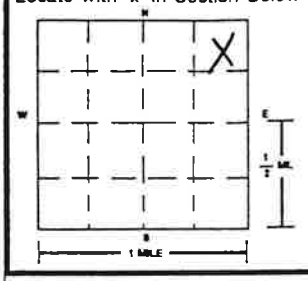
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

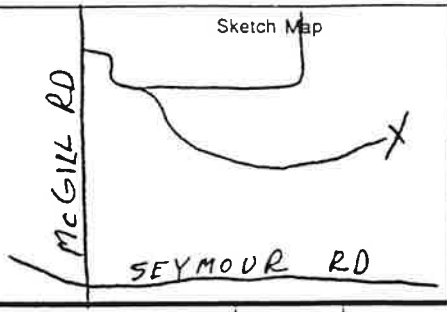
2/10ths North of Seymour Road
900 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 205 ft. | Date Completed: 11/30/94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 61 ft. depth; 4 in. to 200 ft. depth
Height: Above/Below Surface: 24" ft
Weight: _____ lbs./ft.
BORE HOLE: Diameter: 12¼ in. to 59 ft. depth; 3 7/8 in. to 205 ft. depth
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 200 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Clay / Sand	39	39
Gray Clay / Cobbles	3	42
SAnd / Gravel	11	53
Limestone / Sandstone	7	60
Gravel - med/Small	3	63
Shale	7	70
Gravel	2	72
Green Shale	6	78
Gray Sandstone	11	89
Brown Limestone	5	94
Gravel Encountered		
Sandstone	27	121
Limestone	18	139
Gray Shale	20	159
Gray Sandstone	7	166
Gray Shale	13	179
White-Gray Sandstone	26	205

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
#PZ-E Halliburton grouting operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Darrell Hein/Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company — REGISTERED BUSINESS NAME
1686 — REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ AUTHORIZED REPRESENTATIVE
Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-E

NTH CONSULTANTS, LTD.

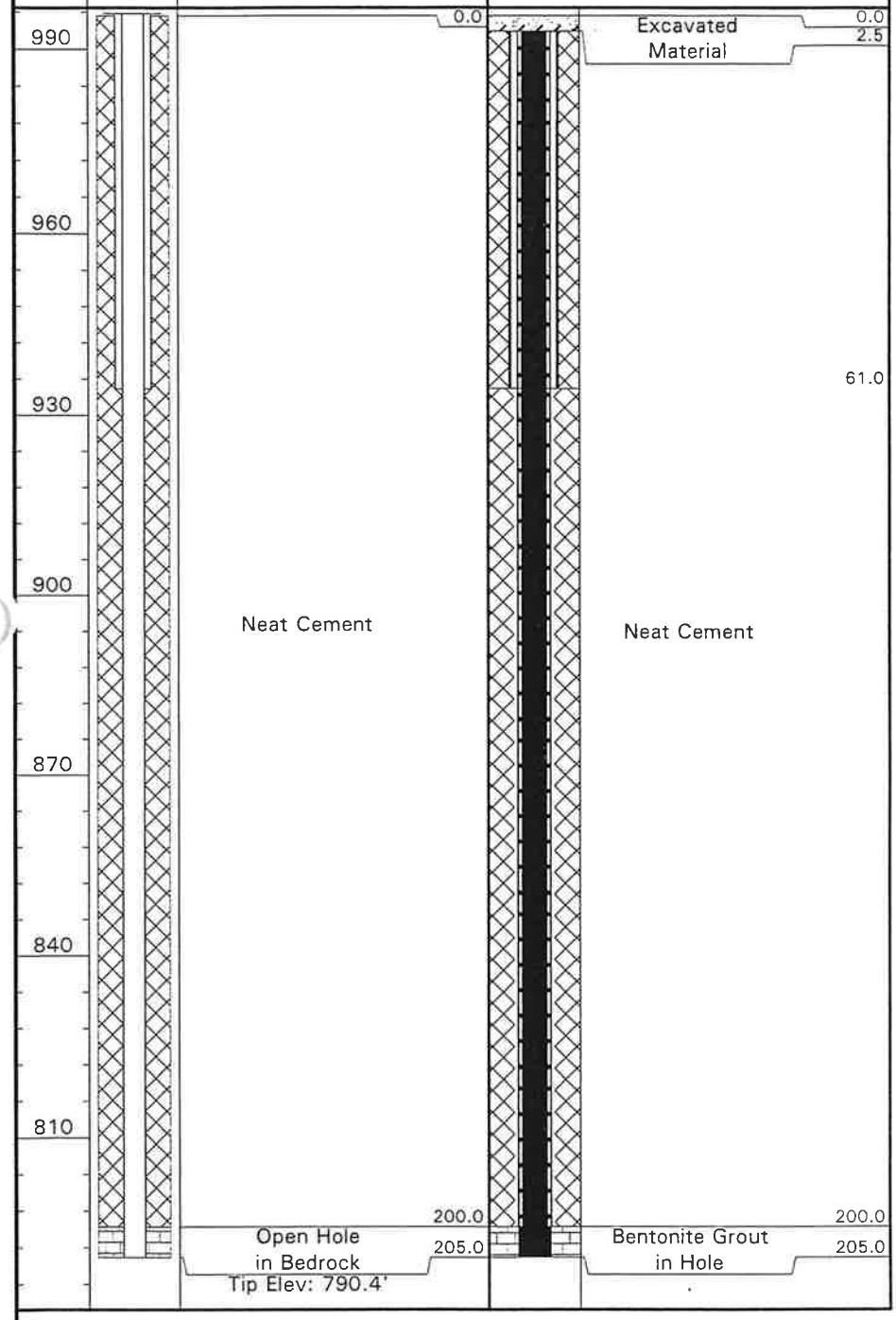
Project Name: *McGILL ROAD LANDFILL*

NTH Proj. No: *13-6773-W01*

Project Location: *JACKSON, MICHIGAN*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Ecavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 61 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/30/94.

Started:	*05/30/01*	Casing Diameter:	*4.0 inches*
Completed:	*05/30/01*	Casing Length:	*200.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-12

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

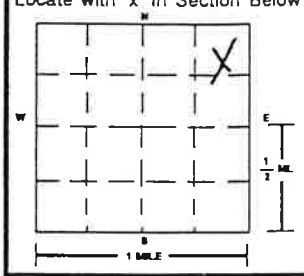
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T3S	R1W

Distance and Direction from Road Intersection

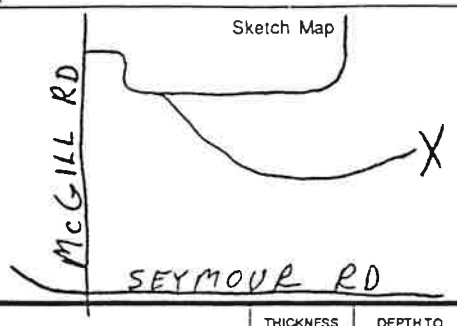
2/10ths North of Seymour Road
900 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL

Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201

Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 119 ft. | Date Completed 11 / 29 / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat Pump
☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 61 ft. depth
4 in. to 114 ft. depth
Height: Above/Below Surface: 24" ft.
Weight: _____ lbs./ft.

BORE HOLE:
Diameter: 12¼ in. to 59 ft. depth
3 7/8 in. to 119 ft. depth
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Clay / Sand	41	41
Gray Clay / Watersand	4	45
Gravel	10	55
Sandstone / Limestone	4	59
Gravel	5	64
Gray Shale	7	71
Gravel - sml-med	6	77
Green Shale	16	93
Sandstone / Limestone layers	26	119

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 114 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

#PZ-F Halliburton grouting Operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Darrell Hein/Chris FEll

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company — REGISTERED BUSINESS NAME — 1686 — REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ AUTHORIZED REPRESENTATIVE Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-F

NTH CONSULTANTS, LTD.

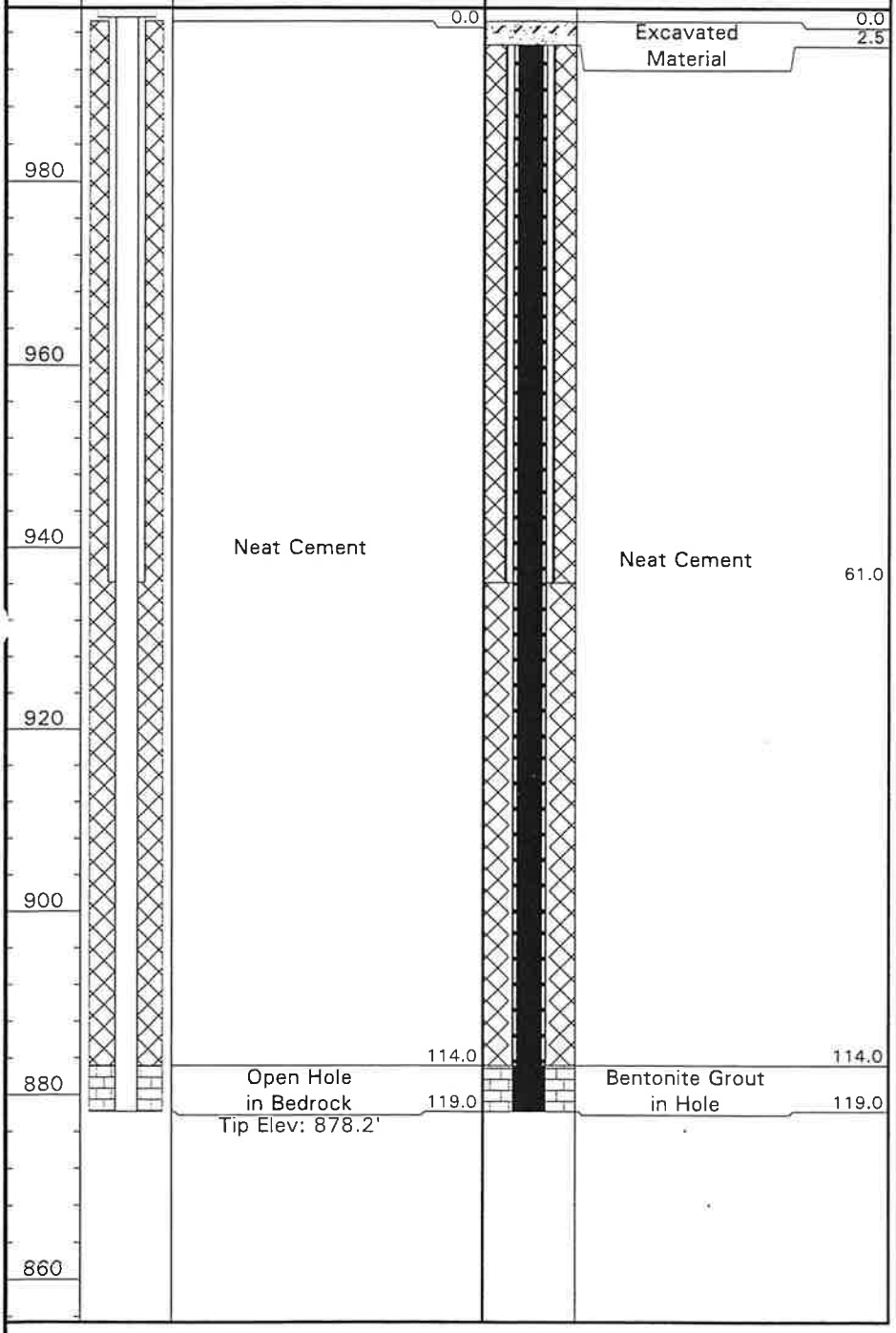
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 61 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 11/29/94.

Started:	*05/22/01*	Casing Diameter:	*4.0 inches*
Completed:	*06/04/01*	Casing Length:	*114.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-13

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

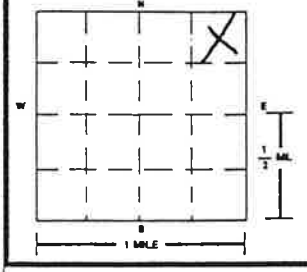
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

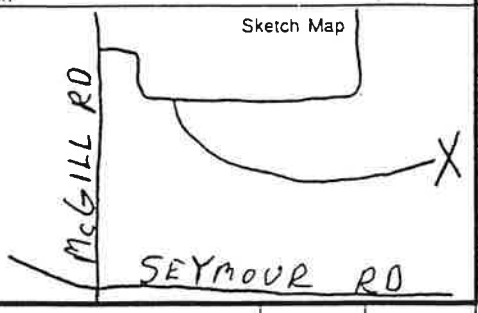
2/10ths North of Seymour Road
900 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201

Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 152 ft. | Date Completed 12 / 12 / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometer

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 81 ft. depth
4 in. to 147 ft. depth
BORE HOLE:
Diameter: ~~12¼~~ in. to ~~80~~ ft. depth
3 7/8 in. to 152 ft. depth
Height: Above/~~Below~~ Surface: ~~12/48~~ ☒
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Brown Sand / Clay	40	40
Gray Clay / Sand	4	44
Gravel / Sand	8	52
Sandstone	9	61
Gravel / Sand / Sandstone	3	64
Gray Shale	5	69
Gravel / Sand	4	73
Green Shale	8	81
Sandstone / Limestone Strips	71	152

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
41 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 147 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
#PZ-G Halliburton grouting operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

18. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Hart Well Drilling Company (REGISTERED BUSINESS NAME) 1686 (REGISTRATION NO)
Address 1154 S. Jefferson St. mason, MI 48854
Signed _____ (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-G

NTH CONSULTANTS, LTD.

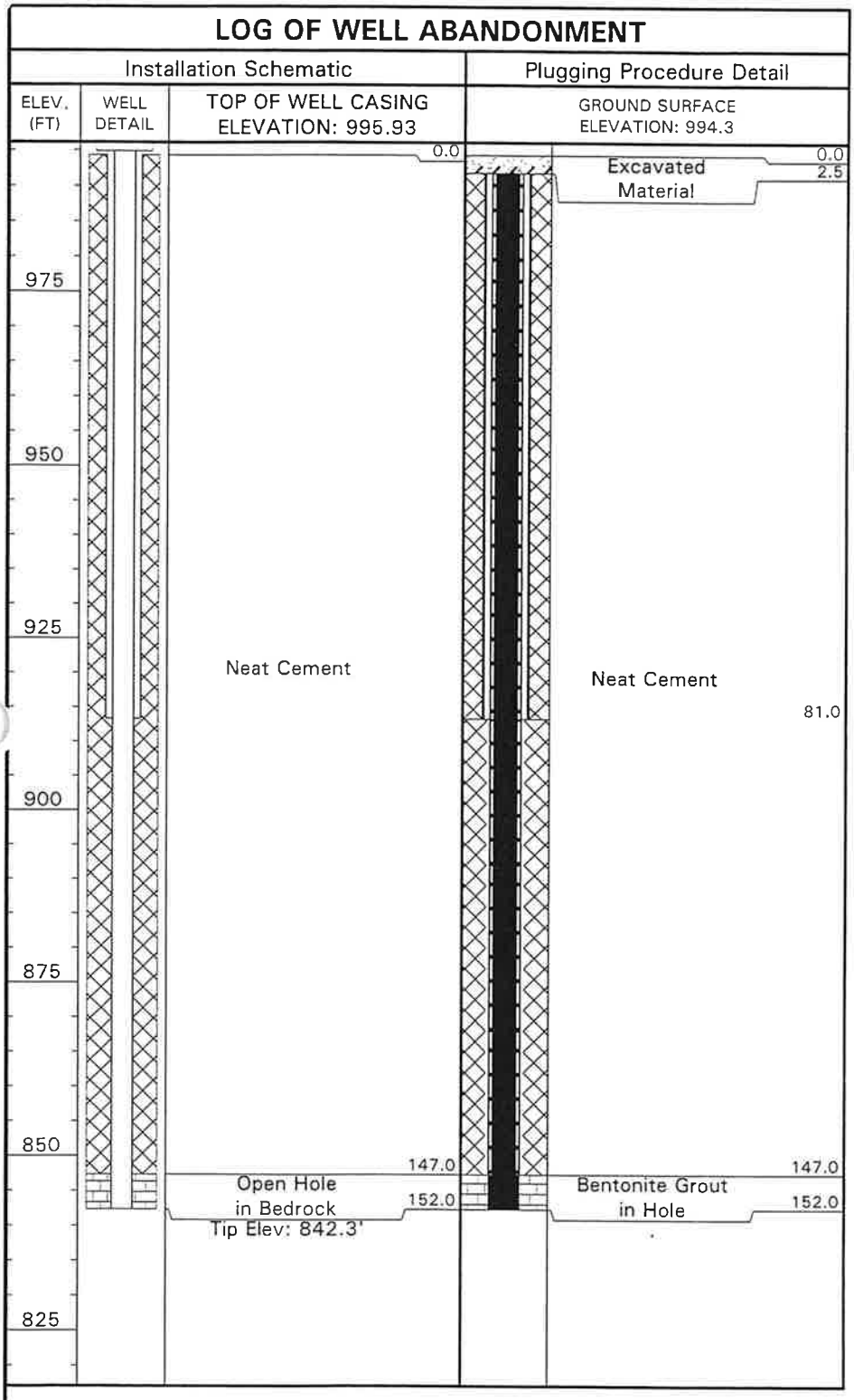
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 81 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 12/12/94.

Started:	*05/22/01*
Completed:	*06/04/01*
Inspector:	*S. Pratt*
Contractor:	*Mateco Drilling Company*
Driller:	*J. Pitsch*
Equipment:	*CME-850*
Well Type:	*Piezometer*

Casing Diameter:	*4.0 inches*
Casing Length:	*147.0 feet*
Casing Type:	*Steel*
Screen Diameter:	---
Screen Length:	---
Screen Mesh:	---
Screen Type:	*Open Hole*

FIGURE NO. A-14

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

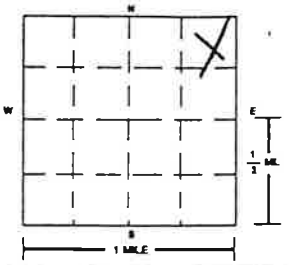
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

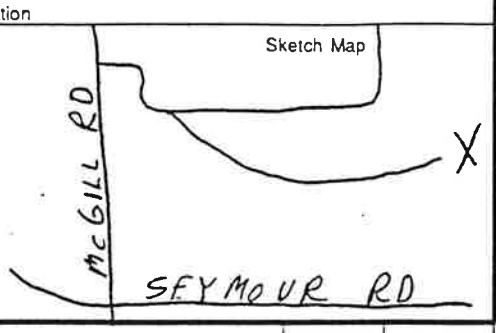
2/10ths North of Seymour Road
900 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201

Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 169 ft. | Date Completed / / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public
☐ Irrigation ☐ Type IIa Public ☐ Heat Pump
☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8" ~~XX~~ in. to 90 ft. depth
4" in. to 163 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 90 ft. depth
3 7/8 in. to 169 ft. depth
Height: Above/~~Below~~ Surface: _____ ft
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	39	39
Gray Clay / Sand	8	47
Gravel / Sand / Cob	10	57
Sandstone - hard white	4	61
Gravel	5	66
Gray Shale	7	73
Gravel	10	83
Green Shale / White Sandstone	13	96
Sandstone / Limestone	46	142
Gray Shale / Limestrips	19	161
Sandstone / Shale - gray	4	165
White Sandstone	4	169

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 163 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
Halliburton grouting operation
#PZ-H

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company (REGISTERED BUSINESS NAME) 1686 (REGISTRATION NO)
Address 1154 S. Jefferson St. Mason, MI 48854
Signed Mark W. Hart (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GEOLOGICAL SURVEY COPY

GW-2-228 9/93

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-H

NTH CONSULTANTS, LTD.

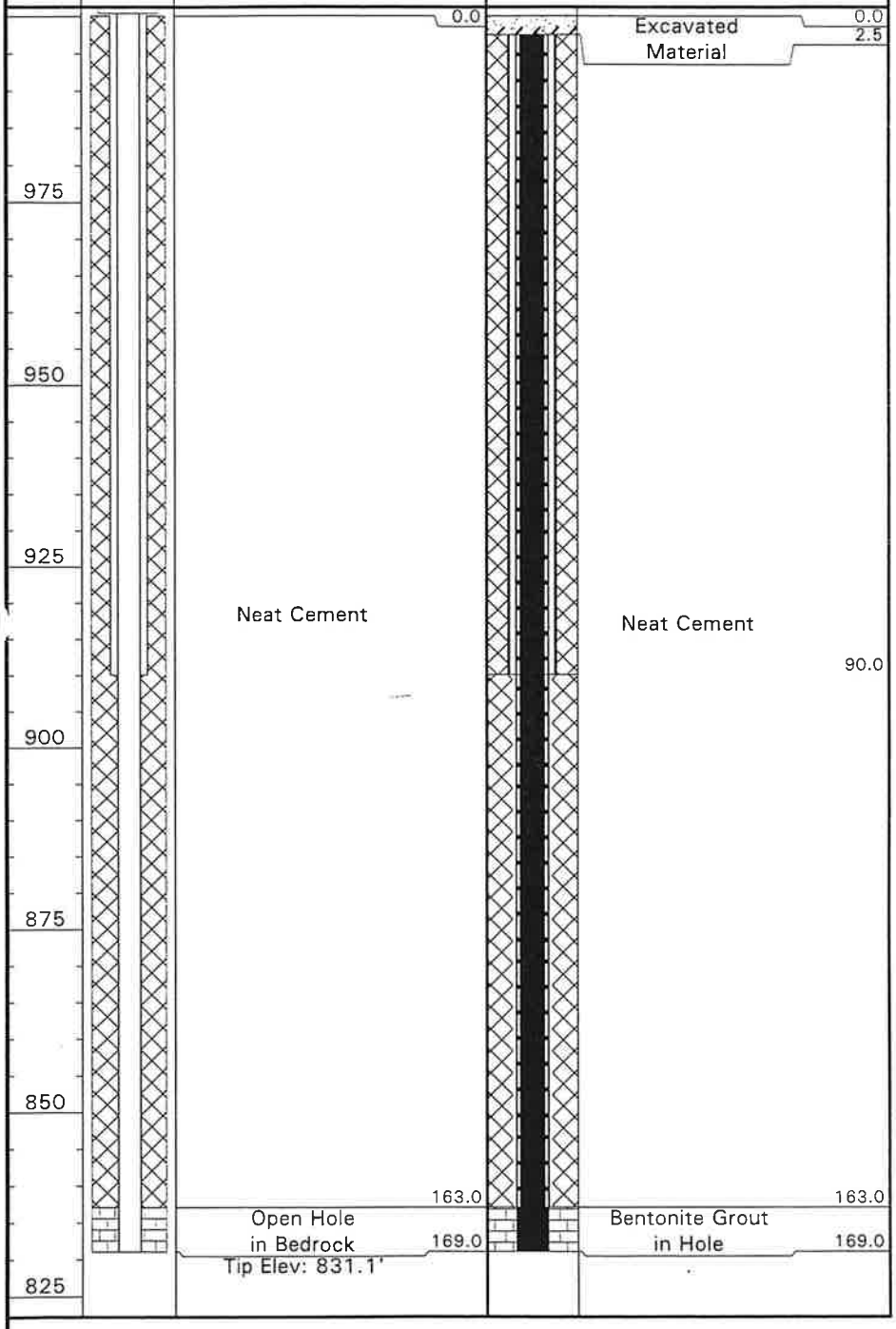
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 90 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 12/94.

Started:	*05/22/01*	Casing Diameter:	*4.0 inches*
Completed:	*06/04/01*	Casing Length:	*163.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-15

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

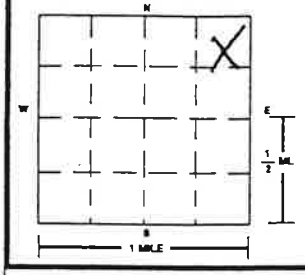
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

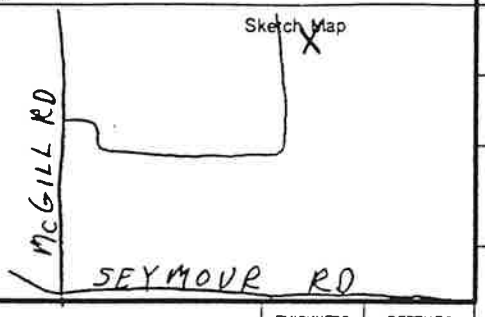
5/10ths North of Seymour Road
350 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 177 ft. | Date Completed: / / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☒ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 70 ft. depth; 4 in. to 172 ft. depth
Height: Above/Below Surface: 24" ft.
Weight: _____ lbs./ft.
BORE HOLE: Diameter: 12¼ in. to 68 ft. depth; 3 7/8 in. to 177 ft. depth
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. ☐ Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 174 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand / Cobbles	41	41
Gray Clay	2	43
Gravel / Cobbles / Sand	14	57
Sandstone - green-gray-white	2	59
Gray Shale / Lime layers	8	67
Gray-White Sandstone	12	79
Hard Brown Limestone	11	90
Wht-Green Sandstone	5	95
Green Shale	2	97
Gray-White Sandstone	14	111
Green Shale	5	116
Gray-White Sandstone/Limestone layers	3	119
Gray Shale / Sandstone pieces	8	127
Gray Shale	12	139
Gray Sandstone	3	142
Gray Shale	3	145
Gray Sandstone / Gray Shale layers	8	153
White Sandstone	19	177

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
#PZ-I Halliburton grouting operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

REGISTERED BUSINESS NAME: Hart Well Drilling Company — REGISTRATION NO: 1686
Address: 1154 S. Jefferson St. mason, MI 48854
Signed: _____ (AUTHORIZED REPRESENTATIVE) Date: 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-I

NTH CONSULTANTS, LTD.

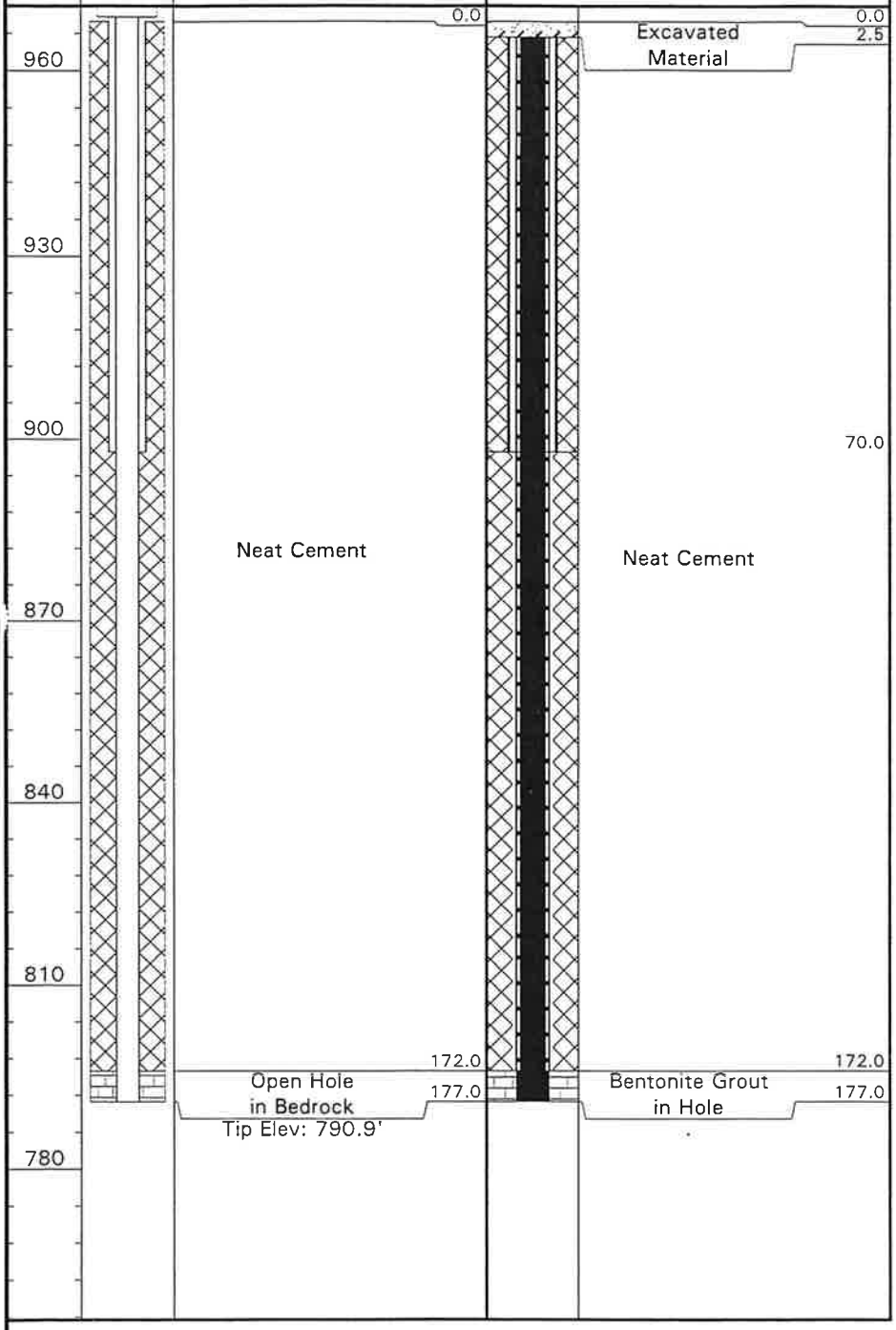
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 70 ft in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 12/94.

Started:	*05/24/01*	Casing Diameter:	*4.0 inches*
Completed:	*06/01/01*	Casing Length:	*172.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-16

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

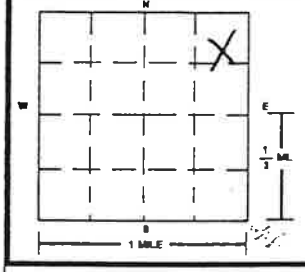
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

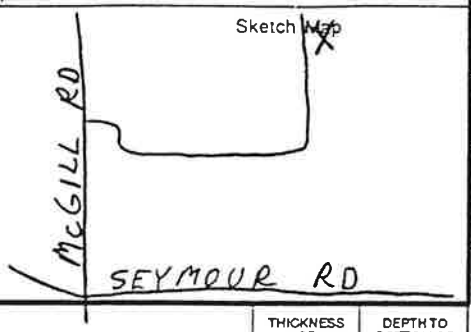
5/10ths North of Seymour Road
350 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201
Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 95 ft. | Date Completed / / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☒ Piezometers

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 8 in. to 72 ft. depth
4 in. to 90 ft. depth
BORE HOLE:
Diameter: 12¼ in. to 72 ft. depth
3 7/8 in. to 95 ft. depth
Height: Above/Below Surface: 24" ft.
Weight: _____ lbs./ft.
☐ Drive Shoe ☐ Shale Packer

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
_____ ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 90 to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☒ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Sand	42	42
Gray Clay	3	45
Sand / Gravel	13	58
Gray Clay	1	59
Sandstone - green-white-gray	3	62
Gray Shale	6	68
Sandstone	12	80
Limestone/Sandstone	11	91
Sandstone	91	95

USE A 2ND SHEET IF NEEDED

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL: ☐ Neat Cement ☐ Bentonite Slurry ☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)
#PZ-J Halliburton grouting operation

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company 1686
REGISTERED BUSINESS NAME REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ Date 1/5/95
AUTHORIZED REPRESENTATIVE

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

WELL ABANDONMENT LOG: PZ-J

NTH CONSULTANTS, LTD.

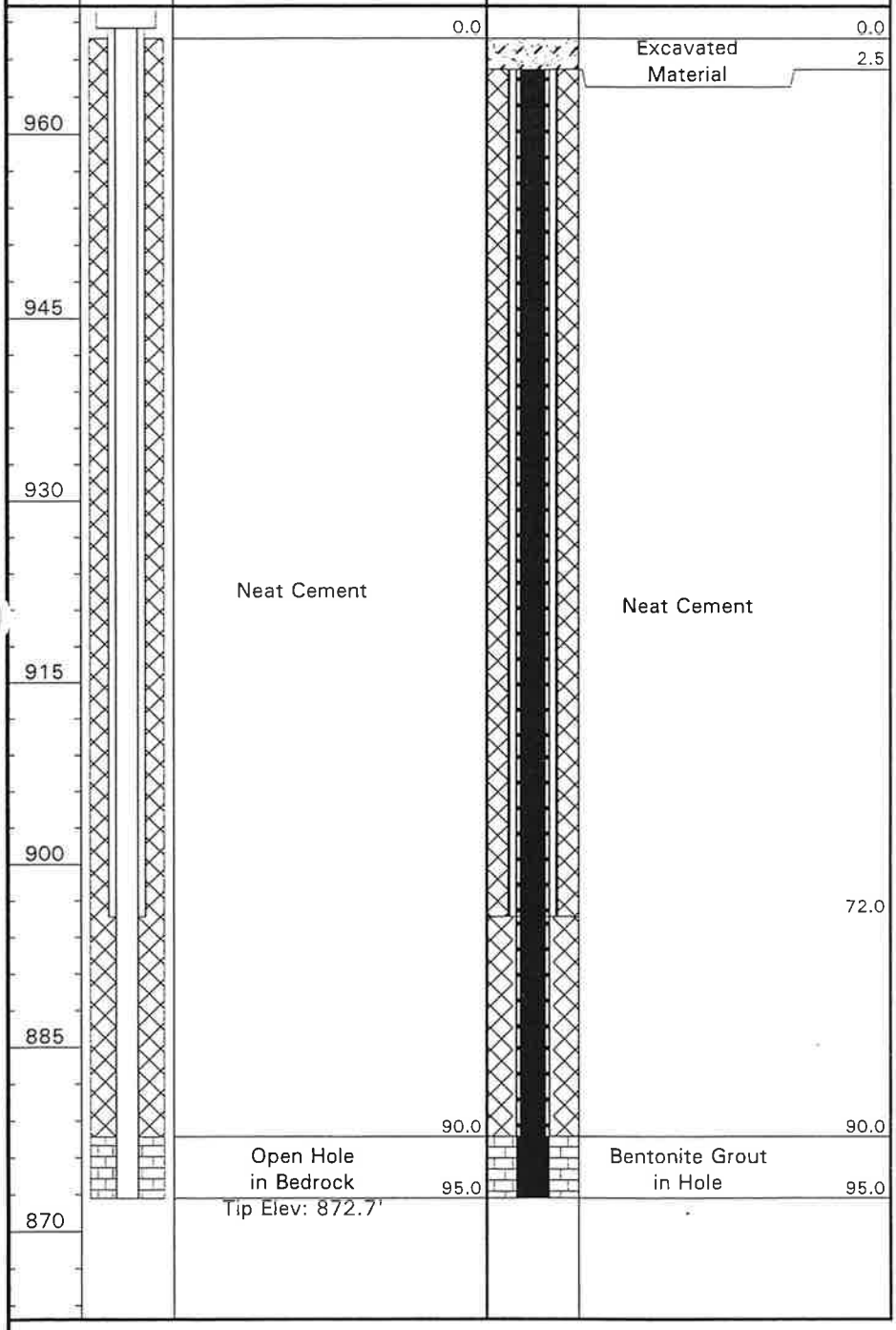
Project Name: *McGILL ROAD LANDFILL*

Project Location: *JACKSON, MICHIGAN*

NTH Proj. No: *13-6773-W01*

Checked By:

LOG OF WELL ABANDONMENT



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] Excavated and exposed approx. 2.5 ft of well casing, cut off and removed exposed casing. Remaining piezometer casing abandoned in place by tremie grouting with bentonite grout.

[2] Protective outer casing (8" dia.) approx. 72 in length.

[3] Original well construction details from Water Well and Pump Record by Hart Well Drilling Co., dated 12/94.

Started:	*05/24/01*	Casing Diameter:	*4.0 inches*
Completed:	*05/25/01*	Casing Length:	*90.0 feet*
Inspector:	*S. Pratt*	Casing Type:	*Steel*
Contractor:	*Mateco Drilling Company*	Screen Diameter:	---
Driller:	*J. Pitsch*	Screen Length:	---
Equipment:	*CME-850*	Screen Mesh:	---
Well Type:	*Piezometer*	Screen Type:	*Open Hole*

FIGURE NO. A-17

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

1. LOCATION OF WELL

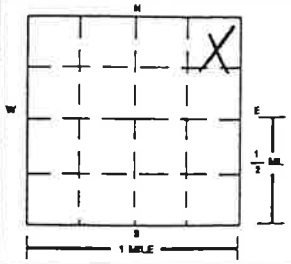
County	Township Name	Fraction	Section No.	Town No.	Range No.
Jackson	Blackman	1/4 1/4 1/4	24	T2S	R1W

Distance and Direction from Road Intersection

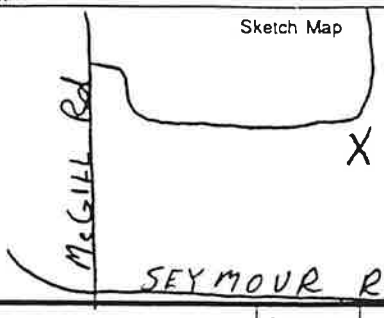
C 3/10ths North of Seymour Road
300 ft East of McGill Road

Street Address & City of Well Location

Locate with 'x' in Section Below



Sketch Map



3. OWNER OF WELL
Address: Philip Environmental Inc.
3895 McGill Road
Jackson, MI 49201

Address Same as Well Location ☐ Yes ☐ No

4. WELL DEPTH: 260 ft. | Date Completed 11 / 8 / 94 | ☐ New Well ☐ Replacement Well

5. ☐ Cable Tool ☒ Rotary ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Auger/Bored ☐ Jetted ☐ _____

6. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump ☐ Test Well ☐ Type IIb Public ☐ _____

7. CASING: ☒ Steel ☐ Threaded ☐ Plastic ☐ Welded ☐ Other _____
Diameter: 6 in. to 75 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface: ~~xxx~~ 48" ~~fix~~
Weight: _____ lbs./ft.

BORE HOLE:
Diameter: 9 7/8 in. to 71 ft. depth
_____ in. to _____ ft. depth
☐ Drive Shoe ☐ Shale Packer

2. FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Top	1	1
Sandy Brown Clay	15	16
Gray Clay / Sand	17	33
Sand/Gravel	28	61
Sandstone	10	71
Sandstone/Gray Shale/Limestone	189	260

USE A 2ND SHEET IF NEEDED

8. SCREEN: ☒ Not Installed ☐ Gravel-Packed
Type _____ Diameter _____
Slot/Gauze _____ Length: _____
Set Between _____ ft. and _____ ft.
FITTINGS: ☐ K-Packer ☐ Bremer Check
☐ Blank Above Screen _____ ft. Other _____

9. STATIC WATER LEVEL:
57 ft. Below Land Surface ☐ Flowing

10. PUMPING LEVEL: Below Land Surface
_____ ft. After _____ hrs. Pumping at _____ G.P.M.
☐ Plunger ☐ Bailer ☐ Air ☐ Test Pump

11. WELL HEAD COMPLETION:
☐ Pitless Adapter ☐ 12" Above Grade
☐ Basement Offset ☐ Well House

12. WELL GROUTED? ☐ No ☒ Yes From 71' to surface
☒ Neat Cement ☐ Bentonite ☐ Other _____
No. of Bags _____ Additives _____

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
Type _____ Distance _____ ft. Direction _____
Type _____ Distance _____ ft. Direction _____

14. PUMP: ☐ Not Installed ☐ Pump Installation Only
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of Drop Pipe _____ ft. Capacity _____ G.P.M.
TYPE: ☐ Submersible ☐ Jet ☐ Other _____
PRESSURE TANK:
Manufacturer's Name _____
Model Number _____ Capacity _____ Gallons _____

15. ABANDONED WELL PLUGGED? ☐ Yes ☐ No
Casing Diameter _____ in. Depth _____ ft.
PLUGGING MATERIAL:
☐ Neat Cement ☐ Bentonite Slurry
☐ Cement/Bentonite Slurry ☐ Concrete Grout ☐ Bentonite Chips
No. of Bags _____ Casing Removed? ☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

6" Conductor
Corebore
Abandoned by Halliburton 72 sks

17. DRILLING MACHINE OPERATOR:
☒ Employee ☐ Subcontractor
Name Chris Fell

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Hart Well Drilling Company 1686
REGISTERED BUSINESS NAME REGISTRATION NO
Address 1154 S. Jefferson St. Mason, MI 48854
Signed _____ (AUTHORIZED REPRESENTATIVE) Date 1/5/95

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

Boring Log No. 1

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 25 ft.

DATE: 2-23-95
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, light brown, fine grained, with clay, Fill.			0–2			
SAND, light brown, fine grained.	SM		2–4		6,13,16, 14	
SAND, light brown, fine grained, with clay, infilling.			3–6			The boring was filled with grout.
	SM		4–6		4,13,17, 18	
SAND, light brown, fine grained, with clay.	SM		6–8		27,32, 38,44	
SAND, tan, medium grained, with gravel at top.			7–8			
SAND, light brown, fine grained with clay and occasional gravel.	SM		8–10		13,26, 31,34	
SAND, tan, medium, fine grained.			9–10			
SAND, tan, medium, fine grained, with black specks.	SM		10–12		14,21, 25,26	
SAND, light brown, fine grained, with clay.			11–12			
SAND, tan, fine grained.			11–12			
SAND, medium brown, with clay.			11–12			
SAND, medium brown, with clay.	SM		12–14		7,20, 28,27	
SAND, medium brown, medium to fine grained.			13–14			
SAND, light brown fine grained grading, to seal tan fine grained with gravel.			13–14			
SAND, medium brown, with clay and small rock.	SM		14–16		4,15, 26,39	
SAND, tan, fine grained.			15–16			
SAND, light brown, fine grained, with clay.			15–16			
SAND, tan, fine grained.	SM		16–18		28,42, 51,64	
SAND, medium brown, fine grained, with clay.			16–18			
SAND, medium brown, medium to fine grained, with clay.			17–18			
SAND, tan, medium to fine grained, with gravel.			17–18			
SAND, medium brown, fine grained, with clay, and occasional gravel.	SM		18–20		35,48, 50,–	
SAND, dark brown, with tan sand, and some gravel.			19–20			
SAND, medium brown, fine grained, with clay, and occasional gravel.			19–20			
	SM		20		16,40 51,50	

Notes:
USCS Classified on composited samples.

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Project No. 276-6

Boring Log No. 1

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 25 ft.

DATE: 2-23-95
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, medium brown to dark brown, fine grained.	SM		20			
SAND, medium brown, fine grained, with clay, with clay and gravel increasing with depth.			21			
SAND, medium brown, fine grained, with clay.	SM		22		31,50, 54,50	
SAND, light brown, fine grained, with clay, rock at 4 inches, gravel 7 to 12 inches and increasing clay from 14 to 20 inches.			23			
SAND, medium brown, fine grained, with clay.	SM		24		19,50, 60,56	
SAND, medium brown, fine grained, with clay, moist to wet at 5 inches.			25			
SAND, medium brown, medium to fine grained, with clay and gravel, black spot at 20 inches, rocks at 10 inches.			26		16,34, 34,39	
SAND, dark brown, fine grained, with clay.	SM					
SAND, medium brown, fine grained, with clay, gravel.			27			
SAND, light brown, medium to fine grained.			28		29,51, 70	
SAND, dark brown, fine grained, with clay and gravel.	SM					
SAND, medium brown, medium to fine grained, pink gravel at 8 inches.			29			
SAND, light brown, medium to fine grained grading to at 10 inches, very fine like beach sand.			30		19,40, 50	
SAND, tan, fine grained, with some black specks, and gravel.	SM					
SAND, medium brown, fine grained, with occasional black spots, wet.			31			
SAND, light brown, fine grained, with clay, crying at 30.10.			32		28,51, 50	
SAND, medium brown, fine grained, with moisture at 32.5 to 33.4.	SM		33			
SAND, medium brown, medium to fine grained, with some clay, water sand.	SM		34		19,41, 50	
			35			
END OF BORING AT 36 FEET.			36			
			37			
			38			
			39			
			40			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS Classified on composited samples.

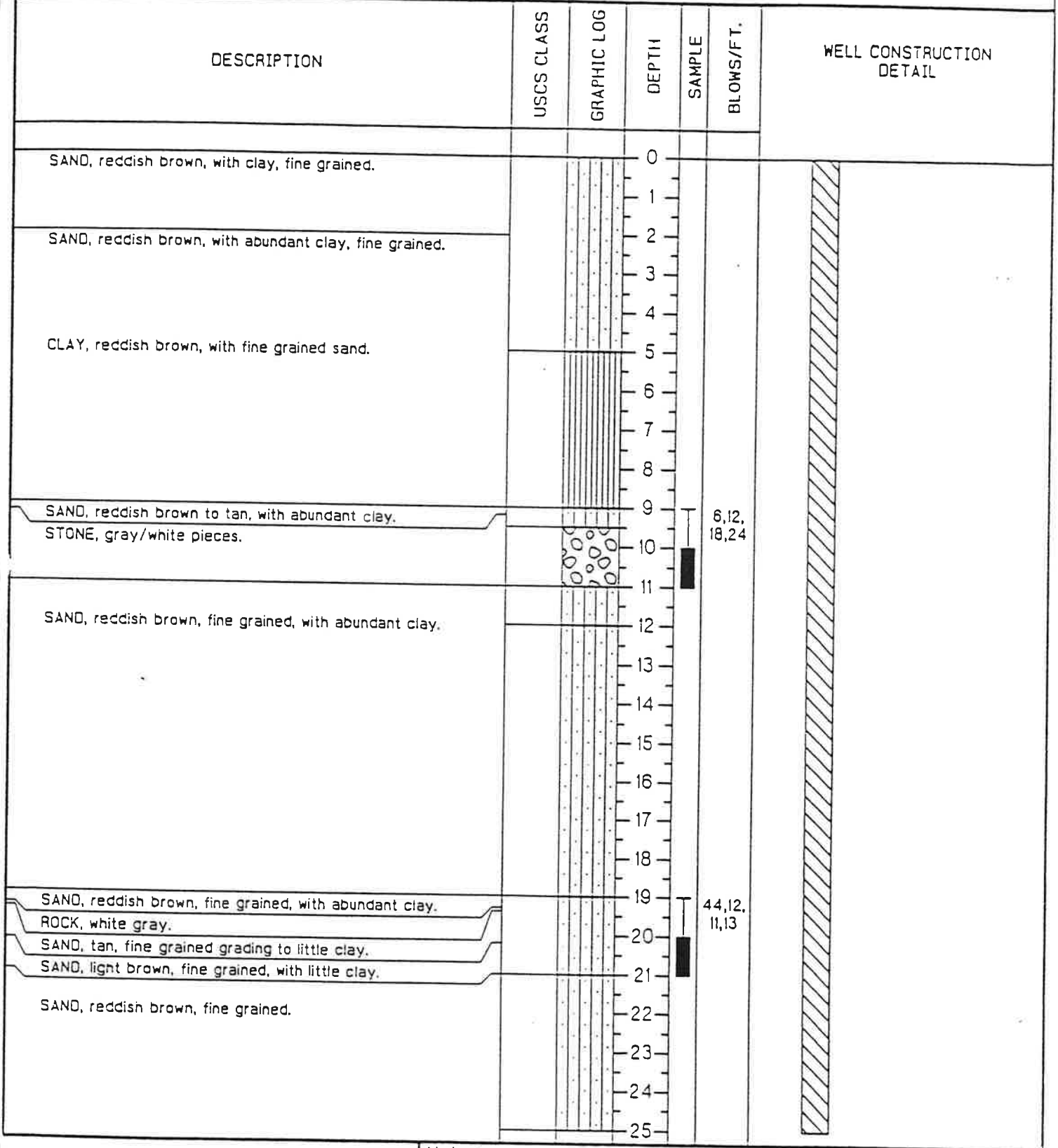
Project No.
276-6

Monitoring Well No. SB-2

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 40 ft.

DATE: 3-2-94
HOLE DIA.: 8.25 in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION:
HOLE ELEV.: ft. msl



Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
278

Monitoring Well No. SB-2

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 40 ft.

DATE: 3-2-94
HOLE DIA.: 8.25 in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION:
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	WELL CONSTRUCTION DETAIL
SAND, light tan, medium grained.			29		5,12, 23,25	
SAND, light tan, medium grained, with black rock/soil.			30			
SAND, medium brown, fine grained.			31			
SAND, light brown, medium grained, wet.			39		7,11, 17,14	
SAND, light brown, medium to fine grained, with clay.			40			
SAND, medium brown, fine grained, with clay grading to a darker brown.			41			
END OF BORING AT 41 FEET.						

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276

Boring Log No. 3

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 2-23-95
HOLE DIA.: 8.25 in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, medium brown, fine grained, with clay. .9=S SAND, medium brown, fine grained, with clay, and occassional rocks.			0			The boring was filled with grout.
SAND, medium brown, fine grained, with clay, and occassional rocks.	SM		10		5,13, 19,14	
SAND, medium brown, fine grained, with clay. SAND, light brown, fine grained, little clay.			12			
SAND, medium brown, fine grained, with clay, and with occassional small rocks, silt like.	SM		20		6,12, 15,16	
			22			
			25			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-8

Boring Log No. 3

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 2-23-95
HOLE DIA.: 8.25 in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
			25			
			26			
			27			
			28			
			29			
SAND, fine to medium grained.			30		8,15, 16,19	
			31			
			32			
			33			
			34			
			35			
			36			
			37			
			38			
			39			
SAND, fine to medium grained.			40		3,7,13, 17	
			41			
END OF BORING AT 42 FEET.			42			
			43			
			44			
			45			
			46			
			47			
			48			
			49			
			50			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-5

Boring Log No. 4

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 60 ft.

DATE: 3-2-94
HOLE DIA.: in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.:

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, light brown, fine grained, with clay, and occassional small pebbles and gravel.			0–17			The boring was filled with grout.
SAND, medium brown, fine grained, with clay, occassional pebbles, frozen.	SM		17		12,14, 12,12	
SAND, light brown, fine grained, with clay.			18			
SAND, medium brown fine grained, with clay, with clay content increasing with depth.			19		5,9,9,7	
SAND, medium, light brown, mottled, fine grained.	SM		20			
SAND, light brown, fine grained, moist with abundant clay.						
SAND, light brown, fine grained.			21		11,15, 11,5	
SAND, light brown, fine grained, with clay.	SM					
SAND, medium brown, fine grained, with clay.			22			
SAND, light brown, fine grained, with clay.						
SAND, medium brown, fine grained, with abundant clay.	SM		23		4,7, 13,21	
SAND, light brown, fine grained, with clay, moist to wet.			24			
	SM		25		11,11, 13,21	

Notes:
USCS based on composited samples.

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Project No. 276-2

Boring Log No. 4

ip McGill Road Landfill
)I
:EPTH: 60 ft.

DATE: 3-2-94
HOLE DIA.: in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.:

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
um brown, fine grained, with clay.	SM		25			
Brown fine grained, with clay.			26			
fine grained.			27		6,16, 17,14	
um brown, fine grained with clay and l small pebbles.	SM		28			
Brown, fine grained, with a layer of clayey			29		7,12, 17,17	
Brown, fine grained, with clay, rock, light gray, ken with reddish brown sand at horizon above.	SM		30			
um brown, fine grained, with abundant clay.			31		5,15, 20,17	
um brown, fine grained, with abundant clay, with l.	SM		32			
um brown, fine grained, with abundant clay, with wn flint rocks.			33		6,18 23,22	
Brown/tan, mottled, fine grained.	SM		34			
um brown, fine grained, with clay.			35		10,20, 20,23	
um to dark brown, fine grained, with clay.	SM		36			
um brown, fine grained, with clay, also light lenses.			37		19,20, 17,17	
um brown, fine grained, with abundant clay, and black and orange stones.	SM		38			
um fine grained, with clay, also with			39		18,12, 27,28	
um brown, fine grained, with clay.	SM		40			
um brown, fine grained, with occasional gravel, ocks.			41		6,16, 37,50	
um brown, fine grained, with clay, and l rocks and gravel.	SM		42			
um brown, fine grained, with abundant clay.			43		30,60, 50	
um brown, fine grained, with occassional small rocks.	SM		44			
um brown, fine grained, with abundant clay, and			45		43,50	
brown, fine grained, with clay, and occassional and pebbles.	SM		46			
brown, fine grained.			47		21,50	
, angular, some broken pieces.	SM		48			
brown to tan, fine grained.			49		50,50	
brown, fine grained.	SM		50			
brown, fine grained, wet						
brown, fine grained.						
um brown, fine grained, with little clay, gray ock.						
ish brown, medium to fine grained.						
white mottled, medium to fine grained, with s, and occassional pebbles, layer of small 3 feet 11 inches.						
um brown, fine grained, with little clay.						
brown to tan, mottled, fine grained						
reddish with small stones, fine						
m brown, fine to medium grained, with small						
Brown, fine grained, medium to light brown, with						
es.						

Engineering & Surveying, Inc.
34 Black Creek Road
Muskegon, MI 49444

Notes:
USCS based on composited samples.

Project No.
276-8

Boring Log No. 4

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: 60 ft.

DATE: 3-2-94
HOLE DIA.: in.
FINAL GW: N/A ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: N/A
HOLE ELEV.:

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
			50			
	SM		51		28,38, 50	
SAND, medium to brown, fine grained, with pebbles.	SM		52			
SAND, medium to brown, fine grained, with pebbles and stone.			53		20,43, 47,48	
SAND, medium grained, tan, wet at bottom of sample, sand becoming coarser towards bottom.	SM		54			
SAND, medium brown, fine grained, with clay.??????			55		36,55	
SAND, light brown, fine grained, grading to sand.	SM		56			
SAND, medium to dark brown, fine grained, with abundant clay, and occassional stone/gravel.			57		3,13, 15,16	
ROCK, light tan, with sand, fine grained blocking hose.	SM		58			
SAND, light brown to tan, mottled, fine grained with black grains/stone.			59		5,10, 5,10	
SAND, brown, medium grained.	SM		60			
SAND, medium brown, fine grained, with clay.			61			
SAND, tan, fine grained.	SM		62			
SAND, light brown, fine grained, wet with clay content increasing in depth.			63			
END OF BORING AT 61 FEET.	SM		64			
			65			
			66			
			67			
			68			
			69			
			70			
			71			
			72			
			73			
			74			
			75			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:
USCS based on composited samples.

Project No.
276-8

Boring Log No. 5

PROJECT: Philip McGill Road Landfill
DRILL RIG: EOI
INITIAL GW DEPTH: ft.

DATE: 4/4/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: Doug Lanesky
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SILT, light brown.			0			
SILT, medium brown.			1–7			The boring was filled with grout.
SAND, medium brown, medium grained, with abundant gravel.			8–10		6,12, 18,24	
SAND, fine grained and silt with abundant gravel. Rocks, cobbles, gravels.			11–17			
ROCK, 1 inch pieces, no other recovered.			18–20		5,5,2,4	
			21–25			

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Muskegon, MI 49444

Notes:

Project No.
276-8

Boring Log No. 5

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4/4/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: Doug Lanesky
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
			25			
			26			
			27			
			28			
END OF BORING AT 28 FEET.			29			
			30			
			31			
			32			
			33			
			34			
			35			
			36			
			37			
			38			
			39			
			40			
			41			
			42			
			43			
			44			
			45			
			46			
			47			
			48			
			49			
			50			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
276-6

Boring Log No. 6

PROJECT: Philip McGill Road Landfill
DRILL RIG: ED1
INITIAL GW DEPTH: ft.

DATE: 4/4/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION:
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, light brown, coarse grained.			28		100/6	
GRAVEL						
Rock, black shale.			29			
Rock, limestone, tan.			30			
END OF BORING AT 30 FEET.						

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
276-8

Boring Log No. 6

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4/4/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION:
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, medium brown, fine grained, with occasional clay, and abundant gravel.			0–8			The boring was filled with grout.
SAND, tan, fine grained, with occasional gravel.			8		4,3,4,4	
SAND, light brown, silt, damp.			8–9			
SAND, tan, fine grained, with occasional gravel.			9–10			
SAND, medium brown, with rocks and gravel.			10–16			
No recovery – rocks?			16		20,21, 23,0	
Gravel and coarse sand, wet, 11" recovery.			18		13,13, 11,9	
			20–25			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-6

Boring Log No. 7

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4-4-94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION: Doug Lanesky
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, silt, medium brown, fine grained.			0			
			1			
			2			
			3			
			4			
			5			
SAND, silt, medium brown, fine grained, wet.			6			
			7			
			8			
			9			
SAND, silt, medium brown, fine grained, wet, with occasional coarse grained sand.			10			
			11			
			12			
SAND, gray, fine grained, with abundant gravel and 1 inch rock.			13		3,7,7,2	
			14			
SAND, gray, medium to fine grained, with occasional coarse grained sand.			15			
			16			
			17			
SHALE, black.			18		23,15,	
SAND, weathered, sandstone, light gray, blue gray.			19		21,18	
END OF BORING AT 20 FEET.			20			
			21			
			22			
			23			
			24			
			25			

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No.
278-1

Boring Log No. 8

PROJECT: Philip McGill Road Landfill
DRILL RIG: EDI
INITIAL GW DEPTH: ft.

DATE: 4/4/94
HOLE DIA.: 8.25 in.
FINAL GW: ft.

LOGGED BY: Doug Lanesky
TOC ELEVATION:
HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SAND, light brown, silt, with occasional coarse grained sand.			0			
			1			
			2			
SILT, light brown, with occasional coarse grained sand.			3			The boring was filled with grout.
			4			
SILT, light brown, with occasional coarse grained sand, wet.			5			
			6			
			7			
SAND, medium brown, fine grained, wet, 17" recovery.			8		7,7,9,4	
			9			
SILT, medium brown, gray, wet.			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
SAND, medium gray, fine grained, with occasional gravel, 12" recovery.			18		5,8, 10,10	
			19			
			20			
Hard drilling			21			
			22			
			23			
			24			
			25		5,10 13,16	

Notes:

Westshore Engineering & Surveying, Inc.
2534 Black Creek Road
Muskegon, MI 49444

Project No. 276-8

Boring Log No. 8

PROJECT: Philip McGill Road Landfill | DATE: 4/4/94 | LOGGED BY: Doug Lanesky

DRILL RIG: EDI | HOLE DIA.: 8.25 in. | TOC ELEVATION:

INITIAL GW DEPTH: ft. | FINAL GW: ft. | HOLE ELEV.: ft. msl

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.	REMARKS
SILT to weathered shale, dark gray to black, layered, 18" recovery.			25–27			
END OF BORING AT 27 FEET.			28–50			

Westshore Engineering & Surveying, Inc.

2534 Black Creek Road
Muskegon, MI 49444

Notes:

Project No. 276-8

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 996.1 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/20/91 9:57 AM

GEOLOGIST: DBW/EAB

COMPLETION DATE:

ppm/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P	5	4 5 7 11		SAND, silty, very fine, light brown, sandstone in tip, damp, (well sorted) (sm)
P,L	10	10 9 8 10		SAND, Light brown, fine to medium, well sorted (sp)
P	15	7 10 16 20		SAND, Silty, fine to medium grained, with a trace of coarse gravel (sm)
P,L	20	6 6 8 10		SAND, Very fine to medium, light brown (sp)
P,L	25	6 8 9 12		SAND, Fine, light brown with a trace of gravel well sorted (sp) SAND, Silty (sm) SILT, Sandy with a trace of gravel, dark brown SILT, Dark gray, clayey with rock fragments (ml)
P,L	30	6 8 11 12		CLAY, Dark brown, sandy, silty (cl)
P		6 17		SAND, dark brown, silty (sm)

GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/20/91 9:57 AM

GEOLOGIST: DBW/EAB

COMPLETION DATE:

IRM/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P	35	10 16		CLAY, Gray, sandy with 1–2" gravel with fine gravel (cl)
P,L	40	3 4 8 10		CLAY, brown w/black, silty with 1–2" gravel (occasional) gray clay, minor sand and silt with fine gravel (cl)
P	45	13 29 30 29		CLAY, Brown, sandy, silty with gravel (cl) SAND, Gray, very fine (saturated) (sp) SAND, Gray, medium to coarse with gravel (sw)
P,L	50	5 14 17 20		SAND, Brown, medium with gravel (sp)
	55	7 12 16 22		SAND, Gray, medium, with clay (very questionalble) high clay content (sc)
P	60	18 34 42		CLAY, Brown, with fine gravel (upper 6" more sand) (cl) SAND, Gray, medium, with limestone clasts (gravel) (sp)
P,L	65	19 100 REFUSAL		CLAY, Brown, with fine sand (cl) BEDROCK, sandstone, blue gray, well sorted to fine
P,L		34 68		SANDSTONE, blue gray, well sorted, fine

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-1

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/21/91 10:20 AM

GEOLOGIST: DBW

COMPLETION DATE:

INU/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	70	72 76		SANDSTONE, Dark green/dark gray
P	75	60 90		SANDSTONE, Blue gray, well sorted, fine Auger refusal at 76' (flat & hard) (Linestone chips in spoon tip)
	80			
	85			
	90			
	95			
	100			

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-2

SHEET 1 of 2

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 997.5 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/22/91 2:00 PM

GEOLOGIST: EAB

COMPLETION DATE:

IRNu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
P	5	2 3 3 4		TOPSOIL, 6", dark brown SILT, Dark brown, damp (ml) SAND, Dark brown, very fine, silty, damp (sm)
P,L	10	4 5 5 5		SILT, Dark to light brown, sandy, mottled with a trace of coarse gravel & organic particles (ml)
P	15	4 5 5 6		SILT, Dark to light brown, sandy, mottled with a trace of coarse gravel & ogranic particles (ol) SAND, Brown, very fine, silty with a trace of organics, damp (sm)
P,L	20	8 15 18 20		SAND, Brown, very fine, silty with a trace of organics, damp (sm)
P,L	25	4 18 20 24		SILT, Light to very dark brown, mottled with rock fragments (ml)
P,L	30	7 11 12 14		SAND, Very light brown, very fine, well sorted, trace of medium to coarse gravel in tip (sp)
P,L		10 16		SAND, Light brown, very fine, silty, well sorted (sm)

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-2

SHEET 2 o

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 3/22/91 2:00 PM

COMPLETION DATE: 3/25/91 11:00 A

Hnu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P,L	35	53		SAND, Light brown, very fine, well sorted, silty (sm
P,L	40	5 12 15		SAND, Light brown, very fine, well sorted, saturated (sp)
	45			
	50			
	55			
	60			
	65			

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-3

SHEET 1 of

CLIENT: MCGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 986.9 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 4/09/91 12:50 PM

GEOLOGIST: EAB

COMPLETION DATE: 4/09/91 3:00 PM

PID/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
P	5	2 3 3 4		SILT, Dark brown, sandy, trace of fine gravel & charcoal (ml)
P,L	10	3 6 7 8		SAND, Light brown, very fine, silty, trace of carbon (sm)
P	15	5 4 4 7		SAND, Dark brown, very fine, well sorted, with interbedded medium sand lenses and cobbles (sp)
P,L	20	21 25 32 50		SAND, Light brown, very fine, well sorted, interbedded with dark brown silty sand and cobbles (sm)
P,L	25	6 16 21 26		SAND, Medium brown, very fine, well sorted, silty, trace of carbon and cobbles (sm)
P,L	30	23 31 40 41		SAND, Dark brown, very fine, silty, well sorted, trace of fine gravel and cobbles (sm)
P		15 28		SAND, Light brown, very fine, well sorted (sp)

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-3

SHEET: 1 of 1

CLIENT: MCGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/09/91 12:5[illegible] PM

COMPLETION DATE: 4/09/91 3:0[illegible] PM

PID/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	35	50		SAND, Light brown, very fine, well sorted (sp)
P,L	40	12 21 37 44		SAND, Dark brown, very fine, well sorted, saturated (sp)
P,L	45	2 2 3 4		SAND, Dark brown, very fine, well sorted, saturated (sp)
	50			
	55			
	60			
	65			

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-4

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 980.5 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/21/91 3:00 PM

GEOLOGIST: DBW/EAB

COMPLETION DATE:

HNU/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
P	5	1 1 1 2		SAND, Light brown, fine, silty with a trace of fragments, damp (sm)
P,L	10	3 2 2 3		SAND, Dark brown, fine with a trace of fragments damp (sp)
P	15	4 9 11 13		SAND, Dark brown, silty, damp (sm)
				SAND, Dark brown, medium, well sorted, with a trace of gravel (sp)
P,L	20	4 8 8 10		SAND, Light brown, fine, well sorted (sp)
P,L	25	5 8 13 16		SAND, Light brown, fine, well sorted, with a trace of organic material (sp)
P,L	30	8 11 16 18		SAND, Dark brown, fine, with a trace of fine gravel, well sorted (sp)
P,L		7 12		

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

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LOG OF SB-4

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

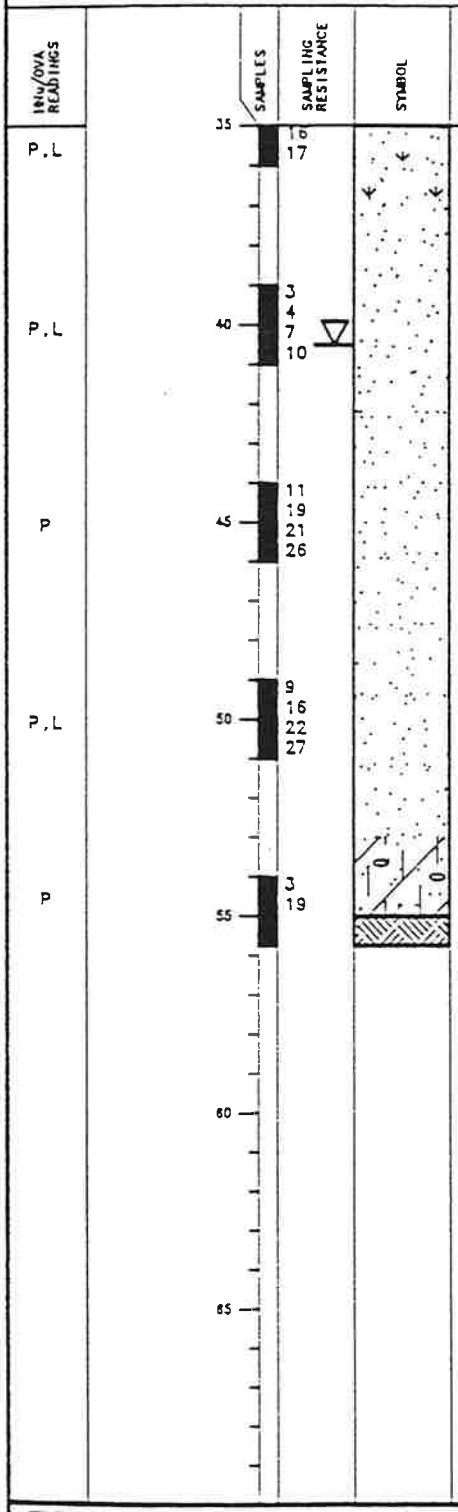
ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

START DATE: 3/21/91 3:00 PM

GEOLOGIST: DBW/EAB

COMPLETION DATE: 3/22/91 9:30 AM



DESCRIPTION

SAND, Light brown, fine, well sorted, with a trace of organic material (sp)

SAND, Light brown, fine, well sorted, saturated (sp)

SAND, Dark brown/brick red, very fine, well sorted, saturated (sp)

SAND, Gray, fine, well sorted, saturated (sp)

SAND, Dark gray, very fine, clayey, silty, with fine gravel (sm)

SPT Refusal — Top of bedrock, greenish-grey sandstone

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-5

SHEET 1 o

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 955.2 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/12/91 4:15 PM

COMPLETION DATE: 4/12/91 4:45 PM

HNu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P	0	2 5 7 12		SAND, Dark brown, very fine to fine, silty with charcoal & a trace of medium to coarse gravel damp (sm)
P	10			SAND, Dark brown, fine, well sorted, saturated (sp)
P.L	15	2 4 5 6		SAND, Dark brown/brick red, fine, well sorted, mottled, saturated (sp)
	20			
	25			
	30			

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
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(616) 342-1100

LOG OF SB-6

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

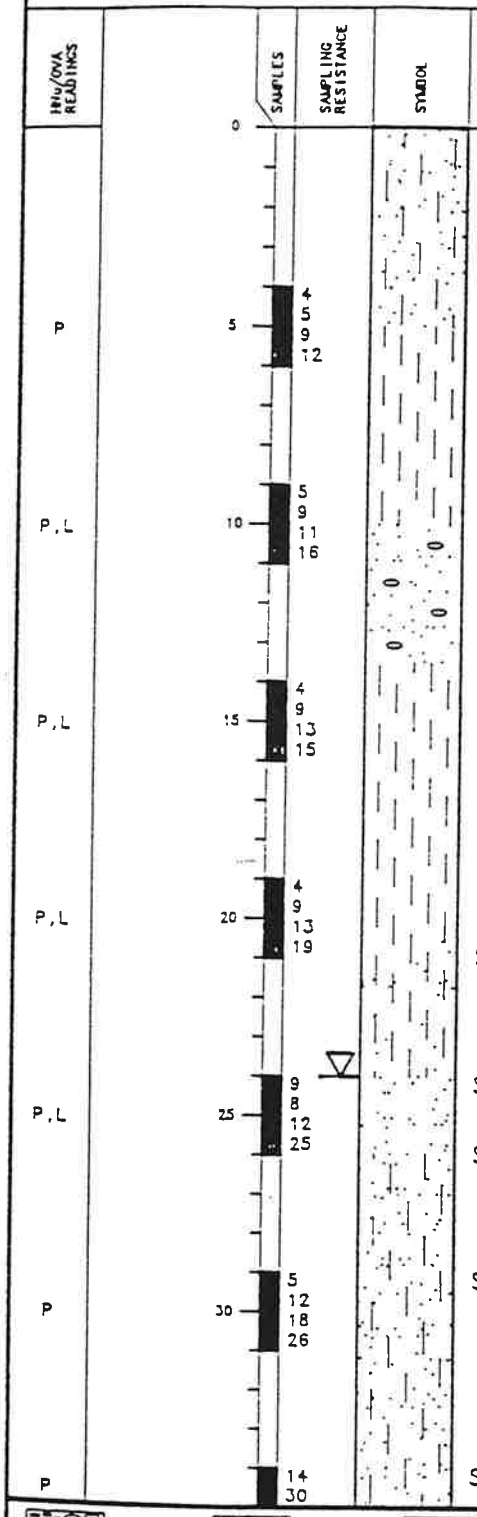
ELEVATIONS:
SURFACE: 959.0 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 3/25/91 11:55 AM

COMPLETION DATE:



GRAVEL SILT ORGANIC SHALE MISC. FILL SATURATED WATER LEVEL
SAND CLAY TILL ROCK TOPSOIL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-6

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 3/25/91 11:55 PM

COMPLETION DATE: 3/25/91 5:00 PM

ppm/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
P	35	17 26		SAND, Dark gray, fine grained, silty, saturated (sm)
P	40	7 13 17 26		SAND, Dark gray, fine grained, silty, saturated (sm) SAND, Dark brown, fine, with a trace of medium to coarse gray coal & shale fragments in tip, trace of organic material (sp)
P,L	45	5 7 10 14		SAND, Dark gray, fine to medium, silty with a trace of fine gravel (sm)
P	50	11 26 35 27		SANDSTONE, Gray green mottled, fine to medium, well well sorted LIMESTONE, fragments & gray fine to medium saturated sand SANDSTONE, Gray green, fine, well sorted
	55			
	60			
	65			

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-7

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: 989.5 TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/02/91 12:35 PM

COMPLETION DATE: 4/02/91 3:00 PM

HNu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	0			
	5			
	10			SAND, Light brown, very fine, silty (sm)
P	15	4 8 8 9		SAND, Dark brown, very fine, silty, trace of organic (sm)
				SAND, Light brown, very fine, well sorted (sp)
P,L	20	12 20 29		SAND, Dark brown, very fine, well sorted, trace of silt & rock fragments (sp)
P	25	18 21 22 29		SAND, Dark brown, very fine, well sorted, silty, trace of medium gravel (sm)
	30	12 16 14 24		SAND, Light brown, very fine, well sorted, trace of silt (sp)
P,L		7 8		SAND, Brown, very fine, well sorted, trace of fine gravel, saturated (sp)

GRAVEL, SAND, SILT, CLAY, ORGANIC, TILL, SHALE, ROCK, MISC. FILL, TOPSOIL, SATURATED WATER LEVEL

ENVIROLOGIC TECHNOLOGIES, INC.
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF SB-7

CLIENT: McGILL ROAD LANDFILL

LOCATION: JACKSON, MICHIGAN

ELEVATIONS:
SURFACE: TOP OF CASING:
STATIC WATER LEVEL:

DRILLING CO: ESE

GEOLOGIST: EAB

START DATE: 4/02/91 12:35 PM

COMPLETION DATE: 4/02/91 3:00 PM

INu/OVA READINGS	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
	35	11		SAND, Brown, very fine, well sorted, trace of fine gravel, saturated (sp)
P,L	40	11 17 26 27		SAND, Brown, very fine, well sorted, trace of fine gravel, saturated (sp)
	45			
	50			
	55			
	60			
	65			

GRAVEL, SILT, ORGANIC, SHALE, MISC. FILL, SATURATED WATER LEVEL
SAND, CLAY, TILL, ROCK, TOPSOIL

JCL SITE

MATEGO DRILLING CO.

693 PLYMOUTH AVENUE, N.E. • GRAND RAPIDS, MICHIGAN 49505 • PHONE: 616/459-1090

Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michican — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-9
Depth Drilled 20.5' ft.
Surface Elev. ____ ft.
Date Started 7-6-87
Date Completed 7-6-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 8 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see diagram #MW-9

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.
				Light brown fine sand (dry)	1.0'			
				Black fine sand with some clay with some trash and organics	4.0'			
5	SBS	1/12"-2/6"		Soft blackish gray orgainc meterial (moist)	5.5'			
10	SBS	13-10-7		Medium dense gray silty sand with little clay and occasional fine to coarse gravel				
15	SBS	4-4-8						
20	SBS	5-3-8						
				End of boring @ 20.5'				
25								
30								
35								

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Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-10
Depth Drilled 50.5' ft.
Surface Elev. ____ ft.
Date Started 7-6-87
Date Completed 7-6-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 8 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see well diagram #MW-10

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.
				Light brown fine sand dry	1.0'			
				Black fine sand with some clay and some trash and organics	4.0'			
5				Soft blackish gray organic material (moist)				
				Medium dense gray silty sand with little clay and occasional fine to coarse gravel (wet)				
10								
15								
20					20.5'			
25	SBS	3-2-5		Loose gray fine to coarse sand with occasional fine gravel, white shell fragments and black shale fragments				
30	SBS	6-6-10						
35	SBS	6-8-12		Grading medium dense				
40								

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Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-10
Depth Drilled 50.5' ft.
Surface Elev. ____ ft.
Date Started 7-6-87
Date Completed 7-6-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 8 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see well diagram #MW-10

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Class
40	SBS	5-10-11						
45	SBS	6-8-12						
50	SBS	50/3"			50'5'			
				Weathered grayish white sandstone				
55				End of boring @ 50.5'				
60								
65								
70								
75								
80								

MALECO DRILLING CO.

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Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-11
Depth Drilled 26 ft.
Surface Elev. ____ ft.
Date Started 6-29-87
Date Completed 6-29-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 14.5 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring Well
see well diagram
#MW-11

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.Dat
				6" of Topsoil				
5	SBS	6-12-15		Medium dense light brown fine sand with fine gravel (dry) some cobbles encountered from 5' - 7.5'				
10	SBS	7-6-7						
15	SBS	3-4-2		Grading brown fine to medium sand				
20	SBS	3-3-4						
25	SBS	5-6-7						
				End of boring @ 26.0'				
30								
35								
40								

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Project McGill Road Landfill
Location Jackson County, Michigan

Job No. 2535-87
Permit No. 820-802-138

LOG OF BORING

Boring Number MW-12
Depth Drilled 50.5 ft.
Surface Elev. ft.
Date Started 6-29-87
Date Completed 6-30-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 14.5 ft.
After Completion ft.
After hrs: ft.
Volume
Seepage at ft.
Boring Caved in at ft.

Plugging Record
Boring Sealed with:

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.Dat
45	SBS	4-5-8						
				Possible bedrock at 50.5'				
50	SBS	6-8-50						
				End of boring @ 50.5'				
55								
60								
65								
70								
75								
80								

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Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-14
Depth Drilled 45.5 ft.
Surface Elev. ____ ft.
Date Started 6-30-87
Date Completed 7-1-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 9.0 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see well diagram
#MW-14

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.Da
				6" Topsoil Loose light brown fine sand with some organic material				
					4.5'			
5				Black clayey organic material	6.0'			
				Medium dense brown fine sand with trace of silt and occasional fine gravel				
10								
15								
20								
25	SBS	5-3-1						
					28.5'			
30	SBS	5-6-7		Medium dense Brownish gray silty fine sand with some black clayey organic material and occasional fine gravel				
					33.5'			
35	SBS	4-4-3		Loose gray silty sand with occasional fine gravel with intermittent layers of gray sandy clay				

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Project McGill Road Landfill
Location Jackson County, Michigan

Job No. 2535-87
Permit No. 820-802-138

LOG OF BORING

Boring Number MW-14
Depth Drilled 45.5 ft.
Surface Elev. _____ ft.
Date Started 6-30-87
Date Completed 7-1-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at _____ ft.
After Completion _____ ft.
After _____ hrs: _____ ft.
Volume _____
Seepage at _____ ft.
Boring Caved in at _____ ft.

Plugging Record
Boring Sealed with:

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.Dat
40				Grading dense				
					44.5'			
45	SBS	13-50/3"		Light gray weathered sandstone				
				End of boring @ 45.5'				
50								
55								
60								
65								
70								
75								
80								

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Project McGill Road Lanfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-15
Depth Drilled 31.0 ft.
Surface Elev. ____ ft.
Date Started 7-1-87
Date Completed 7-1-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 9.5 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see well diagram
#MW-15

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif. Dat
				3" Topsoil				
					3.0'			
5	SBS	1-1-1		Soft blackish brown peat				
					9.5'			
10	SBS	Weight of Rod for 12"/3		Loose black gray fine sand with shell fragments and organic matter				
15	SBS	3-4-3			15.5'			
				Loose gray silty sand with white shell fragments and organic matter				
20	SBS	5-4-6			20.0'			
				Loose gray fine sand with white shell fragments and occasional fine gravel				
25	SBS	5-5-5						
					29.5'			
30	SBS	8-8-6		Medium stiff, gray sandy clay little gravel and intermittent seams of fine sand				
				End of boring @ 31.0'				
35				Backfilled boring with hole plug 27' to 31'. Able to stop gas flow				
				NOTE: Gas pocket encountered 29½ - 31' when pulling split spoon from bore hole. Pressure blew a column of water out of the auger.				

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Project McGill Road Landfill — Job No. 2535-87

Location Jackson County, Michigan — Permit No. 820-802-138

LOG OF BORING

Boring Number MW-16
Depth Drilled 41.0 ft.
Surface Elev. ____ ft.
Date Started 7-14-87
Date Completed 7-14-87

Crew Chief D. Elliott
Helper T. Patterson
Drill Rig CME 45C
Boring Method HSA

Groundwater:
Encounted at 15 ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at ____ ft.
Boring Caved in at ____ ft.

Plugging Record
Boring Sealed with:
Monitoring well
see well diagram
#MW-16

Depth In Feet	Sample Type	Penetration ASTM D 1586	Unified Soil Classif.	SOIL DESCRIPTION	Laboratory Data N.P.M.	N.D.	S.S.	Classif.D
5	SBS	3-2-2		Soft yellow brown clayey silt with some fine to medium sand (moist)				
				Change approximately				
10	SBS	4-3-3		Loose brown fine to coarse sand with little silt (wet)				
				Change approximately				
15	SBS	2-2-4		Loose gray fine to medium sand with little silt (wet)				
20	SBS	1-1/12"		Grading with some coarse sand and trace of fine gravel				
25	SBS	4-6-5						
					27.0'			
30	SBS	10-12-13		Medium dense gray silt and fine sand with occasional 1" - 2" gray clay seams				
35	SBS	9-9-12						
					36.0'			
	SBS	3-4-7		Loose gray fine to medium sand (wet)				

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: MW-18 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR GeoTek
DRILLING METHOD: 4.25" HSA, CME 750 ATV
SAMPLING METHOD: 2" O.D. SS

DRILL DATE: 5/13/93
LOGGED BY: P. Rogers
BORING DIAMETER: 8.25"
TOTAL DEPTH: 28.0'
DEPTH TO WATER: 24.5'

MONITOR WELL DATA:

CASING: 2" Stainless Steel, Threaded
SCREEN: 2" Stainless Steel Threaded. 0.010 slot
TOC ELEV.: 961.017

LENGTH: 25,26'
LENGTH: 5.0'
GROUND SURFACE ELEV.:

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
4-6	SS-1	22"	SM	1 - 2 - 3 - 3	4.0	Loose light brown silty sand.
9-11	SS-2	16"	SM	2 - 2 - 3 - 4	1.8	Loose light brown silty sand.
14-16	SS-3	22"	SM	2 - 3 - 3 - 3	6.0	Loose light brown silty fine sand.
19-20	SS-4	18"	SP	2 - 3 - 4 - 4	5.8	Loose light brown sand.
24-26	SS-5	18"	SP	1 - 1 - 1 - 2	3.0	Very loose dark brown medium and coarse grained sand, wet at 24.5'.
						' EOB 28.0'

Notes:
1. Soil samples SS-3 and SS-5, and SS-5 duplicate were submitted to Brighton Analytical for Analysis.
2. Well Construction: protective steel locking cover set in concrete pad; bentonite concrete slurry 1'-18'; bentonite seal 18'-21'; silicia sand21'-28'. Screened set 23'-28'.

LEGEND/NOTES:

TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
JBP 7/21/93

A:12394MW18.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: MW-19 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR GeoTek
DRILLING METHOD: 4.25" HSA, CME 750 ATV
SAMPLING METHOD: 2" O.D. SS

DRILL DATE: 5/11/93 & 5/12/93
LOGGED BY: E. Brown
BORING DIAMETER: 8.25"
TOTAL DEPTH: 58.5'
DEPTH TO WATER: 25.0'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded
SCREEN: 2" Stainless Steel Threaded. 0.010 slot
TOC ELEV.: 961.882

LENGTH: 55.0'
LENGTH: 5.0'
GROUND SURFACE ELEV.:

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
4-6	SS-1	20"	SM	2 - 2 - 2 - 3	0.6	Very loose brown silty sand.
9-11	SS-2	16"	SM	2 - 2 - 2 - 3	0.9	Very loose light brown silty sand.
14-16	SS-3	20"	SM	2 - 3 - 4 - 2	1.0	14'-15' Loose brown silty sand, 15'-16; loose brown fine sandy silt, trace clay.
19-21	SS-4	22"	SM-ML	2- 3- 4- 5	0.6	Loose brown, sand with 2" silt seam.
24-26	SS-5	24"	SM	2- 2- 2- 3	0.6	Loose brown silty sand, wet at 25'.
29-31	SS-6	24"	SP	1- 1- 1- 3	0.4	Very loose medium and coarse grained sand, with trace pebbles wet.
34-36	SS-7	24"	SM	W O R	0.4	Very loose brown silty sand, wet, some iron staining.
39-41	SS-8	24"	SM	1- 1- 1- 3	0.1	Very loose gray silty sand. Bottom 3" stiff gray silty clay, wet.
44-46	SS-9	24"	SM	9- 13- 20-20	0.3	Compact light and dark gray sand and degraded medium grained sandstone, with trace pebbles, wet.
49-51	SS-10	24"	SM	2- 2- 3	0	Loose, light gray silty sand and medium grained sandstone. Stiff gray silty clay in tip, wet.
54-56	SS-11	24"	SM	25/40/100+	0	Very compact gray to white sand and medium grained sandstone wet.

EOB: 58.5' Notes: Screen set 53'-58'
1. Groundwater samples taken at 24'-29', 36'-41' during drilling, for on site analysis. 2. Soil samples SS-3 and SS-11 sent to Brighton Analytical for analysis. 3. Well Construction: protective steel locking cover set in concrete pad; bentonite concrete slurry 1'-49';bentonite seal 49'-51';silica sand 49'-58.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12394MW18.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: MW-20 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR: GeoTek
DRILLING METHOD: 4.25" Screened Auger, CME 750 ATV
SAMPLING METHOD: No Soil Sampling

DRILL DATE: 5/13/93
LOGGED BY: P. Rogers
BORING DIAMETER: 8.25"
TOTAL DEPTH: 29.0'
DEPTH TO WATER: 2.0'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded — LENGTH: 7.73
SCREEN: 2" Stainless Steel Threaded. 0.010 slot — LENGTH: 5.0'
TOC ELEV.: 932.696 — GROUND SURFACE ELEV.

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
0-2	AS-1	-	SM			Brown silty fine sand, wet.
2-3	AS-2	-	ML			Black silt, organic, very moist.
3-10	AS-3	-	SM			Brown silty fine sand, wet sand.
						EOB 10'
						Notes: 1. New hole drilled for well installation, original borehole sealed with bentonite. 2.Well Construction: protective steel locking cover set in concrete pad; bentonite seal 1'-4.5'; silica sand 4.5'-10'. Screen set 5'-10'.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12394MW20.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: MW-21 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR GeoTek
DRILLING METHOD: 4.25" HSA, CME 750 ATV
SAMPLING METHOD: 2" O.D. SS

DRILL DATE: 5/11/93
LOGGED BY: E. Brown
BORING DIAMETER: 8.25"
TOTAL DEPTH: 39.0'
DEPTH TO WATER: 3.0'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded — LENGTH: 35.0'
SCREEN: 2" Stainless Steel Threaded. 0.010 slot — LENGTH: 5.0'
TOC ELEV.: 931.614 — GROUND SURFACE ELEV.

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
						1-3' Black peat, wet.
4-6	SS-1	14"	SM	2- 3- 6- 5	0	Loose brown silty sand, wet.
9-11	SS-2	18"	SM	W O R	0.4	Very loose brown silty sand with trace pebbles, wet.
14-16	SS-3	20"	SM	2/2"	0	Very loose brown silty sand with trace pebbles and cobbles, wet.
16-27.5	AS	-	-		0	Brown silty sand with increasing silt content and some clay with depth. Cobbles (or fractured bedrock) at 27.5'.
5.5-36	AS	-	-		0	Degraded bedrock.
36-39	AS	-	-			Bedrock
						EOB 39.0'

Notes:
1. Heaving sands prevented soil sampling below 15'.
2. Groundwater sample taken at 4-9' during drilling for on site analysis.
3. Well Construction: Protective steel locking cover in concrete pad; Bentonite/concrete slurry 1'-28.5'. Bentonite seal 28.5'-31.5'. silica sand 31.5'-39'.
4. Samples SS-1, SS-2, and SS-3 submitted to Brighton Analytical Laboratory, for analysis.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12394MW21.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: P-1 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR: GeoTek
DRILLING METHOD: 4.25" Screened Auger, CME 750 ATV
SAMPLING METHOD: No Soil Sampling

DRILL DATE: 5/17/93
LOGGED BY: E. Brown
BORING DIAMETER: 8.25"
TOTAL DEPTH: 46.0'
DEPTH TO WATER: 43.0'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded
SCREEN: 2" Stainless Steel Threaded. 0.010 slot
TOC ELEV.: 975.269

LENGTH: 42.5'
LENGTH: 5.0'
GROUND SURFACE ELEV.:

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
0-2.5	AS-1	-	CL			Brown sandy clay. (Flexible membrane liner at 2.5')
2.5-36	AS-2	-				Refuse and black silty clay.
36-46	AS-3	-	ML			Black silt with some clay.
						EOB 46.0'
						Notes: 1. Piezometer construction: protective steel locking cover set in concrete pad; bentonite cement slurry 1'-33.5' bentonite seal 33.5'-38'; silica sand 38'-46'; screen set at 40'-45'.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12143P1.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: P-2 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR GeoTek
DRILLING METHOD: 4.25" Screened Auger, CME 750 ATV
SAMPLING METHOD: No Soil Sampling

DRILL DATE: 5/14/93
LOGGED BY: P. Rogers
BORING DIAMETER: 8.25"
TOTAL DEPTH: 50.0'
DEPTH TO WATER: 45.0'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded
SCREEN: 2" Stainless Steel Threaded. 0.010 slot
TOC ELEV.: 967.524

LENGTH: 46.75
LENGTH: 5.0'
GROUND SURFACE ELEV.:

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
0-3	AS-1	-	CL			Brown sandy clay, trace silt (Flexible membrane liner at 3.0')
3-35	AS-2	-				Refuse
35-50	AS-3	-	ML			Black silt with fine sand. Wet at 45.0'
						EOB 50.0'
						Notes: 1. Piezometer construction: protective steel locking cover set in concrete pad; bentonite cement slurry 1'-35' bentonite seal 35'-40'; silica sand 40'-50'; screen set at 45'-50'.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12143P2.WK1

METCALF & EDDY, INC.	GEOLOGIC LOG	LOCATION: P-3 SHEET: _1_ OF _1_ PROJECT NO.: 012394

PROJECT: Jackson County Landfill #1
CLIENT: Jackson County
DRILL CONTRACTOR GeoTek
DRILLING METHOD: 4.25" Screened Auger CME 750 ATV
SAMPLING METHOD: No Soil Sampling

DRILL DATE: 5/14/93
LOGGED BY: P. Rogers
BORING DIAMETER: 8.25"
TOTAL DEPTH: 20.0'
DEPTH TO WATER: 16.98'

MONITOR WELL DATA:
CASING: 2" Stainless Steel, Threaded
SCREEN: 2" Stainless Steel Threaded. 0.010 slot
TOC ELEV.: 964.423

LENGTH: 17.32
LENGTH: 5.0'
GROUND SURFACE ELEV.:

DEPTH (ft)	SAMPLE NO.	SAMPLE REC.	USC SYMBOL	BLOW COUNT	PID (ppm)	SAMPLE DESCRIPTION
0-3	AS-1	-	CL			Brown sandy clay. (Flexible membrane liner at 3.0')
3-20		-				Refuse E O B 20.0'

Notes: 1. Piezometer construction: protective steel locking cover set in concrete pad; bentonite cement slurry 1'-9' bentonite seal 9'-13'; silica sand 13'-20'; screen set at 15'-20'.

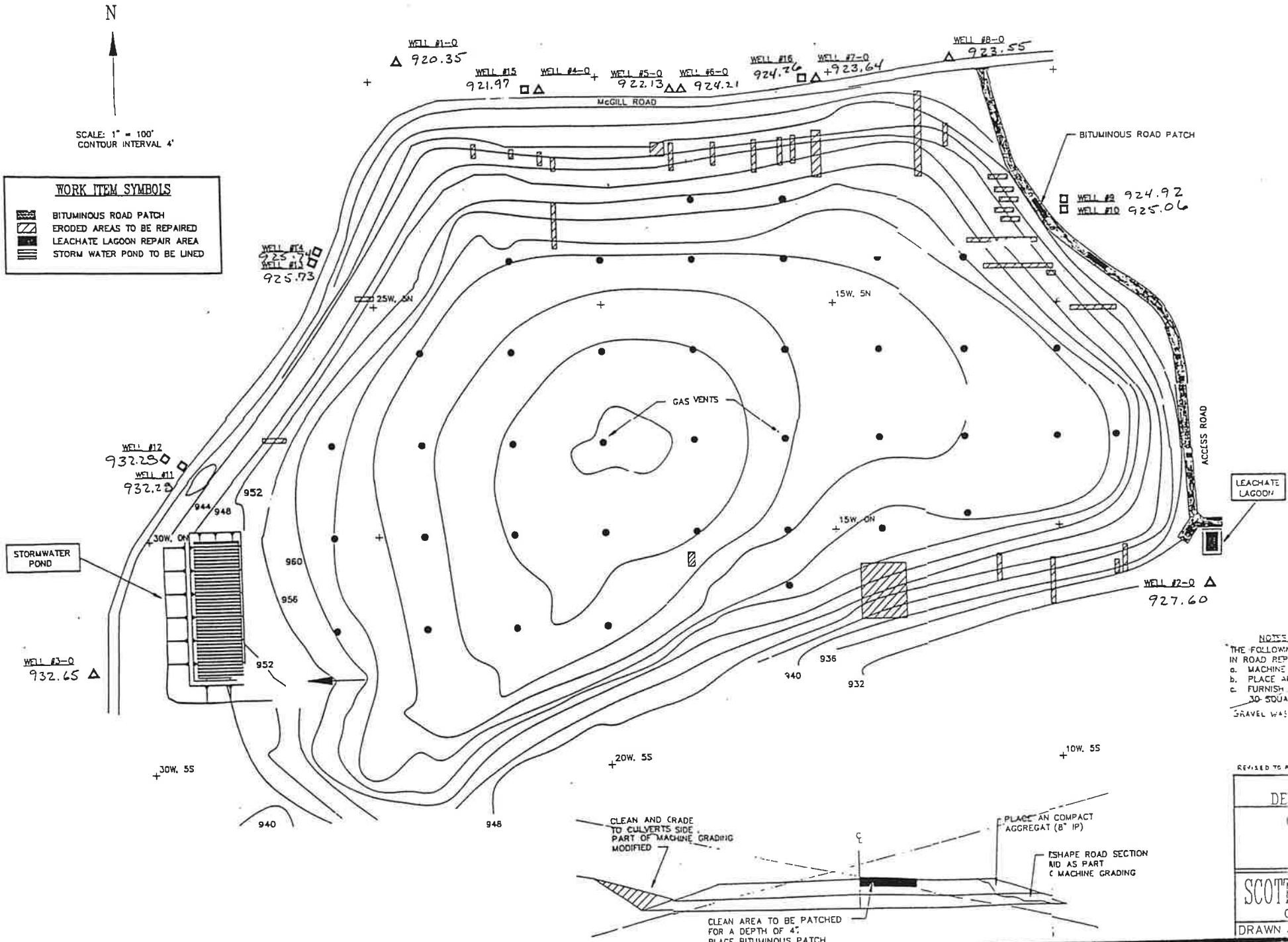
2. It is unknown if native soil was encountered at terminus of boring.

LEGEND/NOTES:
TOC: Top of well casing
SAMPLE TYPE:
SS = Split Spoon
ST = Shelby Tube
RC = Rock Core
AS = Auger Flight

USC SYMBOL = Unified Soil Classification System
BLOW COUNT = No. of blows required to drive 2" O.D. sample spoon 6".
PID = Photoionization Detector Reading

Approved By:/Date
VBP 7/21/93

A:12394P3.WK1


N
SCALE: 1" = 100'
CONTOUR INTERVAL 4'
WORK ITEM SYMBOLS
BITUMINOUS ROAD PATCH
ERODED AREAS TO BE REPAIRED
LEACHATE LAGOON REPAIR AREA
STORM WATER POND TO BE LINED
WELL #1-O 920.35
WELL #15 921.97
WELL #4-O
WELL #5-O 922.13
WELL #6-O 924.21
WELL #16 924.76
WELL #7-O 923.64
WELL #8-O 923.55
McGILL ROAD
BITUMINOUS ROAD PATCH
WELL #9 924.92
WELL #10 925.06
WELL #14 925.73
WELL #13 925.73
25W, 5N
15W, 5N
GAS VENTS
ACCESS ROAD
LEACHATE LAGOON
WELL #12 932.28
WELL #11 932.28
944
948
952
30W, 0N
STORMWATER POND
960
956
952
15W, 0N
WELL #2-O 927.60
936
940
932
WELL #3-O 932.65
30W, 5S
20W, 5S
10W, 5S
940
948
CLEAN AND GRADE TO CULVERTS SIDE PART OF MACHINE GRADING MODIFIED
PLACE AN COMPACT AGGREGAT (8" IP)
SHAPE ROAD SECTION MD AS PART C MACHINE GRADING
CLEAN AREA TO BE PATCHED FOR A DEPTH OF 4" PLACE BITUMINOUS PATCH

GEO-TEK INC.
SUBSURFACE EXPLORATION
P.O. Box 116 Lowell, Mich. 49331 • Bus. Phone: (616) 897-5581

Project Jackson City Landfill
Location Jackson, Michigan
Job No. _____
Permit No. _____

LOG OF BORING

Boring Number 1-0
Depth Drilled 30 ft.
Surface Elev. 924 ft.
Date Started 9/10/82
Date Completed 9/10/82

Crew Chief Qualls
Helper Klitz
Drill Rig CME 55
Boring Method HSA

Ground Water:
Encountered at 7'± ft.
After Completion _____ ft.
After _____ hrs. _____ ft.
Volume _____
Seepage at _____ ft.

Plugging Record
Boring Sealed with: Ex. Soil
_____ between 30 ft. & 6 ft.
bent between 6 ft. & 0 ft.
_____ between _____ ft. & _____ ft.
_____ between _____ ft. & _____ ft.

Depth In Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
		2-2-3	Peat- Soft, black.
6.0'			
		5-5-6	Silt- Compact, gray-brown, fine, sandy.
		2-1-2	
		3-4-5	
			GRAIN SIZE ANALYSIS @ 20'
		6-5-7	
		8-8-8	
30.0'			
			EOB
			Total Pipe 21'2"

GEO-TEK INC.
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Project Jackson City Landfill Job No. _____
Location Jackson, Michigan Permit No. _____

LOG OF BORING

Boring Number 2-0
Depth Drilled 36 ft.
Surface Elev. 928 ft.
Date Started 9/10/82
Date Completed 9/10/82

Crew Chief Qualls
Helper Klitz
Drill Rig CME 55
Boring Method HSA

Ground Water:
Encountered at 13.5' ± ft.
After Completion _____ ft.
After _____ hrs: _____ ft.
Volume _____
Seepage at _____ ft.

Plugging Record
Boring Sealed with: Ex. Soil
_____ between 36 ft. & 10 ft.
bent between 10 ft. & 0 ft.
_____ between _____ ft. & _____ ft.
_____ between _____ ft. & _____ ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
			Fill- Loose, brown sand and garbage.
3.0'	SNR	1for18"	Peat- Soft, black.
		1for18"	
13.5'		1-1-1	Sand- Loose, gray, fine, to med.
18.0'		1for18"	Clay- Ext. soft, gray, organic.
24.0'		6-4-4	Sand- Compact, brown, med, with layers of fine gravel.
			GRAIN SIZE ANALYSIS @ 25'
		8-11-6	
34.0'		6-6-8	
36.0'	EOB		Clay- Stiff, gray, very sandy with pebbles.
			37 1/2' Pipe used including Point.

S35 W675 MW#2-0

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Project Jackson City Landfill Job No. _____
Location Jackson, Michigan Permit No. _____

LOG OF BORING

Boring Number 3-0
Depth Drilled 30 ft.
Surface Elev. 943 ft.
Date Started 9/10/82
Date Completed 9/10/82

Crew Chief Qualls
Helper Klitz
Drill Rig CME 55
Boring Method HSA

Ground Water:
Encountered at 10'± ft.
After Completion ____ ft.
After ____ hrs: ____ ft.
Volume ____
Seepage at 13' TOC ft.

Plugging Record
Boring Sealed with: Ex. Soil
____ between 30 ft. & 10 ft.
bent between 10 ft. & 0 ft.
____ between ____ ft. & ____ ft.
____ between ____ ft. & ____ ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
		4-2-3	Sand- Compact, shades of brown, with a clay binder.
10.5'		3-3-3	
		3-2-3	Sand- Compact, brown, med.
		5-6-6	
23.5'		7-7-4	Sand- Compact, brown, med., with fine gravel.
30.0'		4-5-7	
	EOB		
			29' of material total.

STR. W/2052 MW#2-0

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Project: Jackson City Landfill — Job No. _____
Location: Jackson, Michigan — Permit No. _____

LOG OF BORING

Pushed to recover.

Rig Number 4-D | Crew Chief Klitz | Ground Water: Encountered at 6'± ft. | Plugging Record: Boring Sealed with: Ex. Soil
Depth Drilled 16 ft. | Helper Gryska | After Completion _____ ft. | ex. soil between 1 ft. & 16 ft.
Surface Elev. 944 ft. | Drill Rig 55 | After _____ hrs: _____ ft. | bent between 1 ft. & 0 ft.
Started 10/18/82 | Boring Method HSA | Volume _____ | _____ between _____ ft. & _____ ft.
Completed 10/18/82 | | Seepage at _____ ft. | _____ between _____ ft. & _____ ft.

Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
		Topsoil- Sand, damp, dark-brown, fine, slight clay binder.
		Sand- Damp, dark brown, fine-med.,
SNR	1-1-1	Peat- Soft, dark-brown, trace of wet sand.
	3-3-2	Sand- Slightly compact, dark-brown, med., trace of gravel, fine.
	7-6-5	GRAIN SIZE ANALYSIS @ 15'
EOB		

17.0' of pipe used including point, #7slot screen.

NOTE WELL MW#4-D

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Project Jackson City Landfill Job No. _____
Location Jackson, Michigan Permit No. _____

LOG OF BORING

Boring Number 5-0
Depth Drilled 19 ft.
Surface Elev. 942 ft.
Date Started 10/18/82
Date Completed 10/18/82

Crew Chief Klitz
Helper Gryska
Drill Rig 55
Boring Method HSA

Ground Water:
Encountered at 12.5'+ ft.
After Completion _____ ft.
After _____ hrs: _____ ft.
Volume v. heavy
Seepage at 3'- ft.

Plugging Record
Boring Sealed with:
ex. soil between 1 ft. & 19 ft.
bent between 0 ft. & 1 ft.
_____ between _____ ft. & _____ ft.
_____ between _____ ft. & _____ ft.

Depth In Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
1.0'			Topsoil- Sand, damp, black, fine.
3.0'			Clay- Moist, brown, very silty.
6.5'			Sand- Wet, brown, fine, med.
			Clay- Soft, black, silty, organic with sand senses.
12.5'			Sand- Compact, brown, fine-silty.
19.0'			
	EOB		
			21'8" of pipe used, including point, #6slot screen.

NQ79 W1920 AAW45-0

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Project Jackson City Landfill
Location Jackson, Michigan
Job No. _____
Permit No. _____

LOG OF BORING

Boring Number 6-0
Depth Drilled 35 ft.
Surface Elev. 914 ft.
Date Started 10/18/82
Date Completed 10/18/82

Crew Chief Klitz
Helper Gryska
Drill Rig CME 55
Boring Method HSA

Ground Water:
Encountered at 3'± ft.
After Completion _____ ft.
After _____ hrs: _____ ft.
Volume v heavy
Seepage at 3' ft.

Plugging Record
Boring Sealed with:
exc between 35 ft. & 1 ft.
bent between 0 ft. & 1 ft.
_____ between _____ ft. & _____ ft.
_____ between _____ ft. & _____ ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
1.0'			Topsoil- Sand, camp, dark-brown, black, fine.
3.0'			Clay- Moist, brown, with gray motteling, very silty.
6.5'		4-5-5	Sand- Compact, brown, fine-med.
12.5'		2for 18"	Clay- Soft, black, silty, organic, with sand lenses 1" or less.
19.0'		5-6-6	Sand- Compact, brown, fine, silty.
			GRAIN SIZE ANALYSIS @20'
25.5'		10-15-12	Sand- Very compact, brown, med-coarse, with some gravel, fine-med., occ. very small clay layer 2" or less.
30.0'		11-10-9	Sand- Very compact, gray-brown, fine, silty.
		10-7-10	Sand- Compact, brown, fine-med.
			GRAIN SIZE ANALYSIS @30'
35.0'		10-7-11	
		EOB	

36'6" of pipe used including point, #7slot screen.

A1979 W1825 AA446-9

GEO-TEK INC.
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Project Jackson City Landfill Job No. _____
Location Jackson, Michigan Permit No. _____

LOG OF BORING

Boring Number 7-0 | Crew Chief Klitz | Ground Water: Encountered at 13.5' ft. | Plugging Record: Boring Sealed with:
Depth Drilled 21 ft. | Helper Gryska | After Completion 5' toc ft. | exc between 21 ft. & 1 ft.
Surface Elev. 930 ft. | Drill Rig CME 55 | After ____ hrs: ____ ft. | ben between 0 ft. & 1 ft.
Date Started 10/18/82 | Boring Method HSA | Volume v. heavy | ____ between ____ ft. & ____ ft.
Date Completed 10/18/82 | | Seepage at 6' ft. 5' toc | ____ between ____ ft. & ____ ft.

Depth In Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
1.0'			Topsoil- Sand, damp, dark-brown, fine.
6.0'		8-6-5	Sand- Compact, brown and light brown, fine, med.
		5-4-6	Sand- Compact, brown, fine, with silty sand layers 6" or less, occ. slight clay binder.
13.5'			GRAIN SIZE ANALYSIS @ 15'
18.0'		3-4-5	Sand- Compact, gray-fine, with trace of silty sand lenses.
21.0'		5-4-6	Sand- Compact, brown, fine-med., bits of coal or shale.
	EOB		

21' - 8" total pipe including point, #6 slot screen

N990 W1525 MW #7-0

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Project Jackson City Landfill Job No. _____
Location Jackson, Michigan Permit No. _____

LOG OF BORING

Boring Number 8-0 | Crew Chief Klitz | Ground Water: Encountered at 5'± ft. | Plugging Record: Boring Sealed with:
Depth Drilled 21 ft. | Helper Gryska | After Completion _____ ft. | exc between 21 ft. & 1 ft.
Surface Elev. 926 ft. | Drill Rig _____ | After _____ hrs: _____ ft. | bent between 0 ft. & 1 ft.
Date Started 10/18/82 | Boring Method HSA | Volume _____ | _____ between _____ ft. & _____ ft.
Date Completed 10/18/82 | _____ | Seepage at _____ ft. | _____ between _____ ft. & _____ ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
1.0'			Topsoil- Sand, damp, dark-brown.
		6-4-3	Sand- Compact, brown, fine.
10.5'		4-3-4	Sand- Compact, brown, fine, traces of fine-silty sand.
14.0'		6-4-5	Sand- Compact, gray, fine, silty, with occ. small layers of silt.
			GRAIN SIZE ANALYSIS @ 15'
21.0'		3-1-2	
			EOB

21' - 8" total pipe including point, #6 slot screen.

N1039. W1025 MW#8-0

GEO-TEK INC.
SUBSURFACE EXPLORATION
P.O. Box 116 Lowell, Mich. 49331 • Bus. Phone: (616) 897-5581

Project Jackson Prison Job No. GT-1166
Location Permit No.

LOG OF BORING

Boring Number #1
Depth Drilled 41 ft.
Surface Elev. 930 ft.
Date Started 11/12/79
Date Completed 11/12/79

Crew Chief Qualls
Helper Klitz
Drill Rig 45
Boring Method HSA

Ground Water:
Encountered at 12' ft.
After Completion 7'± ft.
After ____ hrs. ____ ft.
Volume ____
Seepage at 6' ft.
wetcave 7'

Plugging Record
Boring Sealed with: Ex. Soil
____ between 0 ft. & 41 ft.
____ between ____ ft. & ____ ft.
____ between ____ ft. & ____ ft.
____ between ____ ft. & ____ ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
1.0'			Topsoil- Darkbrown, sand.
			Sand- Damp, brown, med.
6.0'			
		12-15-15	Sand- Wet, brwon, ext. compact, with a clay binder.
12.0'			
		5-6-6	Sand- Compact, brown, fine.
17.0'			
		12-16-21	Sand- Ext. compact, gray, fine, with sediment.
23.0'			
		12-18-21	Sand- Ext. compact, gray, fine.
		24-43-61	
		20-34-42	
38.0'			
41'		56-70-93	Sandstone- Ext. compact, white, fractured.

GEO-TEK INC.
SUBSURFACE EXPLORATION
P.O. Box 116 Lowell, Mich. 49331 • Bus. Phone: (616) 897-5581

Point set at 22'.

Project Proposed Landfill Jackson Prison
Location Jackson, Michigan
Job No. GT-1166
Permit No.

LOG OF BORING

SW
Monitor Well

Boring Number #1
Depth Drilled 22 ft.
Surface Elev. ft.
Date Started 12/7/79
Date Completed 12/7/79

Crew Chief Klitz
Helper Rozema
Drill Rig 45
Boring Method HSA

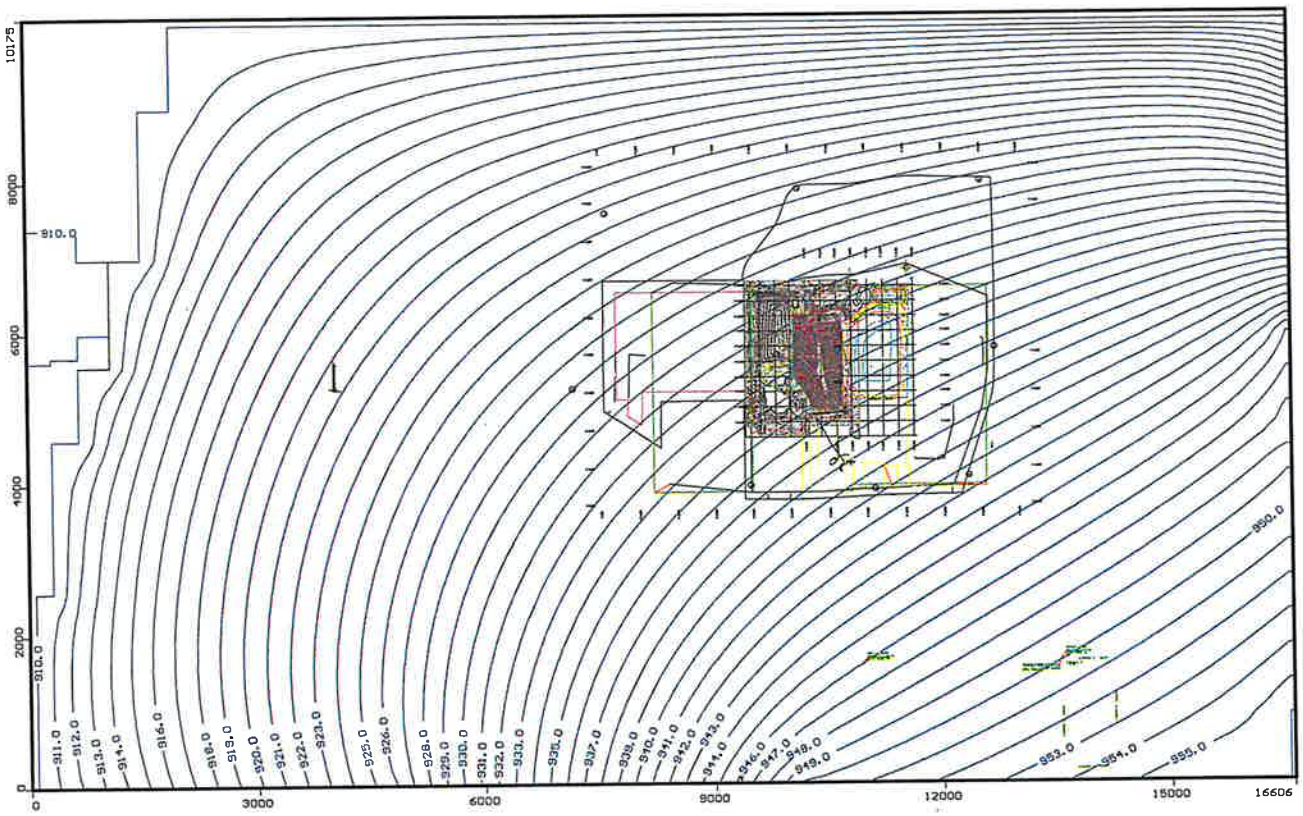
Ground Water:
Encountered at 6 5'± ft.
After Completion 6'5" ft.
After hrs. ft.
Volume
Seepage at ft.
T.O.C. 6.5'

Plugging Record
Boring Sealed with: Ex. Soil
between 0 ft. & 22 ft.
between ft. & ft.
between ft. & ft.
between ft. & ft.

Depth in Feet	Sample Type	Penetration ASTM D 1586	SOIL DESCRIPTION
8"			Topsoil- Sand, damp, dark-brown, med.
6.0'			Sand- Damp, brown, and dark-brown, med.
			Sand- Wet, brown, med.
22.0'			EOB

APPENDIX F

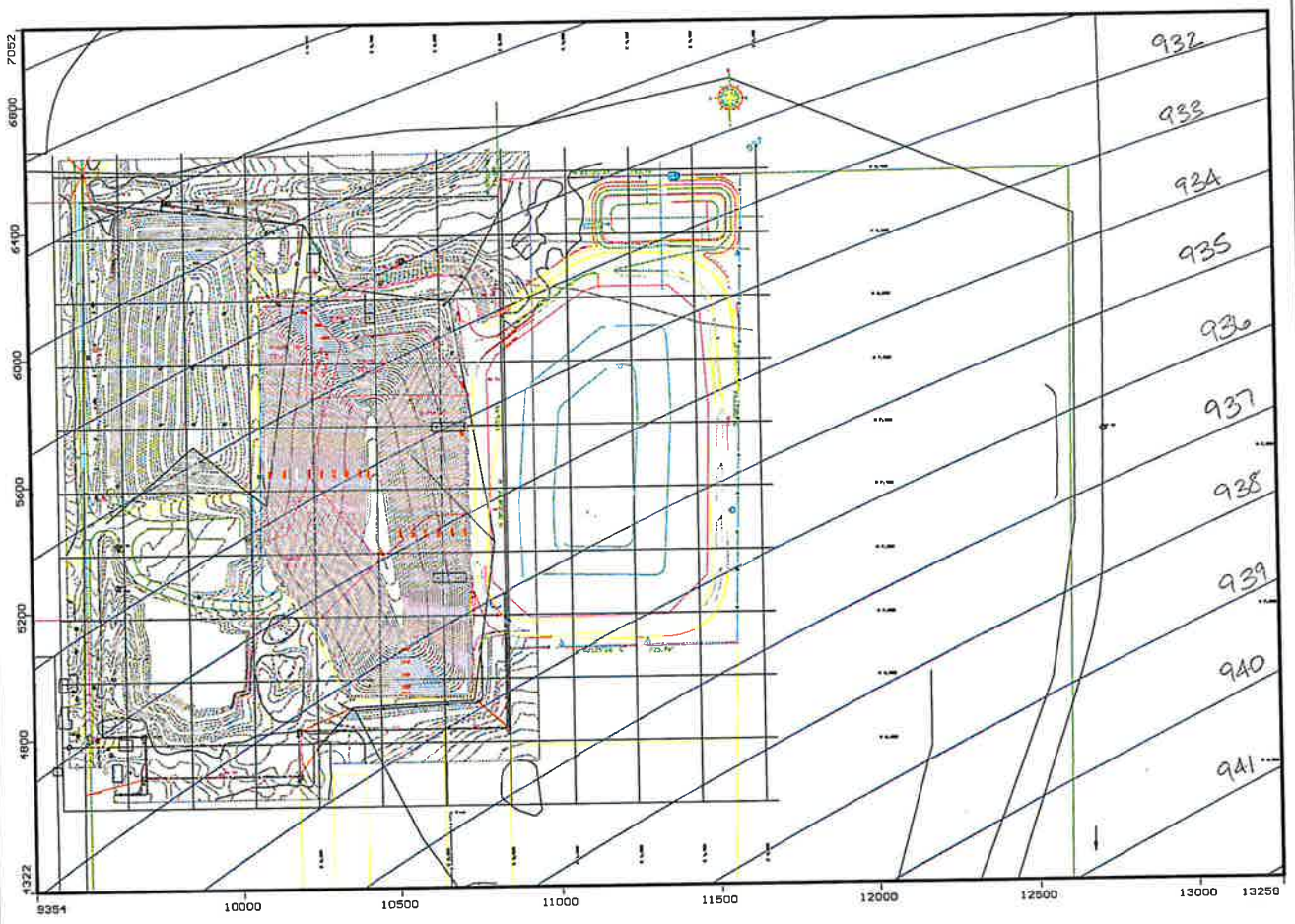
GROUNDWATER MOUNDING ANALYSIS



NTH
Project: McGill
Description: Steady State
23 Dec 03

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Waterloo Hydrogeologic, Inc.
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Current Layer: 4

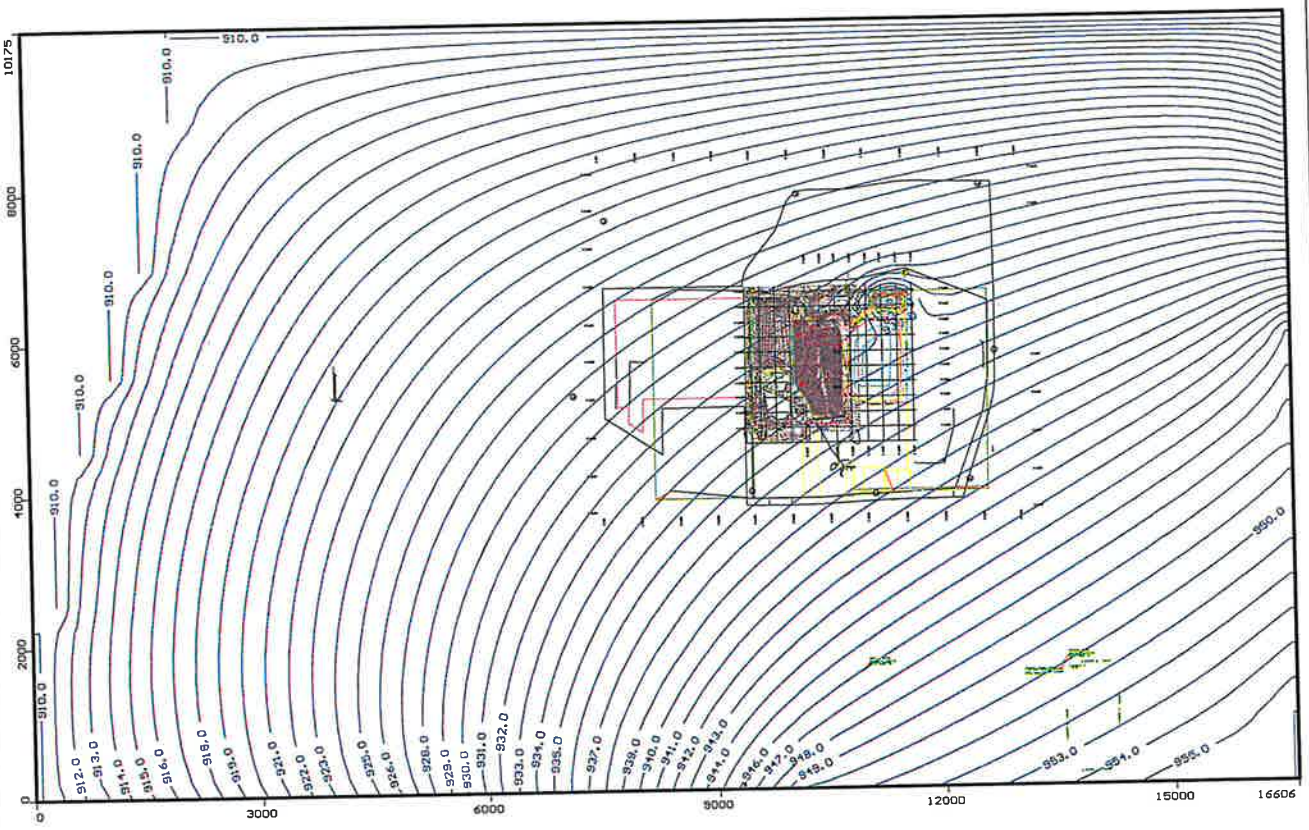
Figure F-1



NTH
Project: McGill
Description: Steady State
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995–1999
Waterloo Hydrogeologic, Inc.
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Current Layer: 4

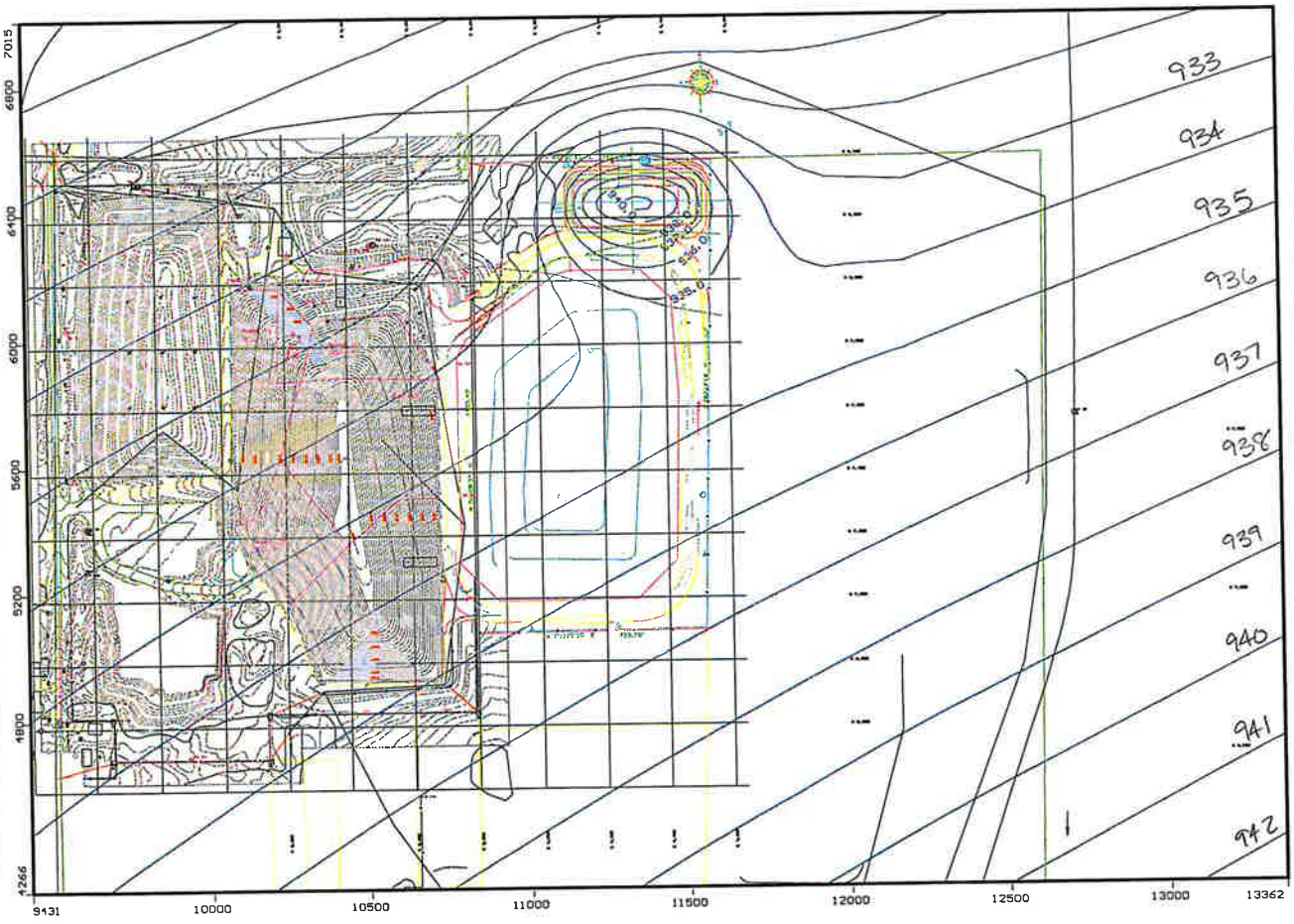
Figure F-2



NTH
Project: McGill
Description: Recharge at Pond
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995–1999
Waterloo Hydrogeologic, Inc.
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Current Layer: 4

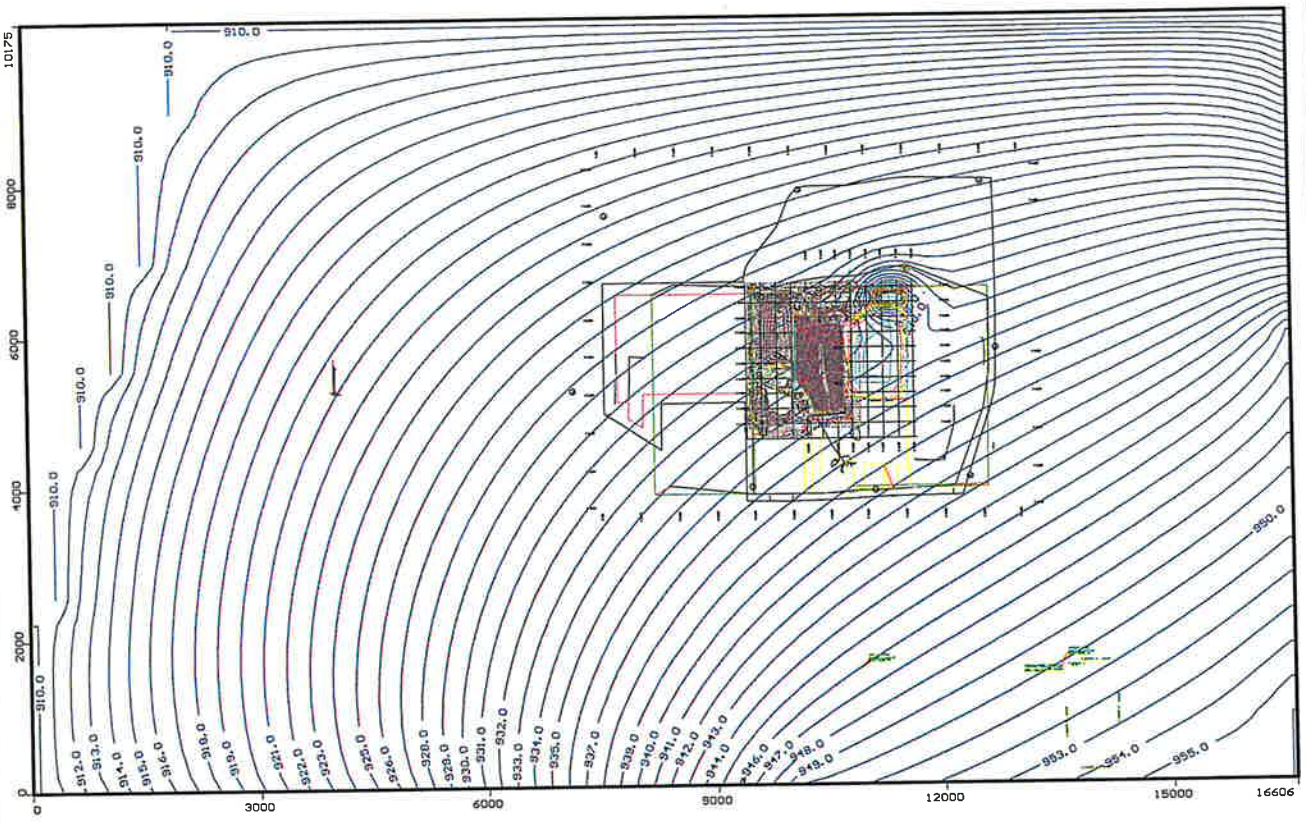
Figure F-3



NTH
Project: McGill
Description: Recharge at Pond
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995–1999
Waterloo Hydrogeologic, Inc.
NC: 59 NR: 66 NL: 5
Current Layer: 4

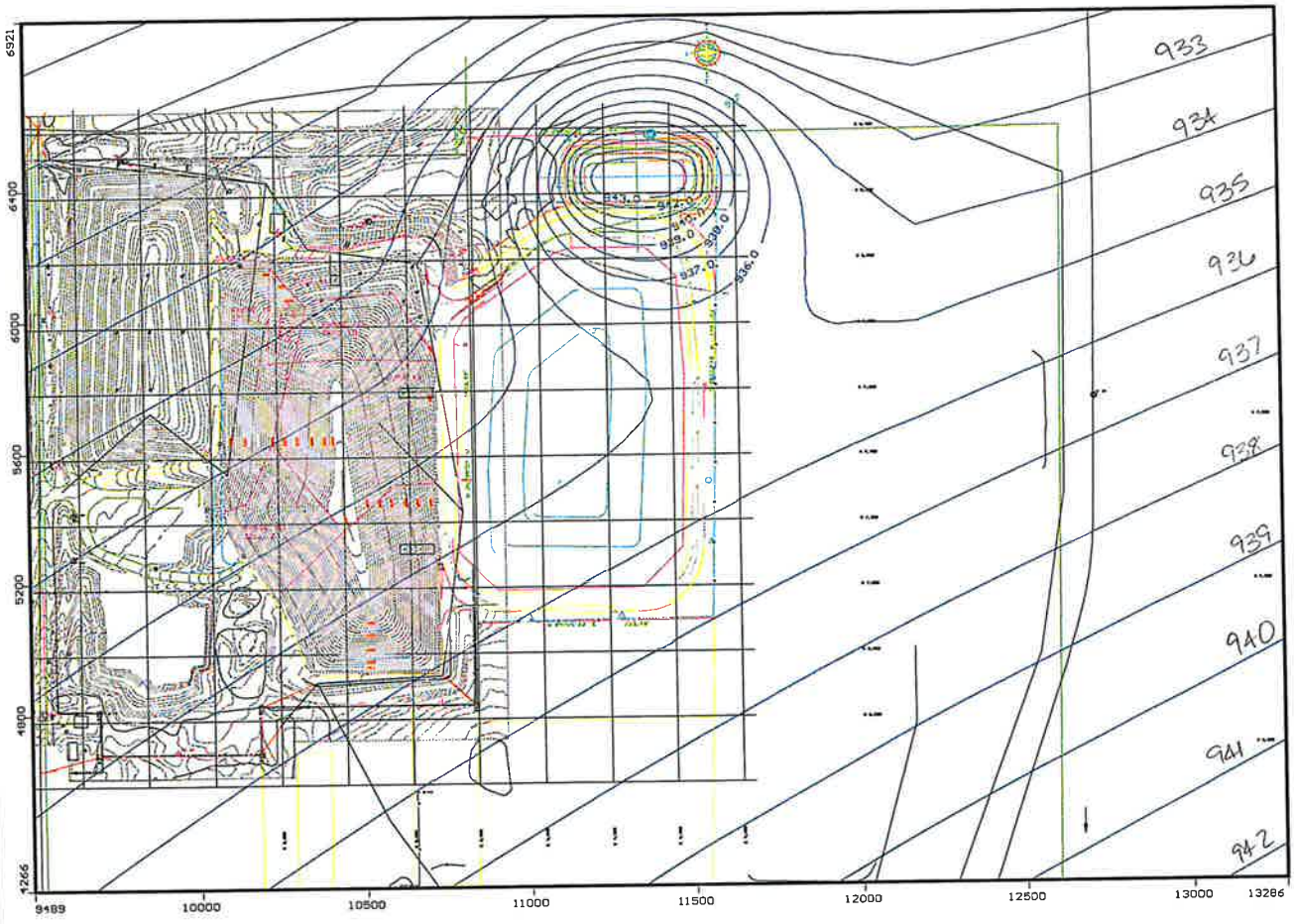
Figure F-4



NTH
Project: McGill
Description: Recharge at Silted Pond
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995–1999
Waterloo Hydrogeologic, Inc.
NC: 59 NR: 66 NL: 5
Current Layer: 4

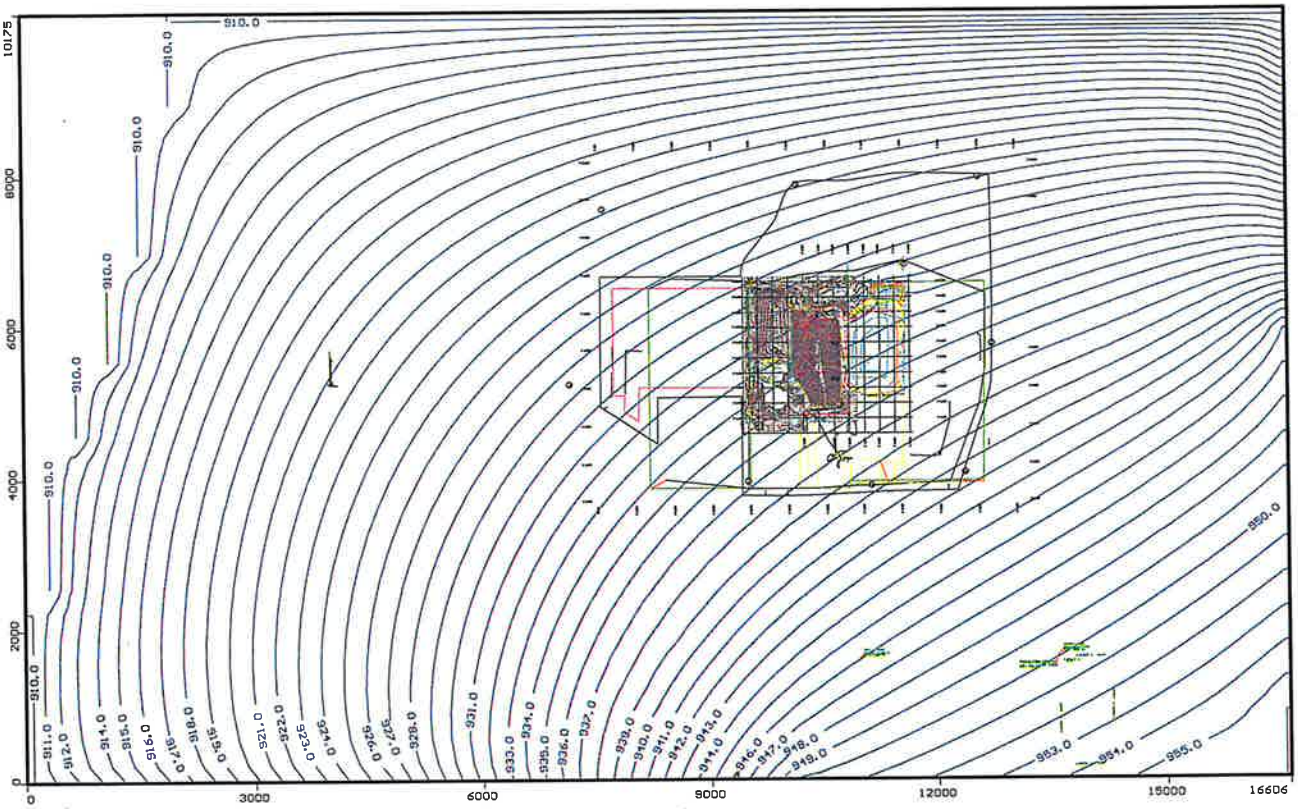
Figure F-5



NTH
Project: McGill
Description: Recharge at Silted Pond
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995–1999
Waterloo Hydrogeologic, Inc.
NC: 59 NR: 66 NL: 5
Current Layer: 4

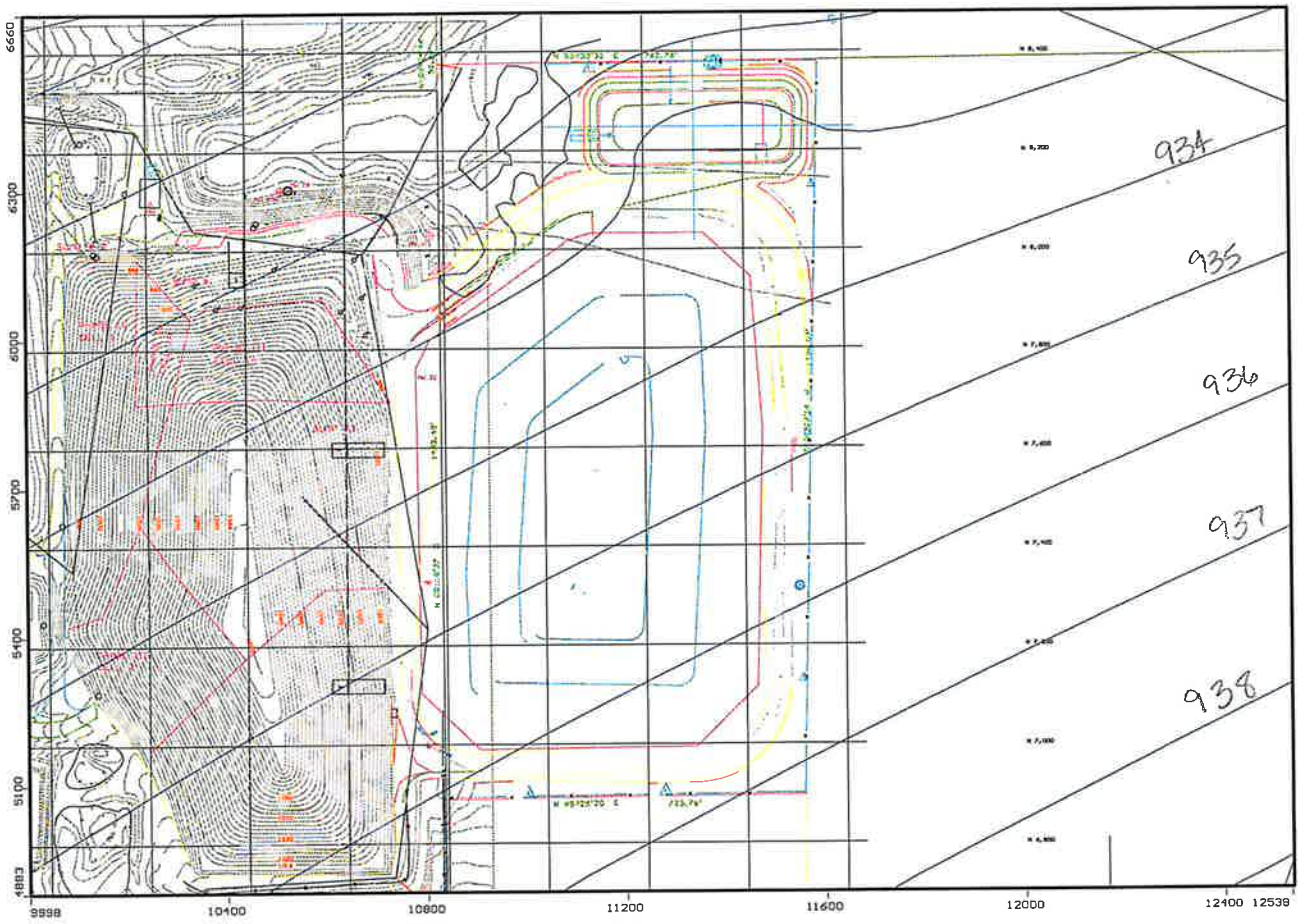
Figure F-6



NTH
Project: McGill
Description: Recharge w/ 1ftClay 1E-7
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995-1999
Waterloo Hydrogeologic, Inc.
NC: 59 NR: 66 NL: 5
Current Layer: 4

Figure F-7



NTH
Project: McGill
Description: Recharge w/ 1ftClay 1E-7
23 Dec 03

Visual MODFLOW v.2.8.2, (C) 1995-1999
Waterloo Hydrogeologic, Inc.
NC: 59 NR: 66 NL: 5
Current Layer: 4

Figure F-8

Appendix B

October 25, 2024 Project No. US0022880.1075

Mr. Brett Coulter, CPG
Michigan Department of Environment, Great Lakes, and Energy
Waste Management & Radiological Protection Division
Jackson District Office
301 E. Louis Glick Highway
Jackson, Michigan 49201

HYDROGEOLOGIC MONITORING AND STATISTICAL EVALUATION REPORT
MCGILL ROAD LANDFILL – THIRD QUARTER 2024

Dear Mr. Coulter:

On behalf of WM of Michigan, Inc. (WM), WSP USA Inc. (WSP), has prepared the Third Quarter 2024 Hydrogeologic Monitoring and Statistical Evaluation Report for the McGill Road Landfill (MRL) in Jackson, Michigan. This report was prepared in accordance with the requirements of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as well as the site's Hydrogeologic Monitoring Plan and Operating License.

This report also serves as notification to the Michigan Department of Environment, Great Lakes, and Energy (EGLE), that a notice has been placed in the MRL Operating Record, pursuant to Rule 440(8)(a) of Part 115, Solid Waste Management, of the Natural Resources Protection Act, 1994 PA 451 regarding the observed verified statistical exceedances. A summary of the exceedances is presented on Table 1, Summary of Statistical Exceedances.

In accordance with Rule 440(9), MRL has 30 days from the date of determination to demonstrate that the cause of the statistical exceedances is a source other than the landfill, an error in sampling, analysis, statistical evaluation or natural variations in groundwater chemistry. This demonstration is included herein. If the Director notifies MRL that a successful demonstration has not been made, then, within 15 days of notification by the Director, MRL will undertake actions required pursuant to Rule 440(8)(b).

Remedial Action Plan (RAP) parameters have been below the Part 201 GRDWC established by EGLE since second quarter 2023. Since the concentration of the two RAP parameters have remained below the applicable cleanup criteria in all of the RAP monitoring wells for five consecutive monitoring events, MRL petitioned EGLE for final closure of the RAP with the previous quarterly submittal.

WSP USA Inc.
46850 Magellan Drive, Suite 190 Novi, MI 48377 T: +1 248 536-5435

This *Third Quarter 2024 Hydrogeologic Monitoring & Statistical Evaluation Report, McGill Road Landfill,* has been prepared in compliance with applicable Part 115 regulations by a qualified groundwater scientist or engineer with WSP USA Inc., of Novi, Michigan.

If you have any questions, please contact us or Mr. Steve Walters of WM at (586) 634-8085.

Sincerely,

WSP USA Inc.

Rachel B. Rubach
Consultant, Environmental Engineer

Mary L. Siegan, P.E.
Assistant Vice President, Environmental Engineer

RBR/MLS

CC: McGill Road Landfill – Operating Record
Mr. Steve Walters, WM of Michigan

Attachments: Third Quarter 2024 Hydrogeologic Monitoring & Statistical Evaluation Report – McGill Road Landfill – (electronic only)
Lab Data Electronic Data Delivery file – (electronic only)

https://wsponline.sharepoint.com/sites/global-mcgillroadlandfill/shared documents/6 deliverables/2024/3q24/final/fn cv - mcgill 3q2024.docx

REPORT

Third Quarter 2024 Hydrogeologic Monitoring & Statistical Evaluation Report

McGill Road Landfill

WDS No. 444391

Submitted to:

McGill Road Landfill

3895 McGill Road, Jackson, Michigan

Submitted by:

WSP USA Inc.

46850 Magellan Drive, Suite 190, Novi, Michigan, USA 48377

+1 248 295 0135

US0022880.1075

October 25, 2024

Distribution List

Brett Coulter - EGLE (electronic only)

Ron Feldcamp - McGill Road Landfill

Steve Walters - WM of Michigan (electronic only)

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Appendix B – Statistical Analyses
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1.0 MONITORING PLAN ADHERENCE

WSP USA Inc. has completed this third quarter 2024 monitoring report for the McGill Road Landfill (MRL). The landfill is located within Section 24, Township 2 South, Range 1 West, Blackman Township and Section 19, Township 2 South, Range 1 East, Leoni Township, in Jackson County, Michigan (the site). The site address is 3895 McGill Road, Jackson, Michigan.

Third quarter 2024 monitoring and reporting for MRL were performed in accordance with the approved Hydrogeologic Monitoring Plan (HMP) for MRL, dated March 2005, revised March 16, 2011. The HMP incorporates the groundwater monitoring program from the Remedial Action Plan (RAP), dated April 23, 2004 (revised February 3, 2005), that complies with the requirements of Part 201 (P.A. 451 of 1994) and associated Administrative Rules. The RAP was approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on April 19, 2005.

Designated sampling parameters, test methods, method detection limits, and corresponding containers, preservatives, and holding times for samples collected at MRL are summarized in the March 2005 HMP, as revised. Water level measurement procedures, sample collection methods, and decontamination procedures for this most recent sampling event were performed in accordance with the HMP and applicable Part 115 Rules.

The third quarter 2024 represents a quarterly sampling event for the site. Therefore, groundwater samples were collected from the monitorable units at MRL. Samples were analyzed for the quarterly primary inorganic indicator parameters. Samples were also collected in accordance with the RAP program. The analytical results for the groundwater samples collected are discussed in detail below.

2.0 THIRD QUARTER 2024 MONITORING RESULTS & DISCUSSION

Groundwater samples for the third quarter 2024 were collected by personnel from Environmental Sampling Services, Inc. (ESS) on July 18, 2024. Resampling of MW-21 took place on September 6, 2024. Field Information Forms provided by ESS are included in Appendix A, Analytical Results & Field Data Forms. Laboratory analysis of the samples was performed by Eurofins Environment Testing America (ETA) of Amherst, New York. The analytical data report provided by ETA is also included in Appendix A.

As shown on the laboratory analytical report from ETA, groundwater samples from twenty (20) monitoring wells, two (2) primary leachate samples, and two (2) secondary collection system samples were submitted for the MRL site. Surface water samples were not collected during the July 2024 sampling event but are collect during the second and fourth quarter events when flow is observed. Verification sampling of dissolved boron at monitoring well MW-21 occurred in September. The methodologies, laboratory recovery data, and chain-of-custody forms are included within the laboratory data report contained in Appendix A. Quality assurance and quality control (QA/QC) review for each sample is provided as part of ETA individual reports. Review of the QA/QC summary provided by ETA indicates the test results are in compliance with the requirements of the applicable laboratory certification programs and quality control data were found to be within acceptable limits unless otherwise noted in the laboratory job narrative.

2.1 Groundwater Elevation Measurements

Groundwater elevations were recorded from the wells at MRL prior to collecting samples. Pursuant to Rule 907(5), we used the water level data to develop Figure 1, Groundwater Elevation Contour Map (Third Quarter 2024). The water levels at MW-13, MW-14, and MW-59 were elevated due to heavy precipitation and were not used when developing the contour map. Recently recorded water levels from these wells have returned to typical

measurements. Review of Figure 1 shows the general direction of groundwater flow across the closed portion of site is toward the north-northwest. The general direction of groundwater flow across the operating portion of site is toward the north-northeast. The groundwater flow pattern observed during this monitoring event is consistent with previous observations.

2.2 Groundwater Gradient and Flow Velocity

In accordance with Rule 907(5) of Part 115, the groundwater flow velocity at MRL was calculated using a derivation of Darcy's Law. Specifically,

$$V = \frac{K * i}{n_e}$$

where:

V = Groundwater flow velocity $\left(\frac{feet}{day}\right)$

K = Average Permeability of the aquifer $\left(\frac{feet}{day}\right)$

i = Horizontal hydraulic gradient $\left(\frac{feet}{feet}\right)$

n_e = Effective porosity

Groundwater flow velocities have been calculated for the site at the locations (flow paths) labeled "A" and "B" on Figure 1. Groundwater flow velocities were calculated using hydraulic gradients along each flow path, an assumed effective porosity of 30 percent (based on silt content), and the average permeability (0.6 feet/day [ft/day] for the closed portion of site and 1.37 ft/day for the operating areas).

As calculated, the groundwater flow velocity across the closed portion of the site (Flow Path A) was estimated at approximately 0.03 ft/day (11.9 feet per year [ft/year]). The groundwater flow velocity across the operating portion of the site (Flow Path B) was estimated at approximately 0.05 ft/day (18.6 ft/year). The calculated groundwater flow velocities are consistent with historic values for the respective areas of the site.

3.0 ANALYTICAL RESULTS AND STATISTICAL ANALYSES

Figure 1 presents a "line of demarcation" that differentiates the areas of the site that are monitorable and unmonitorable, based on the location and configuration of the cells and the groundwater flow direction. This demarcation aligns with the closed and operating areas where the closed area is unmonitorable and the operating area is monitorable. As such, the groundwater monitoring program has been divided into three separate systems:

- A detection monitoring program has been designed to identify changes in the groundwater quality downgradient of the operating monitorable unit.
- A groundwater monitoring program for the closed unmonitorable units has been developed to provide continued evaluation of groundwater quality in the area of known historic impacts.
- A RAP program has been established in accordance with the approved Remedial Action Plan (February 3, 2005) to monitor groundwater quality and compare to clean-up standards.

The September verification resampling results did not confirm the July results for dissolved boron at MW-21. The July 2024 result for dissolved boron at MW-21 has been made an outlier for statistical purposes. Reported analytical results for the third quarter 2024 monitoring event are included in Appendix A. The following subsections discuss our review of the reported data in detail.

3.1 Monitorable Unit Detection Monitoring

The recent analytical data from the monitorable unit (Phase V) has been statistically evaluated using intra-well comparisons, in accordance with the site's current approved HMP. Application of the statistical comparisons are made by using the approved DUMPStat computer program, which calculates control limits depicted on Shewhart-CUSUM Control Charts for intra-well comparisons. The background period for detection monitoring extends through December 2012. The resulting statistical control charts and control limits are included as Appendix B, Statistical Analyses. Also included in Appendix B is a statistical power curve showing the false positive and false negative rates for the control chart analysis and a tabulation of the control limits for each indicator parameter at each monitoring well.

The attached Table 1 presents the statistical exceedances from the current reporting event along with those identified during the three (3) preceding events. Table 3.1 below presents relevant information regarding the Statistically Significant Increases (SSIs) identified during the current monitoring event.

Table 3.1 - Intra-Well Control Chart Statistically Significant Increase Summary (mg/L)

Well	Parameter	Concentration	Part 201 GRDWC	Control Limit
MW-21R	Boron, dissolved	0.048	0.5	0.0473
	Chloride	49.9	250	17.4633
MW-22R	Chloride	42.9	250	22.0513
	Sodium, dissolved[1]	5.0	230	5.7747
MW-206	Boron, dissolved[2]	0.26	0.5	0.0307
MW-212SR	Chloride	30.1	250	5.9754
	Sodium, dissolved	15.8	120	8.6586

[1] Where the concentration is below the control limit, the SSI was triggered by the CUSUM exceeding the control limit.

[2] Denotes exceedance is a recurring initial exceedance that has been identified in previous monitoring events. In lieu of immediate verification sampling, an alternate source demonstration is provided below.

3.2 Alternate Source Demonstration

Rule 440(9) of Part 115 regulations allows a site 30 days (from determination) to prepare an Alternate Source Demonstration (ASD) that apparent statistically significant increases are from a source other than the landfill unit or that the statistically significant increase resulted from errors in sampling, analysis, statistical evaluation, or from natural variation in groundwater quality. The following text is provided as an ASD that the above exceedances are due to sources other than a release from the landfill.

Each of the SSIs identified during this monitoring event have occurred during previous events and as a result the ASDs for these exceedances have been presented in prior reports. The previous ASDs are applicable to the current monitoring results and a summary of the ASDs are included below. Note that the detection monitoring wells are located within the flow path of a double-lined landfill unit, which contains a secondary collection system (SCS). Review of SCS flow rates from Phase V (Table 2, Secondary Collection System Flow Rates) indicates that there have been no exceedances of the action flow rate (AFR) in the Phase V SCS. This serves as the primary evidence that the liner systems are functioning appropriately and that there has not been leakage through the landfill liner.

Dissolved Boron and Chloride (MW-21R)

Verified control limit exceedances of boron and chloride at MW-21R were observed following the July 2024 event. Monitoring well MW-21R is located downgradient of the Phase V landfill unit where the SCS flow rates have not been exceeded. The reported boron concentration at MW-21R for the third quarter 2024 sampling event (0.048 mg/L) does not exceed the Part 201 generic residential drinking water criteria (GRDWC) of 0.5 mg/L. Review of the control charts indicates that dissolved boron concentrations are not part of any trend and are typically not detected at concentrations above 0.02 mg/L. The dissolved boron concentration is also within range of concentrations previously observed at this well.

Review of the control charts indicate that the concentration of chloride at MW-21R follows a similar pattern to boron at the same well. The current concentration (49.9 mg/L) is also low and in itself evidence that leachate has not caused the observed change. Chloride concentrations in leachate are generally between 4,500 mg/L and 5,000 mg/L. A leachate release to groundwater would result in a significant change in groundwater chemistry and significant increases in chloride concentrations which has not occurred. Based on these observations, it is unlikely that the SSIs reported at MW-21R are due to landfill influence on the groundwater.

Dissolved Sodium and Chloride (MW-22R)

Verified control limit exceedances of chloride and dissolved sodium were identified at MW-22R during the July 2024 sampling event. Review of the control charts indicate the SSI of sodium is the result of the CUSUM exceeding the control limit, while the reported concentration of chloride is below the control limit. The concentration of sodium has remained fairly consistent with no sudden increases in concentration. While chloride concentrations have also not increased suddenly, an increasing trend in chloride concentrations at this well is apparent.

None of the parameters showing control limit exceedances in well MW-22R have concentrations greater than their respective Part 201 generic residential drinking water criteria (GRDWC), as noted in Table 3.1 above. Thus, reported concentrations are protective of human health and the environment. Previous sampling in January 2023 of cations and anions at this well indicated that the groundwater at MW-22R was more similar to the upgradient wells than the leachate. Additionally, VOCs have not been detected in well MW-22R. Based on these observations, it is unlikely that the SSIs reported at MW-22R are due to landfill influence on the groundwater.

Dissolved Sodium and Chloride (MW-212SR)

Verified statistical exceedances of dissolved sodium and chloride were noted for upgradient monitoring well MW-212SR following the July 2024 sampling event. This well is located hydraulically upgradient of the unit as shown on the groundwater elevation contour map (Figure 1). The purpose of upgradient background is to identify background groundwater quality and characterize local or long-term changes in background quality. Since MW-212SR is an upgradient background well, changes in groundwater quality are – by definition – not attributable to a release from the unit. The noted SSIs are likely the result of natural variability in groundwater not accommodated by the background data for the site. The sodium concentration observed at MW-212SR remains historically elevated but the concentration has decreased since last sampling event.

Review of groundwater elevations confirms the upgradient position of this monitoring well and no mounding has been observed. As a result, any statistical exceedance observed at an upgradient monitoring well cannot reasonably be the result of a release from the lined landfill cell. Based on this fact, the verified statistical exceedances noted for upgradient monitoring well MW-212SR are not the result of an impact by the landfill and are the result of natural variability in upgradient groundwater quality.

Dissolved Boron (MW-206)

An initial statistical exceedance of dissolved boron was noted for upgradient monitoring well MW-206. This well is located hydraulically upgradient of the unit as shown on the groundwater elevation contour map (Figure 1). The purpose of upgradient background is to identify background groundwater quality and characterize local or long-term changes in background quality. Since MW-206 is an upgradient background well, changes in groundwater quality are – by definition – not attributable to a release from the unit. The noted SSI is likely the result of natural variability in groundwater not accommodated by the background data for the site.

Review of groundwater elevations confirms the upgradient position of this monitoring well and no mounding is observed. As a result, any statistical exceedance observed at an upgradient monitoring well cannot reasonably be the result of a release from the lined landfill cell. Based on this fact, the initial statistical exceedance noted for upgradient monitoring well MW-206 is not the result of an impact by the landfill and is the result of natural variability in upgradient groundwater quality. The historically elevated boron concentratoin will be confirmed during the next quarterly montioring event.

ALTERNATE SOURCE DEMONSTRATION SUMMARY

The preceding information serves as an “Alternate Source Demonstration” prepared in accordance with Rule 440(10) and supports the position that the observed SSIs are not caused by a release from the landfill. Unless otherwise requested by EGLE, the monitorable unit at MRL will remain in “Detection Monitoring”.

3.3 Closed Unit Detection Monitoring Program

The closed landfill units no longer receive waste and are in semi-annual post-closure monitoring. Except for Phase I, the closed units at the MRL facility are double-lined with a leak detection system (LDS). The LDS provides the primary means of ensuring detection and capture of liquids that may be present outside the primary liner system. To evaluate the groundwater quality within the closed (unmonitorable) portion of the site, the groundwater analytical data are compared to the EGLE established Part 201 Generic Residential Drinking Water Criteria (GRDWC) and evaluated for trends. Groundwater samples from the unmonitorable unit monitoring wells are collected during the second and fourth quarters.

MRL continues to sample monitoring wells MW-60 and MW-62S for VOCs on a quarterly basis, in accordance with the approved ASD that MRL submitted on May 15, 2000. The detection of VOCs other than those referenced in the ASD, or an increasing trend for any of the existing VOCs, would be considered a “statistically significant” increase to be addressed under R299.4440(8). During the July 2024 sampling event, VOCs were detected at monitoring wells MW-60 and MW-62S as follows:

Well ID	1,1-dichloroethane	Cis-1,2-dichloroethene	Trans-1,2-dichloroethene	Trichloroethene	Vinyl chloride
MW-60	1.1	12	<1.0	1.3	2.3
MW-62S	<1.0	<1.0	<1.0	<1.0	<1.0
Part 201 GRDWC	880	70	100	5.0	2.0

Trend charts, which present the VOC data at MW-60 and MW-62S, are included in Appendix C. In general, the same parameters continue to be detected at the respective monitoring wells. As shown in the table above, observed concentrations are below the Part 201 GRDWC, with the exception of vinyl chloride at MW-60, detected at 2.3

micrograms per liter (ug/L), which is above the GRDWC for vinyl chloride is 2.0 ug/L. Review of the trend charts indicates that the detected parameters do not exhibit an overall increasing trend at either MW-60 or MW-62S.

3.4 Remedial Action Plan Monitoring Results

In addition to the Part 115 detection groundwater monitoring program, MRL performs groundwater monitoring in accordance with the approved RAP. RAP parameters include dissolved boron and sulfate. Trend charts, which present the RAP monitoring data, are included in Appendix C. As shown, the RAP parameters have been below the Part 201 GRDWC established by EGLE since second quarter 2023. Since the concentration of the two RAP parameters have remained below the applicable cleanup criteria in all of the RAP monitoring wells for five consecutive monitoring events, MRL has petitioned EGLE for final closure of this RAP with this submittal.

3.5 Leachate Monitoring

On July 18, 2024, ESS collected one (1) composite leachate sample from Phases II, III, and IV (sumps 2, 3, and 4); designated as “Phase III/IV COMP” and one (1) grab sample from Phase V (sump 5), designated as “Phase V”. Results of leachate analyses are included in Appendix A.

3.6 Secondary Collection System Monitoring

Table 2 presents a tabulation of the “average daily flow rate” for each secondary collection system (SCS) sump at MRL. Pursuant to Rule 101(o) of the Part 115 Administrative Rules, the “average daily flow rate” is calculated monthly by averaging the flow rate for the current month with those from the preceding two months. As presented in Table 2, the calculated flow rates for sumps #1, #2, and #4 were less than the applicable AFR of 5 gallons per acre per day (g/a/d) and sump #5 was less than the applicable AFR of 25 g/a/d during the third quarter of 2024. Calculated flow rates for sum #3 exceeded the applicable AFR of 5 g/a/d for all months in the quarter.

Samples were collected from Sump #3 Secondary and Sump #4 Secondary on July 18, 2024. Results are presented in Appendix A. Due to the AFR exceedances at Sump #3, the analytical data was compared to the leachate data. The liquid present in the Sump #3 SCS is not characteristic of landfill leachate. Review of analytical data shows that key leachate indicator parameters including various metals, sulfate, and specific conductance occur in SCS Sump #3 at concentrations that are significantly lower than those observed in the site leachate. If the liquids present in the SCS sumps had been a leachate source, the concentrations observed would be similar to those typically observed in leachate. The low inorganic indicator concentrations in the SCS sample suggests that another source, such as surface water infiltration, may be responsible for the elevated flow in this cell.

Pursuant of Part 115 Rule 437(3)(b), since it has been shown that the liquids in Sump #3 SCS do not contain hazardous substances indicative of leachate from the landfill unit, no further response actions are required at this time.

4.0 CONCLUSIONS

This hydrogeologic monitoring and statistical evaluation report has been prepared to meet the requirements of Act 451, Part 115, the site’s HMP, and operating license. The groundwater flow direction across the closed portion of site is toward the north-northwest with a flow velocity of 0.04 ft/day. The groundwater flow direction across the operating portion of the site is toward the north-northeast with a flow velocity of 0.05 ft/day.

The average SCS daily flow rates were below the AFR of 5 g/a/d during the third quarter 2024 except at Sump #3 for all months in the third quarter. Sampling of the SCS sump indicated that the liquids present are not representative of site leachate.

Statistical evaluation of the groundwater monitoring data for the monitorable portion of the site (Phase V) indicated seven control limit exceedances of groundwater monitoring parameters both upgradient and downgradient of the landfill. An ASD is included within this report that concludes the SSIs are the result of natural variability in groundwater chemistry and not the result of a release from the landfill.

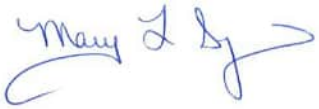
RAP parameters have remained below the applicable cleanup criteria in all of the RAP monitoring wells for five consecutive monitoring events; therefore, MRL petitioned EGLE with the second quarter 2024 hydrogeological monitoring report submittal for final closure of the RAP.

Signature Page

WSP USA Inc.



Rachel B. Rubach
Consultant, Environmental Engineer



Mary L. Siegan, P.E.
Assistant Vice President, Environmental Engineer

RBR/MLS

https://wsponline.sharepoint.com/sites/global-mcgillroadlandfill/shared documents/6 deliverables/2024/3q24/final/2024_mrl_3q2024_rpt_fn. 10-25-24.docx

TABLES

Table 1 - Summary of Statistical Exceedances and RAP Monitoring Results
Table 2 - Secondary Collection System Flow Rates

TABLE 1.

US0022880.1075

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY
SUMMARY OF STATISTICAL EXCEEDANCES AND RAP MONITORING RESULTS

FACILITY: MCGILL ROAD LANDFILL									
Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or "CC" for Control Charts)	Units	Parameter Concentration			
						4th Quarter 2023 (bold > 201)	1st Quarter 2024 (bold > 201)	2nd Quarter 2024 (bold > 201)	3rd Quarter 2024 (bold > 201)
Monitorable Unit									
MW-21R	Downgradient	Boron, dissolved	0.5	CC	mg/L	DNE	DNE	0.32	0.048
		Chloride	250	CC	mg/L	29.1	42.2	37.2	49.9
		Total Inorganic Nitrogen	n/a	CC	mg/L	DNE	DNE	DNE	DNE
MW-22R	Downgradient	Arsenic, dissolved	0.01	CC	mg/L	0.0033	NS	0.0055	NS
		Barium, dissolved	2	CC	mg/L	0.15	NS	0.15	NS
		Chloride	250	CC	mg/L	41.0	42.7	41.5	42.9
		Potassium, dissolved	n/a	CC	mg/L	DNE	1.2	DNE	DNE
		Sodium, dissolved	230	CC	mg/L	5.1	5.3	4.9	5.0
MW-206	Upgradient	Boron, dissolved	0.5	CC	mg/L	0.08	DNE	DNE	0.26
		Sodium, dissolved	230	CC	mg/L	6.4	6.3	DNE	DNE
MW-212SR	Upgradient	Sodium, dissolved	230	CC	mg/L	DNE	DNE	18.8	15.8
		Chloride	250	CC	mg/L	9.1	24.7	21.7	30.1
MW-213	Downgradient	Total Inorganic Nitrogen	n/a	CC	mg/L	DNE	DNE	0.03	DNE
Unmonitorable Unit									
MW-3R	Downgradient	Arsenic, dissolved	0.01	N/A	mg/L	**0.025**	NS	DNE	NS
MW-10R	Downgradient	Arsenic, dissolved	0.01	N/A	mg/L	**0.025**	NS	DNE	NS

COMMENTS:

DNE = Did Not Exceed

N/A = not applicable, no Part 201 GRCC

NS = Not Sampled

^2 - Calibration blank outside of acceptance limits

TABLE 2.
SECONDARY COLLECTION SYSTEM FLOW RATES
MCGILL ROAD LANDFILL

YEAR	MONTH	DAYS IN RECORD PERIOD	Phase II Sump #1 AFR = 5 g/a/d Cell Area = 4.11 Acres			Phase IV Sump #2 AFR = 5 g/a/d Cells 1 & 1A Area = 2.73 Acres			Phase III Sump #3 AFR = 5 g/a/d Cell 1, 1A & 2 Area = 7.77 Acres			Phase III Sump #4 AFR = 5 g/a/d Cell 4 Area = 4.56 Acres			Phase V Sump #5 AFR = 25 g/a/d Cells 1A, 1B, & 1C Area = 15.20 Acres[5]		
			Monthly Flow (gallons)	Average Daily Flow (g/a/d)	3-Month Average (g/a/d)	Monthly Flow (gallons)	Average Daily Flow (g/a/d)	3-Month Average (g/a/d)	Monthly Flow (gallons)	Average Daily Flow (g/a/d)	3-Month Average (g/a/d)	Monthly Flow (gallons)	Average Daily Flow (g/a/d)	3-Month Average (g/a/d)	Monthly Flow (gallons)	Average Daily Flow (g/a/d)	3-Month Average (g/a/d)
2023	October	28	11	0.1	0.2	54	0.7	0.2	267	1.2	1.1	101	0.8	0.3	140	0.4	0.5
	November	28	38	0.3	0.2	68	0.9	0.5	271	1.2	1.3	3	0.0	0.3	115	0.3	0.4
	December	35	72	0.5	0.3	193	2.0	1.2	2,194	8.1	3.5	15	0.1	0.3	503	1.2	0.7
2024	January	28	25	0.2	0.3	0	0.0	1.0	1,023	4.7	4.7	845	6.6	2.2	1786	5.3	2.3
	February	28	278	2.4	1.0	87	1.1	1.1	4,202	19.3	10.7	782	6.1	4.3	1532	4.5	3.7
	March	35	98	0.7	1.1	0	0.0	0.4	4,231	15.6	13.2	115	0.7	4.5	357	0.8	3.6
	April	28	172	1.5	1.5	115	1.5	0.9	4,507	20.7	18.5	415	3.3	3.4	1084	3.2	2.9
	May	35	115	0.8	1.0	0	0.0	0.5	5,305	19.5	18.6	141	0.9	1.6	370	0.9	1.6
	June	28	155	1.3	1.2	83	1.1	0.9	1,101	5.1	15.1	34	0.3	1.5	405	1.2	1.8
	July	28	99	0.9	1.0	203	2.7	1.2	4,762	21.9	15.5	1195	9.4	3.5	900	2.7	1.6
	August	35	298	2.1	1.4	59	0.6	1.5	2,542	9.3	12.1	87	0.5	3.4	440	1.0	1.6
	September	28	207	1.8	1.6	0	0.0	1.1	548	2.5	11.3	20	0.2	3.4	0	0.0	1.2

Notes:

[1] Secondary flow rates are calculated according to Rule 101(o) by averaging the flow rate for the current month with those of the previous 2 months.

[2] Average daily flow rates are calculated based on recorded weekly flow volumes for the specified month.

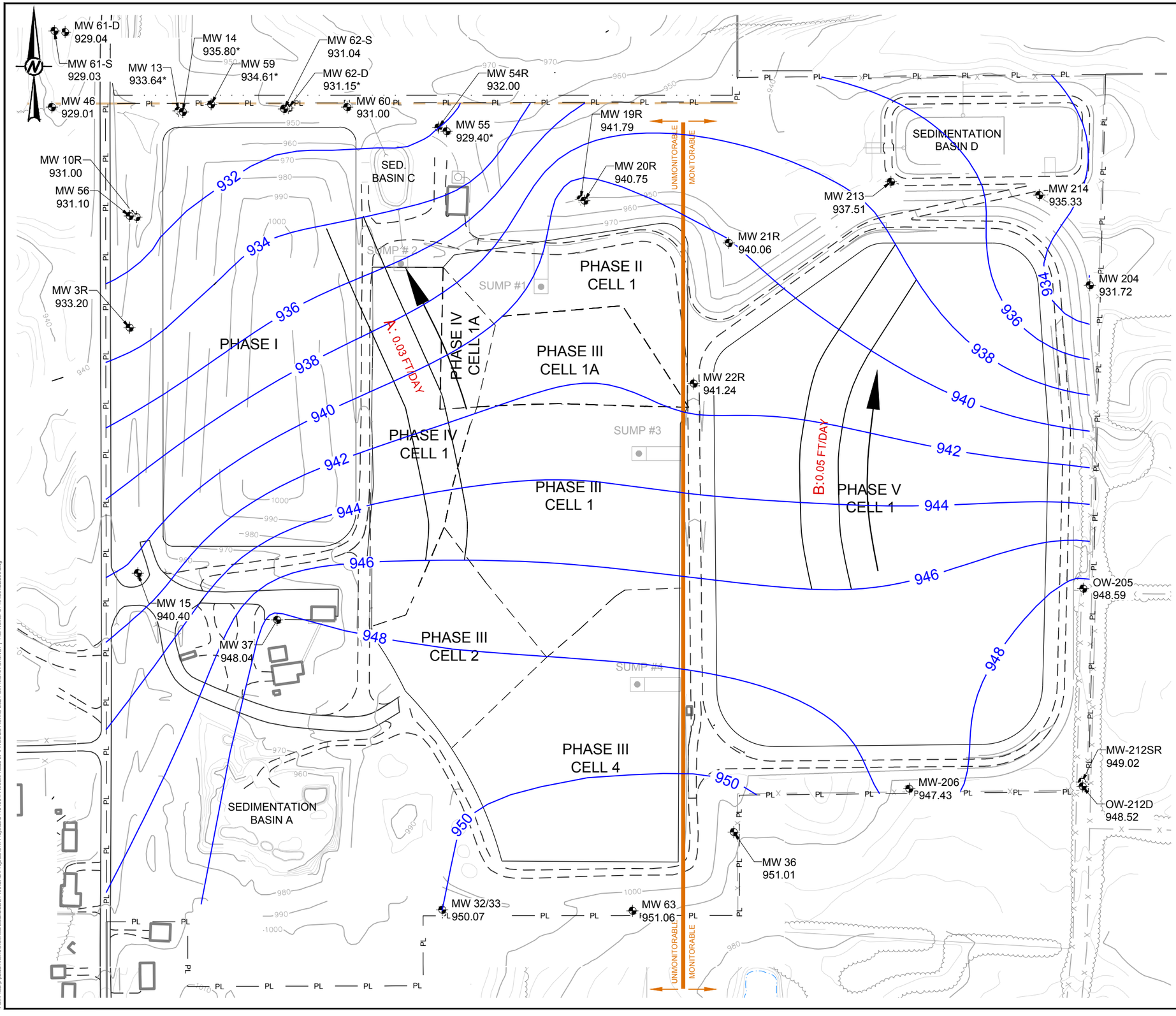
[3] AFR - Action Flow Rate

[4] g/a/d = gallons/acre/day

[5] New flow meter in Phase II Sump #1 was replaced on August 18, 2023. Monthly flow for volume in August is approximate.

FIGURES

Figure 1 – Groundwater Contour Map (Third Quarter 2024)



LEGEND

PL	PROPERTY BOUNDARY
	SOLID WASTE BOUNDARY
	CELL BOUNDARY
MW XXX XXX.XX	MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
XXX	GROUNDWATER ELEVATION CONTOUR
MW 214	GROUNDWATER MONITORING WELLS SCREENED IN GROUNDWATER AQUIFER
MW 63	GROUNDWATER MONITORING WELLS SCREENED IN PERCHED ZONE
MW 55	ASSESSMENT MONITORING WELL

FLOW RATE: A: 0.03 FT/DAY
B: 0.05 FT/DAY

NOTES

1. MW-55, MW-13, MW-14, and MW-59 NOT USED TO GENERATE GROUNDWATER CONTOURS DUE TO ANOMALOUS ELEVATION DATA.

2. MW-62-D IS A DEEP WATER WELL NOT USED TO GENERATE GROUNDWATER CONTOURS.

REFERENCE

BASE MAP FEATURES AND WELL LOCATIONS PROVIDED BY CTI; DATED JANUARY, 2014.

SCALE 0 100 200 FEET

CLIENT
WASTE MANAGEMENT
McGILL ROAD LANDFILL
JACKSON COUNTY, MICHIGAN

PROJECT
2024 GROUNDWATER MONITORING

TITLE
GROUNDWATER ELEVATIONS CONTOUR MAP
3RD QUARTER 2024

CONSULTANT

YYYY-MM-DD	2024-08-14
PREPARED	CAG
DESIGN	RR
REVIEW	
APPROVED	

PROJECT No.	CONTROL	Rev.	FIGURE
31404861B	31404861BB006.dwg	A	1

Path: \\corp.pbwan.net\US\Central\Data\USDET\001CAD\Projects\31x-Projects\31404861A-McGill Road LF\PRODUCTION\C-2024 GW MONITORING\ | File Name: 31404861BB006.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX A

Analytical Results & Field Data Forms

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Walters
Waste Management
3895 McGill Road
Jackson, Michigan 49201

Generated 8/7/2024 12:41:21 PM

JOB DESCRIPTION

McGill Road Landfill
Qtrly GW - Active Unmonitorable (1,7)
Qtrly Leach - Active (1,7,10)
Quarterly GW - Active (1,7)
Quarterly RAP Mont. (1,4,7,10)
Quarterly RAP Mont. (1,7)
Secondary Leachate Collection(1,4,7,10)

JOB NUMBER

480-221858-1

Eurofins Buffalo
10 Hazelwood Drive
Amherst NY 14228-2298

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization



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Definitions/Glossary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F3	Duplicate RPD exceeds the control limit
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
480-221858-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 7/19/2024 12:00 PM and 7/20/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.6°C, 3.0°C, 3.3°C and 3.4°C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-719339 recovered above the upper control limit for 2-Hexanone. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-60 (480-221887-1) and MW-62S (480-221887-2).

Method 8260C: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: PHASE III/IV COMP (480-221858-1) and PHASE V (480-221858-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
Method 2540C_Calcd: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: PHASE III/IV COMP (480-221858-1), PHASE V (480-221858-2), SUMP 3 Secondary (480-221861-1) and SUMP 4 Secondary (480-221861-2). The reporting limits (RLs) have been adjusted proportionately.

Method 9012B_NP: The continuing calibration blank (CCB), method blank (MB), and initial calibration blank (ICB) for analytical batch 480-720335 contained Cyanide, Total above the reporting limit (RL). All reported samples associated with these blanks were ND for this analyte; therefore, re-analysis of samples was not performed.

Method 9012B_NP: Reanalysis of the following sample was performed outside of the analytical holding time due to instrumentation issues : SUMP 3 Secondary (480-221861-1). Both sets of data have been reported.

Method 9038: The results reported for the following sample do not concur with results previously reported for this site: MW-62S (480-221884-3). Reanalysis was performed, and the result(s) confirmed.

Method SM4110B_28D: The following samples were diluted to bring the concentration of target analytes within the calibration range: PHASE III/IV COMP (480-221858-1) and PHASE V (480-221858-2). Elevated reporting limits (RLs) are provided.

Method SM4110B_28D: The following samples were diluted due to the nature of the sample matrix: SUMP 3 Secondary (480-221861-1), SUMP 4 Secondary (480-221861-2), MW-204 (480-221885-1), MW-206 (480-221885-2), MW-21 (480-221885-3), MW-212SR (480-221885-4), MW-213 (480-221885-5), MW-214 (480-221885-6), MW-22R (480-221885-7) and MW-36 (480-221885-8). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Field Service / Mobile Lab
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: PHASE III/IV COMP — Lab Sample ID: 480-221858-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Iron	4.9		0.050		mg/L	1		6010C	Total/NA
Total Inorganic Nitrogen	35.4		0.050		mg/L	1		Inorganic N	Total/NA
Total Dissolved Solids	2250		10.0		mg/L	1		SM 2540C	Total/NA
Chloride	1280		28.2		mg/L	100		SM 4110B	Total/NA
Sulfate	84.5		34.9		mg/L	100		SM 4110B	Total/NA
Field pH	7.38				SU	1		Field Sampling	Total/NA
Field Conductivity	5680				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	16.0				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: PHASE V — Lab Sample ID: 480-221858-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Iron	4.2		0.050		mg/L	1		6010C	Total/NA
Total Inorganic Nitrogen	40.2		0.050		mg/L	1		Inorganic N	Total/NA
Total Dissolved Solids	2210		10.0		mg/L	1		SM 2540C	Total/NA
Chloride	1290		28.2		mg/L	100		SM 4110B	Total/NA
Sulfate	86.4		34.9		mg/L	100		SM 4110B	Total/NA
Field pH	7.32				SU	1		Field Sampling	Total/NA
Field Conductivity	9780				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	16.3				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: SUMP 3 Secondary — Lab Sample ID: 480-221861-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	1.3		1.0		ug/L	1		8260C	Total/NA
Benzene	1.5		1.0		ug/L	1		8260C	Total/NA
Barium	0.11		0.0020		mg/L	1		6010C	Total/NA
Boron	0.13		0.020		mg/L	1		6010C	Total/NA
Calcium	27.3		0.50		mg/L	1		6010C	Total/NA
Iron	2.1		0.020		mg/L	1		6010C	Total/NA
Magnesium	7.1		0.20		mg/L	1		6010C	Total/NA
Manganese	0.18		0.0030		mg/L	1		6010C	Total/NA
Potassium	5.2		0.50		mg/L	1		6010C	Total/NA
Sodium	674		1.0		mg/L	1		6010C	Total/NA
Antimony	0.0053		0.0010		mg/L	1		6020A	Total/NA
Arsenic	0.060		0.0010		mg/L	1		6020A	Total/NA
Lead	0.0014		0.0010		mg/L	1		6020A	Total/NA
Nickel	0.0068		0.0010		mg/L	1		6020A	Total/NA
Alkalinity, bicarb (CaCO3)	2120		200		mg/L	50		310.2	Total/NA
Chemical Oxygen Demand	50.1		10.0		mg/L	1		410.4	Total/NA
Total Organic Carbon	10.4		1.0		mg/L	1		9060A	Total/NA
Total Inorganic Nitrogen	0.85		0.050		mg/L	1		Inorganic N	Total/NA
Total Dissolved Solids	1770		10.0		mg/L	1		SM 2540C	Total/NA
Chloride	146		1.4		mg/L	5		SM 4110B	Total/NA
Sulfate	28.7		2.0		mg/L	5		SM 4110B	Total/NA
Field pH	7.29				SU	1		Field Sampling	Total/NA
Field Conductivity	3260				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	15.3				Degrees C	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 4 Secondary — Lab Sample ID: 480-221861-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	1.4		1.0		ug/L	1		8260C	Total/NA
Benzene	1.5		1.0		ug/L	1		8260C	Total/NA
Barium	0.12		0.0020		mg/L	1		6010C	Total/NA
Boron	0.11		0.020		mg/L	1		6010C	Total/NA
Calcium	27.9		0.50		mg/L	1		6010C	Total/NA
Iron	6.0		0.020		mg/L	1		6010C	Total/NA
Magnesium	7.2		0.20		mg/L	1		6010C	Total/NA
Manganese	0.19		0.0030		mg/L	1		6010C	Total/NA
Potassium	5.2		0.50		mg/L	1		6010C	Total/NA
Sodium	681		1.0		mg/L	1		6010C	Total/NA
Antimony	0.0055		0.0010		mg/L	1		6020A	Total/NA
Arsenic	0.071		0.0010		mg/L	1		6020A	Total/NA
Lead	0.0016		0.0010		mg/L	1		6020A	Total/NA
Nickel	0.0068		0.0010		mg/L	1		6020A	Total/NA
Zinc	0.011		0.010		mg/L	1		6020A	Total/NA
Alkalinity, bicarb (CaCO3)	1990		200		mg/L	50		310.2	Total/NA
Chemical Oxygen Demand	43.9		10.0		mg/L	1		410.4	Total/NA
Total Organic Carbon	11.2		1.0		mg/L	1		9060A	Total/NA
Total Inorganic Nitrogen	0.83		0.050		mg/L	1		Inorganic N	Total/NA
Total Dissolved Solids	1990		10.0		mg/L	1		SM 2540C	Total/NA
Chloride	150		2.8		mg/L	10		SM 4110B	Total/NA
Sulfate	29.5		3.5		mg/L	10		SM 4110B	Total/NA
Field pH	7.18				SU	1		Field Sampling	Total/NA
Field Conductivity	3150				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	15.4				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-19R — Lab Sample ID: 480-221884-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.12		0.020		mg/L	1		6010C	Dissolved
Sulfate	91.2		7.5		mg/L	5		9038	Total/NA

Client Sample ID: MW-59 — Lab Sample ID: 480-221884-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.053		0.020		mg/L	1		6010C	Dissolved
Sulfate	11.9		2.0		mg/L	1		9038	Total/NA

Client Sample ID: MW-62S — Lab Sample ID: 480-221884-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.092		0.020		mg/L	1		6010C	Dissolved

Client Sample ID: MW-204 — Lab Sample ID: 480-221885-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Potassium, Dissolved	0.62		0.50		mg/L	1		6010C	Dissolved
Sodium, Dissolved	1.9		1.0		mg/L	1		6010C	Dissolved
Total Inorganic Nitrogen	0.18		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	3.9		0.56		mg/L	2		SM 4110B	Total/NA
Field pH	6.95				SU	1		Field Sampling	Total/NA
Field Conductivity	621				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.6				Degrees C	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Buffalo

Detection Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-206 — Lab Sample ID: 480-221885-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Calcium, Dissolved	64.2		0.50		mg/L	1		6010C	Dissolved
Potassium, Dissolved	0.99		0.50		mg/L	1		6010C	Dissolved
Magnesium, Dissolved	19.2		0.20		mg/L	1		6010C	Dissolved
Sodium, Dissolved	6.0		1.0		mg/L	1		6010C	Dissolved
Alkalinity, Bicarbonate	287		20.0		mg/L	5		310.2	Total/NA
Total Inorganic Nitrogen	0.066		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	13.9		0.56		mg/L	2		SM 4110B	Total/NA
Sulfate	29.6		2.0		mg/L	2		SM 4110B	Total/NA
Field pH	7.17				SU	1		Field Sampling	Total/NA
Field Conductivity	519				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	11.9				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-21 — Lab Sample ID: 480-221885-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.54		0.020		mg/L	1		6010C	Dissolved
Calcium, Dissolved	145		0.50		mg/L	1		6010C	Dissolved
Potassium, Dissolved	1.1		0.50		mg/L	1		6010C	Dissolved
Magnesium, Dissolved	58.4		0.20		mg/L	1		6010C	Dissolved
Sodium, Dissolved	18.1		1.0		mg/L	1		6010C	Dissolved
Alkalinity, Bicarbonate	507		104		mg/L	26		310.2	Total/NA
Chloride	49.4		1.4		mg/L	5		SM 4110B	Total/NA
Sulfate	93.8		2.0		mg/L	5		SM 4110B	Total/NA
Field pH	6.96				SU	1		Field Sampling	Total/NA
Field Conductivity	745				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	11.7				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-212SR — Lab Sample ID: 480-221885-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.020		0.020		mg/L	1		6010C	Dissolved
Potassium, Dissolved	1.4		0.50		mg/L	1		6010C	Dissolved
Sodium, Dissolved	15.8		1.0		mg/L	1		6010C	Dissolved
Chloride	30.1		0.56		mg/L	2		SM 4110B	Total/NA
Field pH	7.26				SU	1		Field Sampling	Total/NA
Field Conductivity	632				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.2				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-213 — Lab Sample ID: 480-221885-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.023		0.020		mg/L	1		6010C	Dissolved
Calcium, Dissolved	100		0.50		mg/L	1		6010C	Dissolved
Potassium, Dissolved	1.0		0.50		mg/L	1		6010C	Dissolved
Magnesium, Dissolved	30.6		0.20		mg/L	1		6010C	Dissolved
Sodium, Dissolved	4.4		1.0		mg/L	1		6010C	Dissolved
Alkalinity, Bicarbonate	446		20.0		mg/L	5		310.2	Total/NA
Total Inorganic Nitrogen	0.065		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	8.8		0.56		mg/L	2		SM 4110B	Total/NA
Sulfate	37.6		2.0		mg/L	2		SM 4110B	Total/NA
Field pH	7.13				SU	1		Field Sampling	Total/NA
Field Conductivity	634				umhos/cm	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Buffalo

Client Sample ID: MW-213 (Continued) — Lab Sample ID: 480-221885-5

Analyte	Result	Qualifier	NONE		Unit	Dil Fac	D	Method	Prep Type
Field Temperature	13.4				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-214 — Lab Sample ID: 480-221885-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Potassium, Dissolved	0.69		0.50		mg/L	1		6010C	Dissolved
Sodium, Dissolved	2.1		1.0		mg/L	1		6010C	Dissolved
Total Inorganic Nitrogen	0.26		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	2.0		0.56		mg/L	2		SM 4110B	Total/NA
Field pH	7.27				SU	1		Field Sampling	Total/NA
Field Conductivity	554				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.2				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-22R — Lab Sample ID: 480-221885-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Calcium, Dissolved	97.1		0.50		mg/L	1		6010C	Dissolved
Potassium, Dissolved	1.1		0.50		mg/L	1		6010C	Dissolved
Magnesium, Dissolved	36.4		0.20		mg/L	1		6010C	Dissolved
Sodium, Dissolved	5.0		1.0		mg/L	1		6010C	Dissolved
Alkalinity, Bicarbonate	226		20.0		mg/L	5		310.2	Total/NA
Total Inorganic Nitrogen	0.12		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	42.9		1.4		mg/L	5		SM 4110B	Total/NA
Sulfate	78.4		2.0		mg/L	5		SM 4110B	Total/NA
Field pH	7.17				SU	1		Field Sampling	Total/NA
Field Conductivity	625				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.3				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-36 — Lab Sample ID: 480-221885-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Calcium, Dissolved	105		0.50		mg/L	1		6010C	Dissolved
Potassium, Dissolved	1.5		0.50		mg/L	1		6010C	Dissolved
Magnesium, Dissolved	31.7		0.20		mg/L	1		6010C	Dissolved
Sodium, Dissolved	16.3		1.0		mg/L	1		6010C	Dissolved
Alkalinity, Bicarbonate	364		20.0		mg/L	5		310.2	Total/NA
Total Inorganic Nitrogen	0.058		0.050		mg/L	1		Inorganic N	Total/NA
Chloride	29.8		1.4		mg/L	5		SM 4110B	Total/NA
Sulfate	80.2		2.0		mg/L	5		SM 4110B	Total/NA
Field pH	7.16				SU	1		Field Sampling	Total/NA
Field Conductivity	463				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.4				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: JCL-WELL 11 — Lab Sample ID: 480-221886-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.071		0.020		mg/L	1		6010C	Dissolved
Sulfate	15.5		2.0		mg/L	1		9038	Total/NA

Client Sample ID: JCL-WELL 12 — Lab Sample ID: 480-221886-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.073		0.020		mg/L	1		6010C	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample ID: JCL-WELL 12 (Continued) — Lab Sample ID: 480-221886-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Sulfate	16.2		2.0		mg/L	1		9038	Total/NA

Client Sample ID: JCL-WELL 13 — Lab Sample ID: 480-221886-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.026		0.020		mg/L	1		6010C	Dissolved
Sulfate	40.3		7.5		mg/L	5		9038	Total/NA

Client Sample ID: JCL-WELL 14 — Lab Sample ID: 480-221886-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.023		0.020		mg/L	1		6010C	Dissolved
Sulfate	44.2		7.5		mg/L	5		9038	Total/NA

Client Sample ID: MW-20R — Lab Sample ID: 480-221886-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.50		0.020		mg/L	1		6010C	Dissolved
Sulfate	84.2		7.5		mg/L	5		9038	Total/NA

Client Sample ID: MW-21 — Lab Sample ID: 480-221886-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Sulfate	84.2		7.5		mg/L	5		9038	Total/NA

Client Sample ID: MW-62D — Lab Sample ID: 480-221886-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.18		0.020		mg/L	1		6010C	Dissolved
Sulfate	40.4		7.5		mg/L	5		9038	Total/NA

Client Sample ID: MW-60 — Lab Sample ID: 480-221887-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.1		1.0		ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	12		1.0		ug/L	1		8260C	Total/NA
Trichloroethene	1.3		1.0		ug/L	1		8260C	Total/NA
Vinyl chloride	2.3		1.0		ug/L	1		8260C	Total/NA
Field pH	7.38				SU	1		Field Sampling	Total/NA
Field Conductivity	493				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.4				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-62S — Lab Sample ID: 480-221887-2

Analyte	Result	Qualifier	NONE		Unit	Dil Fac	D	Method	Prep Type
Field pH	7.40				SU	1		Field Sampling	Total/NA
Field Conductivity	564				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	12.1				Degrees C	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PHASE III/IV COMP

Date Collected: 07/18/24 10:45
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221858-1

Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.8		ug/L			07/22/24 20:44	5
1,1,1-Trichloroethane	ND		4.1		ug/L			07/22/24 20:44	5
1,1,2,2-Tetrachloroethane	ND		1.1		ug/L			07/22/24 20:44	5
1,1,2-Trichloroethane	ND		1.2		ug/L			07/22/24 20:44	5
1,1-Dichloroethane	ND		1.9		ug/L			07/22/24 20:44	5
1,1-Dichloroethene	ND		1.5		ug/L			07/22/24 20:44	5
1,2,3-Trichloropropane	ND		4.5		ug/L			07/22/24 20:44	5
1,2-Dichlorobenzene	ND		4.0		ug/L			07/22/24 20:44	5
1,2-Dichloroethane	ND		1.1		ug/L			07/22/24 20:44	5
1,2-Dichloropropane	ND		3.6		ug/L			07/22/24 20:44	5
1,4-Dichlorobenzene	ND		4.2		ug/L			07/22/24 20:44	5
Benzene	ND		2.1		ug/L			07/22/24 20:44	5
Bromodichloromethane	ND		2.0		ug/L			07/22/24 20:44	5
Bromoform	ND		1.3		ug/L			07/22/24 20:44	5
Bromomethane	ND		5.0		ug/L			07/22/24 20:44	5
Carbon tetrachloride	ND		1.4		ug/L			07/22/24 20:44	5
Chlorobenzene	ND		3.8		ug/L			07/22/24 20:44	5
Chloroethane	ND		5.0		ug/L			07/22/24 20:44	5
Chloroform	ND		1.7		ug/L			07/22/24 20:44	5
Chloromethane	ND		5.0		ug/L			07/22/24 20:44	5
cis-1,2-Dichloroethene	ND		4.1		ug/L			07/22/24 20:44	5
cis-1,3-Dichloropropene	ND		1.8		ug/L			07/22/24 20:44	5
Dibromochloromethane	ND		1.6		ug/L			07/22/24 20:44	5
Dibromomethane	ND		2.1		ug/L			07/22/24 20:44	5
Ethylbenzene	ND		3.7		ug/L			07/22/24 20:44	5
Iodomethane	ND		1.5		ug/L			07/22/24 20:44	5
Methylene Chloride	ND		5.0		ug/L			07/22/24 20:44	5
Styrene	ND		3.7		ug/L			07/22/24 20:44	5
Tetrachloroethene	ND		1.8		ug/L			07/22/24 20:44	5
Toluene	ND		2.6		ug/L			07/22/24 20:44	5
trans-1,2-Dichloroethene	ND		4.5		ug/L			07/22/24 20:44	5
trans-1,3-Dichloropropene	ND		1.9		ug/L			07/22/24 20:44	5
Trichloroethene	ND		2.3		ug/L			07/22/24 20:44	5
Trichlorofluoromethane	ND		4.4		ug/L			07/22/24 20:44	5
Vinyl chloride	ND		4.5		ug/L			07/22/24 20:44	5
Xylenes, Total	ND		3.3		ug/L			07/22/24 20:44	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*07/22/24 20:44*	*5*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*07/22/24 20:44*	*5*
Toluene-d8 (Surr)	*99*		*80 - 120*		*07/22/24 20:44*	*5*

Method: SW846 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4.9**		0.050		mg/L		07/24/24 09:10	07/24/24 16:58	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**2250**		10.0		mg/L			07/23/24 12:56	1
Chloride (SM 4110B)	**1280**		28.2		mg/L			07/23/24 11:07	100

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: PHASE III/IV COMP

Date Collected: 07/18/24 10:45
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221858-1

Matrix: Leachate

General Chemistry (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SM 4110B)	84.5		34.9		mg/L			07/23/24 11:07	100

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	35.4		0.050		mg/L			07/22/24 15:25	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.38				SU			07/18/24 10:45	1
Field Conductivity	5680				umhos/cm			07/18/24 10:45	1
Field Temperature	16.0				Degrees C			07/18/24 10:45	1

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: PHASE V

Date Collected: 07/18/24 11:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221858-2

Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		3.5		ug/L			07/22/24 21:07	10
1,1,1-Trichloroethane	ND		8.2		ug/L			07/22/24 21:07	10
1,1,2,2-Tetrachloroethane	ND		2.1		ug/L			07/22/24 21:07	10
1,1,2-Trichloroethane	ND		2.3		ug/L			07/22/24 21:07	10
1,1-Dichloroethane	ND		3.8		ug/L			07/22/24 21:07	10
1,1-Dichloroethene	ND		2.9		ug/L			07/22/24 21:07	10
1,2,3-Trichloropropane	ND		8.9		ug/L			07/22/24 21:07	10
1,2-Dichlorobenzene	ND		7.9		ug/L			07/22/24 21:07	10
1,2-Dichloroethane	ND		2.1		ug/L			07/22/24 21:07	10
1,2-Dichloropropane	ND		7.2		ug/L			07/22/24 21:07	10
1,4-Dichlorobenzene	ND		8.4		ug/L			07/22/24 21:07	10
Benzene	ND		4.1		ug/L			07/22/24 21:07	10
Bromodichloromethane	ND		3.9		ug/L			07/22/24 21:07	10
Bromoform	ND		2.6		ug/L			07/22/24 21:07	10
Bromomethane	ND		6.9		ug/L			07/22/24 21:07	10
Carbon tetrachloride	ND		2.7		ug/L			07/22/24 21:07	10
Chlorobenzene	ND		7.5		ug/L			07/22/24 21:07	10
Chloroethane	ND		5.0		ug/L			07/22/24 21:07	10
Chloroform	ND		3.4		ug/L			07/22/24 21:07	10
Chloromethane	ND		5.0		ug/L			07/22/24 21:07	10
cis-1,2-Dichloroethene	ND		8.1		ug/L			07/22/24 21:07	10
cis-1,3-Dichloropropene	ND		3.6		ug/L			07/22/24 21:07	10
Dibromochloromethane	ND		3.2		ug/L			07/22/24 21:07	10
Dibromomethane	ND		4.1		ug/L			07/22/24 21:07	10
Ethylbenzene	ND		7.4		ug/L			07/22/24 21:07	10
Iodomethane	ND		3.0		ug/L			07/22/24 21:07	10
Methylene Chloride	ND		5.0		ug/L			07/22/24 21:07	10
Styrene	ND		7.3		ug/L			07/22/24 21:07	10
Tetrachloroethene	ND		3.6		ug/L			07/22/24 21:07	10
Toluene	ND		5.1		ug/L			07/22/24 21:07	10
trans-1,2-Dichloroethene	ND		9.0		ug/L			07/22/24 21:07	10
trans-1,3-Dichloropropene	ND		3.7		ug/L			07/22/24 21:07	10
Trichloroethene	ND		4.6		ug/L			07/22/24 21:07	10
Trichlorofluoromethane	ND		8.8		ug/L			07/22/24 21:07	10
Vinyl chloride	ND		9.0		ug/L			07/22/24 21:07	10
Xylenes, Total	ND		6.6		ug/L			07/22/24 21:07	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*		*07/22/24 21:07*	*10*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*07/22/24 21:07*	*10*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/22/24 21:07*	*10*

Method: SW846 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4.2**		0.050		mg/L		07/24/24 09:10	07/24/24 17:00	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**2210**		10.0		mg/L			07/23/24 12:56	1
Chloride (SM 4110B)	**1290**		28.2		mg/L			07/23/24 11:22	100

Eurofins Buffalo

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: PHASE V

Date Collected: 07/18/24 11:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221858-2

Matrix: Leachate

General Chemistry (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SM 4110B)	86.4		34.9		mg/L			07/23/24 11:22	100

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	40.2		0.050		mg/L			07/22/24 15:26	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.32				SU			07/18/24 11:00	1
Field Conductivity	9780				umhos/cm			07/18/24 11:00	1
Field Temperature	16.3				Degrees C			07/18/24 11:00	1

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 3 Secondary

Date Collected: 07/18/24 10:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-1

Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,1-Dichloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,1-Dichloroethene	ND		1.0		ug/L			07/23/24 04:38	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/23/24 04:38	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/23/24 04:38	1
1,2-Dibromoethane	ND		1.0		ug/L			07/23/24 04:38	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/23/24 04:38	1
1,2-Dichloroethane	ND		1.0		ug/L			07/23/24 04:38	1
1,2-Dichloropropane	ND		1.0		ug/L			07/23/24 04:38	1
1,4-Dichlorobenzene	**1.3**		1.0		ug/L			07/23/24 04:38	1
2-Hexanone	ND		5.0		ug/L			07/23/24 04:38	1
Acetone	ND		5.0		ug/L			07/23/24 04:38	1
Acrylonitrile	ND		5.0		ug/L			07/23/24 04:38	1
Benzene	**1.5**		1.0		ug/L			07/23/24 04:38	1
Bromochloromethane	ND		1.0		ug/L			07/23/24 04:38	1
Bromodichloromethane	ND		1.0		ug/L			07/23/24 04:38	1
Bromoform	ND		1.0		ug/L			07/23/24 04:38	1
Bromomethane	ND		5.0		ug/L			07/23/24 04:38	1
Carbon disulfide	ND		1.0		ug/L			07/23/24 04:38	1
Carbon tetrachloride	ND		1.0		ug/L			07/23/24 04:38	1
Chlorobenzene	ND		1.0		ug/L			07/23/24 04:38	1
Chloroethane	ND		5.0		ug/L			07/23/24 04:38	1
Chloroform	ND		1.0		ug/L			07/23/24 04:38	1
Chloromethane	ND		5.0		ug/L			07/23/24 04:38	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 04:38	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 04:38	1
Dibromochloromethane	ND		1.0		ug/L			07/23/24 04:38	1
Dibromomethane	ND		1.0		ug/L			07/23/24 04:38	1
Ethylbenzene	ND		1.0		ug/L			07/23/24 04:38	1
Iodomethane	ND		1.0		ug/L			07/23/24 04:38	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/23/24 04:38	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/23/24 04:38	1
Methylene Chloride	ND		5.0		ug/L			07/23/24 04:38	1
Styrene	ND		1.0		ug/L			07/23/24 04:38	1
Tetrachloroethene	ND		1.0		ug/L			07/23/24 04:38	1
Toluene	ND		1.0		ug/L			07/23/24 04:38	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 04:38	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 04:38	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/23/24 04:38	1
Trichloroethene	ND		1.0		ug/L			07/23/24 04:38	1
Trichlorofluoromethane	ND		1.0		ug/L			07/23/24 04:38	1
Vinyl chloride	ND		1.0		ug/L			07/23/24 04:38	1
Xylenes, Total	ND		3.0		ug/L			07/23/24 04:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*07/23/24 04:38*	*1*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*		*07/23/24 04:38*	*1*

Client Sample ID: SUMP 3 Secondary

Date Collected: 07/18/24 10:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-1
Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/23/24 04:38*	*1*

Method: SW846 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.11**		0.0020		mg/L		07/24/24 09:10	07/24/24 17:24	1
Beryllium	ND		0.00070		mg/L		07/24/24 09:10	07/24/24 17:24	1
Boron	**0.13**		0.020		mg/L		07/24/24 09:10	07/24/24 17:24	1
Calcium	**27.3**		0.50		mg/L		07/24/24 09:10	07/24/24 17:24	1
Chromium	ND		0.0015		mg/L		07/24/24 09:10	07/24/24 17:24	1
Cobalt	ND		0.0040		mg/L		07/24/24 09:10	07/24/24 17:24	1
Iron	**2.1**		0.020		mg/L		07/24/24 09:10	07/24/24 17:24	1
Magnesium	**7.1**		0.20		mg/L		07/24/24 09:10	07/24/24 17:24	1
Manganese	**0.18**		0.0030		mg/L		07/24/24 09:10	07/24/24 17:24	1
Potassium	**5.2**		0.50		mg/L		07/24/24 09:10	07/24/24 17:24	1
Sodium	**674**		1.0		mg/L		07/24/24 09:10	07/24/24 17:24	1
Vanadium	ND		0.0015		mg/L		07/24/24 09:10	07/24/24 17:24	1

Method: SW846 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0053**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:46	1
Arsenic	**0.060**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:46	1
Cadmium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:46	1
Copper	ND		0.0010		mg/L		07/24/24 09:02	07/26/24 15:08	1
Lead	**0.0014**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:46	1
Nickel	**0.0068**		0.0010		mg/L		07/24/24 09:02	07/26/24 15:08	1
Selenium	ND		0.0010		mg/L		07/24/24 09:02	07/25/24 14:28	1
Silver	ND		0.00050		mg/L		07/24/24 09:02	07/24/24 17:46	1
Thallium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:46	1
Zinc	ND		0.010		mg/L		07/24/24 09:02	07/24/24 17:46	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3) (EPA 310.2)	**2120**		200		mg/L			07/23/24 12:36	50
Alkalinity, Carbonate (EPA 310.2)	ND		200		mg/L			07/23/24 12:36	50
Chemical Oxygen Demand (EPA 410.4)	**50.1**		10.0		mg/L			07/26/24 12:20	1
Cyanide, Total (SW846 9012B)	ND	H	0.010		mg/L			08/06/24 12:10	1
Total Organic Carbon (SW846 9060A)	**10.4**		1.0		mg/L			07/25/24 18:58	1
Total Recoverable Phenolics (EPA 9066)	ND		0.010		mg/L			07/24/24 02:35	1
Total Dissolved Solids (SM 2540C)	**1770**		10.0		mg/L			07/23/24 12:56	1
Chloride (SM 4110B)	**146**		1.4		mg/L			07/23/24 21:39	5
Sulfate (SM 4110B)	**28.7**		2.0		mg/L			07/23/24 21:39	5

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.85**		0.050		mg/L			07/22/24 15:27	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 3 Secondary

Date Collected: 07/18/24 10:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-1

Matrix: Leachate

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.29				SU			07/18/24 10:00	1
Field Conductivity	3260				umhos/cm			07/18/24 10:00	1
Field Temperature	15.3				Degrees C			07/18/24 10:00	1

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 4 Secondary

Date Collected: 07/18/24 10:15
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-2

Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,1-Dichloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,1-Dichloroethene	ND		1.0		ug/L			07/23/24 05:02	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/23/24 05:02	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/23/24 05:02	1
1,2-Dibromoethane	ND		1.0		ug/L			07/23/24 05:02	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/23/24 05:02	1
1,2-Dichloroethane	ND		1.0		ug/L			07/23/24 05:02	1
1,2-Dichloropropane	ND		1.0		ug/L			07/23/24 05:02	1
1,4-Dichlorobenzene	**1.4**		1.0		ug/L			07/23/24 05:02	1
2-Hexanone	ND		5.0		ug/L			07/23/24 05:02	1
Acetone	ND		5.0		ug/L			07/23/24 05:02	1
Acrylonitrile	ND		5.0		ug/L			07/23/24 05:02	1
Benzene	**1.5**		1.0		ug/L			07/23/24 05:02	1
Bromochloromethane	ND		1.0		ug/L			07/23/24 05:02	1
Bromodichloromethane	ND		1.0		ug/L			07/23/24 05:02	1
Bromoform	ND		1.0		ug/L			07/23/24 05:02	1
Bromomethane	ND		5.0		ug/L			07/23/24 05:02	1
Carbon disulfide	ND		1.0		ug/L			07/23/24 05:02	1
Carbon tetrachloride	ND		1.0		ug/L			07/23/24 05:02	1
Chlorobenzene	ND		1.0		ug/L			07/23/24 05:02	1
Chloroethane	ND		5.0		ug/L			07/23/24 05:02	1
Chloroform	ND		1.0		ug/L			07/23/24 05:02	1
Chloromethane	ND		5.0		ug/L			07/23/24 05:02	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 05:02	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 05:02	1
Dibromochloromethane	ND		1.0		ug/L			07/23/24 05:02	1
Dibromomethane	ND		1.0		ug/L			07/23/24 05:02	1
Ethylbenzene	ND		1.0		ug/L			07/23/24 05:02	1
Iodomethane	ND		1.0		ug/L			07/23/24 05:02	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/23/24 05:02	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/23/24 05:02	1
Methylene Chloride	ND		5.0		ug/L			07/23/24 05:02	1
Styrene	ND		1.0		ug/L			07/23/24 05:02	1
Tetrachloroethene	ND		1.0		ug/L			07/23/24 05:02	1
Toluene	ND		1.0		ug/L			07/23/24 05:02	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 05:02	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 05:02	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/23/24 05:02	1
Trichloroethene	ND		1.0		ug/L			07/23/24 05:02	1
Trichlorofluoromethane	ND		1.0		ug/L			07/23/24 05:02	1
Vinyl chloride	ND		1.0		ug/L			07/23/24 05:02	1
Xylenes, Total	ND		3.0		ug/L			07/23/24 05:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*		*07/23/24 05:02*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*07/23/24 05:02*	*1*

Client Sample ID: SUMP 4 Secondary

Date Collected: 07/18/24 10:15
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-2

Matrix: Leachate

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*110*		*80 - 120*		*07/23/24 05:02*	*1*

Method: SW846 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.12**		0.0020		mg/L		07/24/24 09:10	07/24/24 17:26	1
Beryllium	ND		0.00070		mg/L		07/24/24 09:10	07/24/24 17:26	1
Boron	**0.11**		0.020		mg/L		07/24/24 09:10	07/24/24 17:26	1
Calcium	**27.9**		0.50		mg/L		07/24/24 09:10	07/24/24 17:26	1
Chromium	ND		0.0015		mg/L		07/24/24 09:10	07/24/24 17:26	1
Cobalt	ND		0.0040		mg/L		07/24/24 09:10	07/24/24 17:26	1
Iron	**6.0**		0.020		mg/L		07/24/24 09:10	07/24/24 17:26	1
Magnesium	**7.2**		0.20		mg/L		07/24/24 09:10	07/24/24 17:26	1
Manganese	**0.19**		0.0030		mg/L		07/24/24 09:10	07/24/24 17:26	1
Potassium	**5.2**		0.50		mg/L		07/24/24 09:10	07/24/24 17:26	1
Sodium	**681**		1.0		mg/L		07/24/24 09:10	07/24/24 17:26	1
Vanadium	ND		0.0015		mg/L		07/24/24 09:10	07/24/24 17:26	1

Method: SW846 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.0055**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:48	1
Arsenic	**0.071**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:48	1
Cadmium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:48	1
Copper	ND		0.0010		mg/L		07/24/24 09:02	07/26/24 15:11	1
Lead	**0.0016**		0.0010		mg/L		07/24/24 09:02	07/24/24 17:48	1
Nickel	**0.0068**		0.0010		mg/L		07/24/24 09:02	07/26/24 15:11	1
Selenium	ND		0.0010		mg/L		07/24/24 09:02	07/25/24 14:30	1
Silver	ND		0.00050		mg/L		07/24/24 09:02	07/24/24 17:48	1
Thallium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:48	1
Zinc	**0.011**		0.010		mg/L		07/24/24 09:02	07/24/24 17:48	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3) (EPA 310.2)	**1990**		200		mg/L			07/23/24 12:36	50
Alkalinity, Carbonate (EPA 310.2)	ND		200		mg/L			07/23/24 12:36	50
Chemical Oxygen Demand (EPA 410.4)	**43.9**		10.0		mg/L			07/26/24 12:20	1
Cyanide, Total (SW846 9012B)	ND	F1	0.010		mg/L			07/31/24 14:31	1
Total Organic Carbon (SW846 9060A)	**11.2**		1.0		mg/L			07/25/24 19:58	1
Total Recoverable Phenolics (EPA 9066)	ND		0.010		mg/L			07/24/24 02:38	1
Total Dissolved Solids (SM 2540C)	**1990**		10.0		mg/L			07/23/24 12:56	1
Chloride (SM 4110B)	**150**		2.8		mg/L			07/23/24 23:08	10
Sulfate (SM 4110B)	**29.5**		3.5		mg/L			07/23/24 23:08	10

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.83**		0.050		mg/L			07/22/24 15:29	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 4 Secondary

Date Collected: 07/18/24 10:15
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-2

Matrix: Leachate

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.18				SU			07/18/24 10:15	1
Field Conductivity	3150				umhos/cm			07/18/24 10:15	1
Field Temperature	15.4				Degrees C			07/18/24 10:15	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-19R

Date Collected: 07/18/24 12:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-1

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.12		0.020		mg/L		07/24/24 09:08	07/24/24 19:16	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	91.2		7.5		mg/L			07/31/24 12:27	5

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-59

Date Collected: 07/18/24 10:45
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-2

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.053		0.020		mg/L		07/24/24 09:08	07/24/24 19:18	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	11.9		2.0		mg/L			07/24/24 11:02	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-62S

Date Collected: 07/18/24 11:20
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-3

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.092		0.020		mg/L		07/24/24 09:08	07/24/24 19:20	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	ND		2.0		mg/L			07/31/24 12:20	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-204

Date Collected: 07/18/24 14:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-1

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		07/24/24 09:08	07/24/24 18:56	1
Potassium, Dissolved	**0.62**		0.50		mg/L		07/24/24 09:08	07/24/24 18:56	1
Sodium, Dissolved	**1.9**		1.0		mg/L		07/24/24 09:08	07/24/24 18:56	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4110B)	**3.9**		0.56		mg/L			07/23/24 23:22	2

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.18**		0.050		mg/L			07/22/24 15:30	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**6.95**				SU			07/18/24 14:35	1
Field Conductivity	**621**				umhos/cm			07/18/24 14:35	1
Field Temperature	**12.6**				Degrees C			07/18/24 14:35	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-206

Date Collected: 07/18/24 11:05
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-2

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		07/24/24 09:08	07/24/24 18:57	1
Calcium, Dissolved	**64.2**		0.50		mg/L		07/24/24 09:08	07/24/24 18:57	1
Potassium, Dissolved	**0.99**		0.50		mg/L		07/24/24 09:08	07/24/24 18:57	1
Magnesium, Dissolved	**19.2**		0.20		mg/L		07/24/24 09:08	07/24/24 18:57	1
Sodium, Dissolved	**6.0**		1.0		mg/L		07/24/24 09:08	07/24/24 18:57	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate (EPA 310.2)	**287**		20.0		mg/L			07/30/24 10:58	5
Chloride (SM 4110B)	**13.9**		0.56		mg/L			07/23/24 23:37	2
Sulfate (SM 4110B)	**29.6**		2.0		mg/L			07/23/24 23:37	2

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.066**		0.050		mg/L			07/22/24 15:32	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**7.17**				SU			07/18/24 11:05	1
Field Conductivity	**519**				umhos/cm			07/18/24 11:05	1
Field Temperature	**11.9**				Degrees C			07/18/24 11:05	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-21

Date Collected: 07/18/24 13:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-3

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.54		0.020		mg/L		07/24/24 09:08	07/24/24 18:59	1
Calcium, Dissolved	145		0.50		mg/L		07/24/24 09:08	07/24/24 18:59	1
Potassium, Dissolved	1.1		0.50		mg/L		07/24/24 09:08	07/24/24 18:59	1
Magnesium, Dissolved	58.4		0.20		mg/L		07/24/24 09:08	07/24/24 18:59	1
Sodium, Dissolved	18.1		1.0		mg/L		07/24/24 09:08	07/24/24 18:59	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate (EPA 310.2)	507		104		mg/L			07/30/24 12:18	26
Chloride (SM 4110B)	49.4		1.4		mg/L			07/23/24 23:52	5
Sulfate (SM 4110B)	93.8		2.0		mg/L			07/23/24 23:52	5

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	ND		0.050		mg/L			07/22/24 15:38	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.96				SU			07/18/24 13:00	1
Field Conductivity	745				umhos/cm			07/18/24 13:00	1
Field Temperature	11.7				Degrees C			07/18/24 13:00	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-212SR

Date Collected: 07/18/24 10:40
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-4

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.020		0.020		mg/L		07/24/24 09:08	07/24/24 19:01	1
Potassium, Dissolved	1.4		0.50		mg/L		07/24/24 09:08	07/24/24 19:01	1
Sodium, Dissolved	15.8		1.0		mg/L		07/24/24 09:08	07/24/24 19:01	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4110B)	30.1		0.56		mg/L			07/24/24 00:07	2

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	ND		0.050		mg/L			07/22/24 15:43	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.26				SU			07/18/24 10:40	1
Field Conductivity	632				umhos/cm			07/18/24 10:40	1
Field Temperature	12.2				Degrees C			07/18/24 10:40	1

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-213

Date Collected: 07/18/24 13:40
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-5

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.023		0.020		mg/L		07/24/24 09:08	07/24/24 19:03	1
Calcium, Dissolved	100		0.50		mg/L		07/24/24 09:08	07/24/24 19:03	1
Potassium, Dissolved	1.0		0.50		mg/L		07/24/24 09:08	07/24/24 19:03	1
Magnesium, Dissolved	30.6		0.20		mg/L		07/24/24 09:08	07/24/24 19:03	1
Sodium, Dissolved	4.4		1.0		mg/L		07/24/24 09:08	07/24/24 19:03	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate (EPA 310.2)	446		20.0		mg/L			07/30/24 10:59	5
Chloride (SM 4110B)	8.8		0.56		mg/L			07/24/24 00:21	2
Sulfate (SM 4110B)	37.6		2.0		mg/L			07/24/24 00:21	2

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	0.065		0.050		mg/L			07/22/24 15:44	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.13				SU			07/18/24 13:40	1
Field Conductivity	634				umhos/cm			07/18/24 13:40	1
Field Temperature	13.4				Degrees C			07/18/24 13:40	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-214

Date Collected: 07/18/24 13:25
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-6

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		07/24/24 09:08	07/24/24 19:11	1
Potassium, Dissolved	**0.69**		0.50		mg/L		07/24/24 09:08	07/24/24 19:11	1
Sodium, Dissolved	**2.1**		1.0		mg/L		07/24/24 09:08	07/24/24 19:11	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride (SM 4110B)	**2.0**		0.56		mg/L			07/24/24 01:35	2

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.26**		0.050		mg/L			07/22/24 15:45	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**7.27**				SU			07/18/24 13:25	1
Field Conductivity	**554**				umhos/cm			07/18/24 13:25	1
Field Temperature	**12.2**				Degrees C			07/18/24 13:25	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-22R

Date Collected: 07/18/24 11:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-7

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		07/24/24 09:08	07/24/24 19:13	1
Calcium, Dissolved	97.1		0.50		mg/L		07/24/24 09:08	07/24/24 19:13	1
Potassium, Dissolved	1.1		0.50		mg/L		07/24/24 09:08	07/24/24 19:13	1
Magnesium, Dissolved	36.4		0.20		mg/L		07/24/24 09:08	07/24/24 19:13	1
Sodium, Dissolved	5.0		1.0		mg/L		07/24/24 09:08	07/24/24 19:13	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate (EPA 310.2)	226		20.0		mg/L			07/30/24 11:02	5
Chloride (SM 4110B)	42.9		1.4		mg/L			07/24/24 01:50	5
Sulfate (SM 4110B)	78.4		2.0		mg/L			07/24/24 01:50	5

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	0.12		0.050		mg/L			07/22/24 15:47	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	7.17				SU			07/18/24 11:35	1
Field Conductivity	625				umhos/cm			07/18/24 11:35	1
Field Temperature	12.3				Degrees C			07/18/24 11:35	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-36

Date Collected: 07/18/24 09:55
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-8

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		07/24/24 09:08	07/24/24 19:15	1
Calcium, Dissolved	**105**		0.50		mg/L		07/24/24 09:08	07/24/24 19:15	1
Potassium, Dissolved	**1.5**		0.50		mg/L		07/24/24 09:08	07/24/24 19:15	1
Magnesium, Dissolved	**31.7**		0.20		mg/L		07/24/24 09:08	07/24/24 19:15	1
Sodium, Dissolved	**16.3**		1.0		mg/L		07/24/24 09:08	07/24/24 19:15	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate (EPA 310.2)	**364**		20.0		mg/L			07/30/24 11:03	5
Chloride (SM 4110B)	**29.8**		1.4		mg/L			07/24/24 02:05	5
Sulfate (SM 4110B)	**80.2**		2.0		mg/L			07/24/24 02:05	5

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Nitrogen (EPA Inorganic N)	**0.058**		0.050		mg/L			07/22/24 15:48	1

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**7.16**				SU			07/18/24 09:55	1
Field Conductivity	**463**				umhos/cm			07/18/24 09:55	1
Field Temperature	**12.4**				Degrees C			07/18/24 09:55	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: JCL-WELL 11

Date Collected: 07/18/24 14:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-1

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.071		0.020		mg/L		07/24/24 09:08	07/24/24 18:29	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	15.5		2.0		mg/L			07/24/24 11:03	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: JCL-WELL 12

Date Collected: 07/18/24 12:25
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-2

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.073		0.020		mg/L		07/24/24 09:08	07/24/24 18:31	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	16.2		2.0		mg/L			07/24/24 11:05	1

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: JCL-WELL 13

Date Collected: 07/18/24 13:30
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-3

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.026		0.020		mg/L		07/24/24 09:08	07/24/24 18:40	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	40.3		7.5		mg/L			07/24/24 11:14	5

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: JCL-WELL 14

Date Collected: 07/18/24 13:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-4

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.023		0.020		mg/L		07/24/24 09:08	07/24/24 18:48	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	44.2		7.5		mg/L			07/24/24 11:14	5

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-20R

Date Collected: 07/18/24 12:30
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-5

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.50		0.020		mg/L		07/24/24 09:08	07/24/24 18:50	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	84.2		7.5		mg/L			07/24/24 11:15	5

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-21

Date Collected: 07/18/24 13:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-6

Matrix: Ground Water

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	84.2		7.5		mg/L			07/24/24 11:17	5

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-62D

Date Collected: 07/18/24 12:05
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-7

Matrix: Ground Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.18		0.020		mg/L		07/24/24 09:08	07/24/24 18:52	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate (SW846 9038)	40.4		7.5		mg/L			07/24/24 11:20	5

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-60
Date Collected: 07/18/24 15:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-1
Matrix: Ground Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 05:28	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/24/24 05:28	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 05:28	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/24/24 05:28	1
1,1-Dichloroethane	**1.1**		1.0		ug/L			07/24/24 05:28	1
1,1-Dichloroethene	ND		1.0		ug/L			07/24/24 05:28	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/24/24 05:28	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/24/24 05:28	1
1,2-Dibromoethane	ND		1.0		ug/L			07/24/24 05:28	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/24/24 05:28	1
1,2-Dichloroethane	ND		1.0		ug/L			07/24/24 05:28	1
1,2-Dichloropropane	ND		1.0		ug/L			07/24/24 05:28	1
1,4-Dichlorobenzene	ND		1.0		ug/L			07/24/24 05:28	1
2-Hexanone	ND		5.0		ug/L			07/24/24 05:28	1
Acetone	ND		5.0		ug/L			07/24/24 05:28	1
Acrylonitrile	ND		5.0		ug/L			07/24/24 05:28	1
Benzene	ND		1.0		ug/L			07/24/24 05:28	1
Bromochloromethane	ND		1.0		ug/L			07/24/24 05:28	1
Bromodichloromethane	ND		1.0		ug/L			07/24/24 05:28	1
Bromoform	ND		1.0		ug/L			07/24/24 05:28	1
Bromomethane	ND		5.0		ug/L			07/24/24 05:28	1
Carbon disulfide	ND		1.0		ug/L			07/24/24 05:28	1
Carbon tetrachloride	ND		1.0		ug/L			07/24/24 05:28	1
Chlorobenzene	ND		1.0		ug/L			07/24/24 05:28	1
Chloroethane	ND		5.0		ug/L			07/24/24 05:28	1
Chloroform	ND		1.0		ug/L			07/24/24 05:28	1
Chloromethane	ND		5.0		ug/L			07/24/24 05:28	1
cis-1,2-Dichloroethene	**12**		1.0		ug/L			07/24/24 05:28	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 05:28	1
Dibromochloromethane	ND		1.0		ug/L			07/24/24 05:28	1
Dibromomethane	ND		1.0		ug/L			07/24/24 05:28	1
Ethylbenzene	ND		1.0		ug/L			07/24/24 05:28	1
Iodomethane	ND		1.0		ug/L			07/24/24 05:28	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/24/24 05:28	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/24/24 05:28	1
Methylene Chloride	ND		5.0		ug/L			07/24/24 05:28	1
Styrene	ND		1.0		ug/L			07/24/24 05:28	1
Tetrachloroethene	ND		1.0		ug/L			07/24/24 05:28	1
Toluene	ND		1.0		ug/L			07/24/24 05:28	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/24/24 05:28	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 05:28	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/24/24 05:28	1
Trichloroethene	**1.3**		1.0		ug/L			07/24/24 05:28	1
Trichlorofluoromethane	ND		1.0		ug/L			07/24/24 05:28	1
Vinyl chloride	**2.3**		1.0		ug/L			07/24/24 05:28	1
Xylenes, Total	ND		3.0		ug/L			07/24/24 05:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*07/24/24 05:28*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*07/24/24 05:28*	*1*

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-60
Date Collected: 07/18/24 15:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-1
Matrix: Ground Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*73 - 120*		*07/24/24 05:28*	*1*

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**7.38**				SU			07/18/24 15:00	1
Field Conductivity	**493**				umhos/cm			07/18/24 15:00	1
Field Temperature	**12.4**				Degrees C			07/18/24 15:00	1

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-62S
Date Collected: 07/18/24 11:20
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-2
Matrix: Ground Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,1-Dichloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,1-Dichloroethene	ND		1.0		ug/L			07/24/24 05:53	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/24/24 05:53	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/24/24 05:53	1
1,2-Dibromoethane	ND		1.0		ug/L			07/24/24 05:53	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/24/24 05:53	1
1,2-Dichloroethane	ND		1.0		ug/L			07/24/24 05:53	1
1,2-Dichloropropane	ND		1.0		ug/L			07/24/24 05:53	1
1,4-Dichlorobenzene	ND		1.0		ug/L			07/24/24 05:53	1
2-Hexanone	ND		5.0		ug/L			07/24/24 05:53	1
Acetone	ND		5.0		ug/L			07/24/24 05:53	1
Acrylonitrile	ND		5.0		ug/L			07/24/24 05:53	1
Benzene	ND		1.0		ug/L			07/24/24 05:53	1
Bromochloromethane	ND		1.0		ug/L			07/24/24 05:53	1
Bromodichloromethane	ND		1.0		ug/L			07/24/24 05:53	1
Bromoform	ND		1.0		ug/L			07/24/24 05:53	1
Bromomethane	ND		5.0		ug/L			07/24/24 05:53	1
Carbon disulfide	ND		1.0		ug/L			07/24/24 05:53	1
Carbon tetrachloride	ND		1.0		ug/L			07/24/24 05:53	1
Chlorobenzene	ND		1.0		ug/L			07/24/24 05:53	1
Chloroethane	ND		5.0		ug/L			07/24/24 05:53	1
Chloroform	ND		1.0		ug/L			07/24/24 05:53	1
Chloromethane	ND		5.0		ug/L			07/24/24 05:53	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/24/24 05:53	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 05:53	1
Dibromochloromethane	ND		1.0		ug/L			07/24/24 05:53	1
Dibromomethane	ND		1.0		ug/L			07/24/24 05:53	1
Ethylbenzene	ND		1.0		ug/L			07/24/24 05:53	1
Iodomethane	ND		1.0		ug/L			07/24/24 05:53	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/24/24 05:53	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/24/24 05:53	1
Methylene Chloride	ND		5.0		ug/L			07/24/24 05:53	1
Styrene	ND		1.0		ug/L			07/24/24 05:53	1
Tetrachloroethene	ND		1.0		ug/L			07/24/24 05:53	1
Toluene	ND		1.0		ug/L			07/24/24 05:53	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/24/24 05:53	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 05:53	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/24/24 05:53	1
Trichloroethene	ND		1.0		ug/L			07/24/24 05:53	1
Trichlorofluoromethane	ND		1.0		ug/L			07/24/24 05:53	1
Vinyl chloride	ND		1.0		ug/L			07/24/24 05:53	1
Xylenes, Total	ND		3.0		ug/L			07/24/24 05:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*07/24/24 05:53*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*07/24/24 05:53*	*1*

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-62S
Date Collected: 07/18/24 11:20
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-2
Matrix: Ground Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*07/24/24 05:53*	*1*

Method: EPA Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE		Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**7.40**				SU			07/18/24 11:20	1
Field Conductivity	**564**				umhos/cm			07/18/24 11:20	1
Field Temperature	**12.1**				Degrees C			07/18/24 11:20	1

Surrogate Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Ground Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	TOL	BFB
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)
480-221887-1	MW-60	98	93	84
480-221887-2	MW-62S	101	99	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Leachate

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)
480-221858-1	PHASE III/IV COMP	97	104	99
480-221858-2	PHASE V	95	104	96
480-221861-1	SUMP 3 Secondary	98	95	96
480-221861-2	SUMP 4 Secondary	95	103	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	TOL	BFB
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)
LCS 480-719153/7	Lab Control Sample	96	97	101
LCS 480-719212/6	Lab Control Sample	95	97	95
LCS 480-719339/6	Lab Control Sample	97	103	85
MB 480-719153/9	Method Blank	97	97	108
MB 480-719212/8	Method Blank	93	93	86
MB 480-719339/8	Method Blank	99	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-719153/9
Matrix: Water
Analysis Batch: 719153

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,1-Dichloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,1-Dichloroethene	ND		1.0		ug/L			07/22/24 14:01	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/22/24 14:01	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/22/24 14:01	1
1,2-Dichloroethane	ND		1.0		ug/L			07/22/24 14:01	1
1,2-Dichloropropane	ND		1.0		ug/L			07/22/24 14:01	1
1,4-Dichlorobenzene	ND		1.0		ug/L			07/22/24 14:01	1
Benzene	ND		1.0		ug/L			07/22/24 14:01	1
Bromodichloromethane	ND		1.0		ug/L			07/22/24 14:01	1
Bromoform	ND		1.0		ug/L			07/22/24 14:01	1
Bromomethane	ND		5.0		ug/L			07/22/24 14:01	1
Carbon tetrachloride	ND		1.0		ug/L			07/22/24 14:01	1
Chlorobenzene	ND		1.0		ug/L			07/22/24 14:01	1
Chloroethane	ND		5.0		ug/L			07/22/24 14:01	1
Chloroform	ND		1.0		ug/L			07/22/24 14:01	1
Chloromethane	ND		5.0		ug/L			07/22/24 14:01	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/22/24 14:01	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/22/24 14:01	1
Dibromochloromethane	ND		1.0		ug/L			07/22/24 14:01	1
Dibromomethane	ND		1.0		ug/L			07/22/24 14:01	1
Ethylbenzene	ND		1.0		ug/L			07/22/24 14:01	1
Iodomethane	ND		1.0		ug/L			07/22/24 14:01	1
Methylene Chloride	ND		5.0		ug/L			07/22/24 14:01	1
Styrene	ND		1.0		ug/L			07/22/24 14:01	1
Tetrachloroethene	ND		1.0		ug/L			07/22/24 14:01	1
Toluene	ND		1.0		ug/L			07/22/24 14:01	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/22/24 14:01	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/22/24 14:01	1
Trichloroethene	ND		1.0		ug/L			07/22/24 14:01	1
Trichlorofluoromethane	ND		1.0		ug/L			07/22/24 14:01	1
Vinyl chloride	ND		1.0		ug/L			07/22/24 14:01	1
Xylenes, Total	ND		3.0		ug/L			07/22/24 14:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*07/22/24 14:01*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*07/22/24 14:01*	*1*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*07/22/24 14:01*	*1*

Lab Sample ID: LCS 480-719153/7
Matrix: Water
Analysis Batch: 719153

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1,1,2-Tetrachloroethane			25.0	29.7		ug/L		119	80 - 120		

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-719153/7
Matrix: Water
Analysis Batch: 719153

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	27.8		ug/L		111	73 - 126
1,1,2,2-Tetrachloroethane	25.0	27.2		ug/L		109	76 - 120
1,1,2-Trichloroethane	25.0	28.5		ug/L		114	76 - 122
1,1-Dichloroethane	25.0	28.1		ug/L		112	77 - 120
1,1-Dichloroethene	25.0	28.8		ug/L		115	66 - 127
1,2,3-Trichloropropane	25.0	27.0		ug/L		108	68 - 122
1,2-Dichlorobenzene	25.0	27.3		ug/L		109	80 - 124
1,2-Dichloroethane	25.0	27.7		ug/L		111	75 - 120
1,2-Dichloropropane	25.0	28.5		ug/L		114	76 - 120
1,4-Dichlorobenzene	25.0	27.0		ug/L		108	80 - 120
Benzene	25.0	27.4		ug/L		109	71 - 124
Bromodichloromethane	25.0	29.3		ug/L		117	80 - 122
Bromoform	25.0	32.2		ug/L		129	61 - 132
Bromomethane	25.0	26.1		ug/L		105	55 - 144
Carbon tetrachloride	25.0	27.6		ug/L		110	72 - 134
Chlorobenzene	25.0	27.4		ug/L		109	80 - 120
Chloroethane	25.0	26.7		ug/L		107	69 - 136
Chloroform	25.0	25.2		ug/L		101	73 - 127
Chloromethane	25.0	25.8		ug/L		103	68 - 124
cis-1,2-Dichloroethene	25.0	28.0		ug/L		112	74 - 124
cis-1,3-Dichloropropene	25.0	29.0		ug/L		116	74 - 124
Dibromochloromethane	25.0	29.9		ug/L		120	75 - 125
Dibromomethane	25.0	28.2		ug/L		113	76 - 127
Ethylbenzene	25.0	27.0		ug/L		108	77 - 123
Iodomethane	25.0	27.7		ug/L		111	78 - 123
Methylene Chloride	25.0	28.1		ug/L		112	75 - 124
Styrene	25.0	28.3		ug/L		113	80 - 120
Tetrachloroethene	25.0	29.0		ug/L		116	74 - 122
Toluene	25.0	27.5		ug/L		110	80 - 122
trans-1,2-Dichloroethene	25.0	28.0		ug/L		112	73 - 127
trans-1,3-Dichloropropene	25.0	28.4		ug/L		114	80 - 120
Trichloroethene	25.0	27.5		ug/L		110	74 - 123
Trichlorofluoromethane	25.0	27.0		ug/L		108	62 - 150
Vinyl chloride	25.0	27.3		ug/L		109	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
Toluene-d8 (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 480-719212/8
Matrix: Water
Analysis Batch: 719212

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L			07/23/24 02:36	1
1,1,1-Trichloroethane	ND		1.0	ug/L			07/23/24 02:36	1
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L			07/23/24 02:36	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-719212/8
Matrix: Water
Analysis Batch: 719212

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		1.0		ug/L			07/23/24 02:36	1
1,1-Dichloroethane	ND		1.0		ug/L			07/23/24 02:36	1
1,1-Dichloroethene	ND		1.0		ug/L			07/23/24 02:36	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/23/24 02:36	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/23/24 02:36	1
1,2-Dibromoethane	ND		1.0		ug/L			07/23/24 02:36	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/23/24 02:36	1
1,2-Dichloroethane	ND		1.0		ug/L			07/23/24 02:36	1
1,2-Dichloropropane	ND		1.0		ug/L			07/23/24 02:36	1
1,4-Dichlorobenzene	ND		1.0		ug/L			07/23/24 02:36	1
2-Hexanone	ND		5.0		ug/L			07/23/24 02:36	1
Acetone	ND		5.0		ug/L			07/23/24 02:36	1
Acrylonitrile	ND		5.0		ug/L			07/23/24 02:36	1
Benzene	ND		1.0		ug/L			07/23/24 02:36	1
Bromochloromethane	ND		1.0		ug/L			07/23/24 02:36	1
Bromodichloromethane	ND		1.0		ug/L			07/23/24 02:36	1
Bromoform	ND		1.0		ug/L			07/23/24 02:36	1
Bromomethane	ND		5.0		ug/L			07/23/24 02:36	1
Carbon disulfide	ND		1.0		ug/L			07/23/24 02:36	1
Carbon tetrachloride	ND		1.0		ug/L			07/23/24 02:36	1
Chlorobenzene	ND		1.0		ug/L			07/23/24 02:36	1
Chloroethane	ND		5.0		ug/L			07/23/24 02:36	1
Chloroform	ND		1.0		ug/L			07/23/24 02:36	1
Chloromethane	ND		5.0		ug/L			07/23/24 02:36	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 02:36	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 02:36	1
Dibromochloromethane	ND		1.0		ug/L			07/23/24 02:36	1
Dibromomethane	ND		1.0		ug/L			07/23/24 02:36	1
Ethylbenzene	ND		1.0		ug/L			07/23/24 02:36	1
Iodomethane	ND		1.0		ug/L			07/23/24 02:36	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/23/24 02:36	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/23/24 02:36	1
Methylene Chloride	ND		5.0		ug/L			07/23/24 02:36	1
Styrene	ND		1.0		ug/L			07/23/24 02:36	1
Tetrachloroethene	ND		1.0		ug/L			07/23/24 02:36	1
Toluene	ND		1.0		ug/L			07/23/24 02:36	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/23/24 02:36	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/23/24 02:36	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/23/24 02:36	1
Trichloroethene	ND		1.0		ug/L			07/23/24 02:36	1
Trichlorofluoromethane	ND		1.0		ug/L			07/23/24 02:36	1
Vinyl chloride	ND		1.0		ug/L			07/23/24 02:36	1
Xylenes, Total	ND		3.0		ug/L			07/23/24 02:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*77 - 120*		*07/23/24 02:36*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*07/23/24 02:36*	*1*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*07/23/24 02:36*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-719212/6
Matrix: Water
Analysis Batch: 719212

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	25.0	28.4		ug/L		113	80 - 120
1,1,1-Trichloroethane	25.0	27.3		ug/L		109	73 - 126
1,1,2,2-Tetrachloroethane	25.0	28.1		ug/L		112	76 - 120
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	76 - 122
1,1-Dichloroethane	25.0	26.0		ug/L		104	77 - 120
1,1-Dichloroethene	25.0	26.3		ug/L		105	66 - 127
1,2,3-Trichloropropane	25.0	27.7		ug/L		111	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	33.4		ug/L		134	56 - 134
1,2-Dibromoethane	25.0	26.0		ug/L		104	77 - 120
1,2-Dichlorobenzene	25.0	26.8		ug/L		107	80 - 124
1,2-Dichloroethane	25.0	24.9		ug/L		100	75 - 120
1,2-Dichloropropane	25.0	25.8		ug/L		103	76 - 120
1,4-Dichlorobenzene	25.0	25.9		ug/L		104	80 - 120
2-Hexanone	125	149		ug/L		120	65 - 127
Acetone	125	142		ug/L		114	56 - 142
Acrylonitrile	250	264		ug/L		106	63 - 125
Benzene	25.0	24.8		ug/L		99	71 - 124
Bromochloromethane	25.0	24.1		ug/L		97	72 - 130
Bromodichloromethane	25.0	25.9		ug/L		103	80 - 122
Bromoform	25.0	28.1		ug/L		112	61 - 132
Bromomethane	25.0	24.8		ug/L		99	55 - 144
Carbon disulfide	25.0	25.7		ug/L		103	59 - 134
Carbon tetrachloride	25.0	27.9		ug/L		112	72 - 134
Chlorobenzene	25.0	25.2		ug/L		101	80 - 120
Chloroethane	25.0	27.0		ug/L		108	69 - 136
Chloroform	25.0	23.6		ug/L		94	73 - 127
Chloromethane	25.0	27.2		ug/L		109	68 - 124
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	74 - 124
cis-1,3-Dichloropropene	25.0	25.6		ug/L		102	74 - 124
Dibromochloromethane	25.0	27.7		ug/L		111	75 - 125
Dibromomethane	25.0	24.6		ug/L		98	76 - 127
Ethylbenzene	25.0	26.4		ug/L		106	77 - 123
Iodomethane	25.0	24.5		ug/L		98	78 - 123
Methyl ethyl ketone (MEK)	125	141		ug/L		113	57 - 140
Methyl isobutyl ketone (MIBK)	125	143		ug/L		114	71 - 125
Methylene Chloride	25.0	26.1		ug/L		104	75 - 124
Styrene	25.0	25.9		ug/L		104	80 - 120
Tetrachloroethene	25.0	25.1		ug/L		101	74 - 122
Toluene	25.0	25.4		ug/L		102	80 - 122
trans-1,2-Dichloroethene	25.0	25.0		ug/L		100	73 - 127
trans-1,3-Dichloropropene	25.0	27.6		ug/L		110	80 - 120
trans-1,4-Dichloro-2-butene	25.0	27.9		ug/L		112	41 - 131
Trichloroethene	25.0	24.9		ug/L		100	74 - 123
Trichlorofluoromethane	25.0	25.8		ug/L		103	62 - 150
Vinyl chloride	25.0	28.8		ug/L		115	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-719212/6
Matrix: Water
Analysis Batch: 719212

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*

Lab Sample ID: MB 480-719339/8
Matrix: Water
Analysis Batch: 719339

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,1,1-Trichloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,1,2-Trichloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,1-Dichloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,1-Dichloroethene	ND		1.0		ug/L			07/24/24 01:46	1
1,2,3-Trichloropropane	ND		1.0		ug/L			07/24/24 01:46	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			07/24/24 01:46	1
1,2-Dibromoethane	ND		1.0		ug/L			07/24/24 01:46	1
1,2-Dichlorobenzene	ND		1.0		ug/L			07/24/24 01:46	1
1,2-Dichloroethane	ND		1.0		ug/L			07/24/24 01:46	1
1,2-Dichloropropane	ND		1.0		ug/L			07/24/24 01:46	1
1,4-Dichlorobenzene	ND		1.0		ug/L			07/24/24 01:46	1
2-Hexanone	ND		5.0		ug/L			07/24/24 01:46	1
Acetone	ND		5.0		ug/L			07/24/24 01:46	1
Acrylonitrile	ND		5.0		ug/L			07/24/24 01:46	1
Benzene	ND		1.0		ug/L			07/24/24 01:46	1
Bromochloromethane	ND		1.0		ug/L			07/24/24 01:46	1
Bromodichloromethane	ND		1.0		ug/L			07/24/24 01:46	1
Bromoform	ND		1.0		ug/L			07/24/24 01:46	1
Bromomethane	ND		5.0		ug/L			07/24/24 01:46	1
Carbon disulfide	ND		1.0		ug/L			07/24/24 01:46	1
Carbon tetrachloride	ND		1.0		ug/L			07/24/24 01:46	1
Chlorobenzene	ND		1.0		ug/L			07/24/24 01:46	1
Chloroethane	ND		5.0		ug/L			07/24/24 01:46	1
Chloroform	ND		1.0		ug/L			07/24/24 01:46	1
Chloromethane	ND		5.0		ug/L			07/24/24 01:46	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			07/24/24 01:46	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 01:46	1
Dibromochloromethane	ND		1.0		ug/L			07/24/24 01:46	1
Dibromomethane	ND		1.0		ug/L			07/24/24 01:46	1
Ethylbenzene	ND		1.0		ug/L			07/24/24 01:46	1
Iodomethane	ND		1.0		ug/L			07/24/24 01:46	1
Methyl ethyl ketone (MEK)	ND		5.0		ug/L			07/24/24 01:46	1
Methyl isobutyl ketone (MIBK)	ND		5.0		ug/L			07/24/24 01:46	1
Methylene Chloride	ND		5.0		ug/L			07/24/24 01:46	1
Styrene	ND		1.0		ug/L			07/24/24 01:46	1
Tetrachloroethene	ND		1.0		ug/L			07/24/24 01:46	1
Toluene	ND		1.0		ug/L			07/24/24 01:46	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			07/24/24 01:46	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-719339/8
Matrix: Water
Analysis Batch: 719339

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0		ug/L			07/24/24 01:46	1
trans-1,4-Dichloro-2-butene	ND		5.0		ug/L			07/24/24 01:46	1
Trichloroethene	ND		1.0		ug/L			07/24/24 01:46	1
Trichlorofluoromethane	ND		1.0		ug/L			07/24/24 01:46	1
Vinyl chloride	ND		1.0		ug/L			07/24/24 01:46	1
Xylenes, Total	ND		3.0		ug/L			07/24/24 01:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*07/24/24 01:46*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*07/24/24 01:46*	*1*
4-Bromofluorobenzene (Surr)	*87*		*73 - 120*		*07/24/24 01:46*	*1*

Lab Sample ID: LCS 480-719339/6
Matrix: Water
Analysis Batch: 719339

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	25.0	27.0		ug/L		108	80 - 120
1,1,1-Trichloroethane	25.0	27.0		ug/L		108	73 - 126
1,1,2,2-Tetrachloroethane	25.0	26.7		ug/L		107	76 - 120
1,1,2-Trichloroethane	25.0	26.4		ug/L		106	76 - 122
1,1-Dichloroethane	25.0	26.1		ug/L		104	77 - 120
1,1-Dichloroethene	25.0	25.8		ug/L		103	66 - 127
1,2,3-Trichloropropane	25.0	25.9		ug/L		104	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	31.9		ug/L		128	56 - 134
1,2-Dibromoethane	25.0	26.4		ug/L		106	77 - 120
1,2-Dichlorobenzene	25.0	25.5		ug/L		102	80 - 124
1,2-Dichloroethane	25.0	25.2		ug/L		101	75 - 120
1,2-Dichloropropane	25.0	25.4		ug/L		101	76 - 120
1,4-Dichlorobenzene	25.0	24.9		ug/L		99	80 - 120
2-Hexanone	125	149		ug/L		119	65 - 127
Acetone	125	141		ug/L		113	56 - 142
Acrylonitrile	250	265		ug/L		106	63 - 125
Benzene	25.0	24.6		ug/L		98	71 - 124
Bromochloromethane	25.0	24.4		ug/L		98	72 - 130
Bromodichloromethane	25.0	25.7		ug/L		103	80 - 122
Bromoform	25.0	25.4		ug/L		101	61 - 132
Bromomethane	25.0	24.7		ug/L		99	55 - 144
Carbon disulfide	25.0	25.2		ug/L		101	59 - 134
Carbon tetrachloride	25.0	27.9		ug/L		112	72 - 134
Chlorobenzene	25.0	24.8		ug/L		99	80 - 120
Chloroethane	25.0	27.2		ug/L		109	69 - 136
Chloroform	25.0	23.4		ug/L		93	73 - 127
Chloromethane	25.0	27.4		ug/L		110	68 - 124
cis-1,2-Dichloroethene	25.0	24.9		ug/L		100	74 - 124
cis-1,3-Dichloropropene	25.0	25.0		ug/L		100	74 - 124
Dibromochloromethane	25.0	27.9		ug/L		112	75 - 125
Dibromomethane	25.0	24.1		ug/L		96	76 - 127

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-719339/6
Matrix: Water
Analysis Batch: 719339

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	25.0	25.9		ug/L		103	77 - 123
Iodomethane	25.0	23.6		ug/L		94	78 - 123
Methyl ethyl ketone (MEK)	125	139		ug/L		111	57 - 140
Methyl isobutyl ketone (MIBK)	125	150		ug/L		120	71 - 125
Methylene Chloride	25.0	25.0		ug/L		100	75 - 124
Styrene	25.0	23.2		ug/L		93	80 - 120
Tetrachloroethene	25.0	24.9		ug/L		99	74 - 122
Toluene	25.0	26.2		ug/L		105	80 - 122
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	73 - 127
trans-1,3-Dichloropropene	25.0	27.8		ug/L		111	80 - 120
trans-1,4-Dichloro-2-butene	25.0	27.4		ug/L		109	41 - 131
Trichloroethene	25.0	24.8		ug/L		99	74 - 123
Trichlorofluoromethane	25.0	26.4		ug/L		105	62 - 150
Vinyl chloride	25.0	28.3		ug/L		113	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*85*		*73 - 120*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-719223/1-A
Matrix: Water
Analysis Batch: 719603

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 719223

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020	mg/L		07/24/24 09:10	07/24/24 16:54	1
Beryllium	ND		0.00070	mg/L		07/24/24 09:10	07/24/24 16:54	1
Boron	ND		0.020	mg/L		07/24/24 09:10	07/24/24 16:54	1
Calcium	ND		0.50	mg/L		07/24/24 09:10	07/24/24 16:54	1
Chromium	ND		0.0015	mg/L		07/24/24 09:10	07/24/24 16:54	1
Cobalt	ND		0.0040	mg/L		07/24/24 09:10	07/24/24 16:54	1
Iron	ND		0.050	mg/L		07/24/24 09:10	07/24/24 16:54	1
Magnesium	ND		0.20	mg/L		07/24/24 09:10	07/24/24 16:54	1
Manganese	ND		0.0030	mg/L		07/24/24 09:10	07/24/24 16:54	1
Potassium	ND		0.50	mg/L		07/24/24 09:10	07/24/24 16:54	1
Sodium	ND		1.0	mg/L		07/24/24 09:10	07/24/24 16:54	1
Vanadium	ND		0.0015	mg/L		07/24/24 09:10	07/24/24 16:54	1

Lab Sample ID: LCS 480-719223/2-A
Matrix: Water
Analysis Batch: 719603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.970		mg/L		97	80 - 120
Beryllium	0.500	0.505		mg/L		101	80 - 120
Boron	0.500	0.499		mg/L		100	80 - 120
Calcium	25.0	25.53		mg/L		102	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-719223/2-A
Matrix: Water
Analysis Batch: 719603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium	0.500	0.499		mg/L		100	80 - 120
Cobalt	0.500	0.486		mg/L		97	80 - 120
Iron	5.10	5.31		mg/L		104	80 - 120
Magnesium	25.0	24.63		mg/L		99	80 - 120
Manganese	0.500	0.488		mg/L		98	80 - 120
Potassium	25.0	24.76		mg/L		99	80 - 120
Sodium	25.0	24.95		mg/L		100	80 - 120
Vanadium	0.500	0.491		mg/L		98	80 - 120

Lab Sample ID: MB 480-719225/1-A
Matrix: Water
Analysis Batch: 719603

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 719225

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020	mg/L		07/24/24 09:08	07/24/24 18:25	1
Calcium, Dissolved	ND		0.50	mg/L		07/24/24 09:08	07/24/24 18:25	1
Magnesium, Dissolved	ND		0.20	mg/L		07/24/24 09:08	07/24/24 18:25	1
Potassium, Dissolved	ND		0.50	mg/L		07/24/24 09:08	07/24/24 18:25	1
Sodium, Dissolved	ND		1.0	mg/L		07/24/24 09:08	07/24/24 18:25	1

Lab Sample ID: LCS 480-719225/2-A
Matrix: Water
Analysis Batch: 719603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron, Dissolved	0.500	0.469		mg/L		94	80 - 120
Calcium, Dissolved	25.0	24.11		mg/L		96	80 - 120
Magnesium, Dissolved	25.0	23.14		mg/L		93	80 - 120
Potassium, Dissolved	25.0	23.36		mg/L		93	80 - 120
Sodium, Dissolved	25.0	23.52		mg/L		94	80 - 120

Lab Sample ID: 480-221886-2 MS
Matrix: Ground Water
Analysis Batch: 719603

Client Sample ID: JCL-WELL 12
Prep Type: Dissolved
Prep Batch: 719225

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron, Dissolved	0.073		0.500	0.568		mg/L		99	75 - 125
Calcium, Dissolved	122		25.0	147.9	4	mg/L		105	75 - 125
Magnesium, Dissolved	30.3		25.0	55.51		mg/L		101	75 - 125
Potassium, Dissolved	4.0		25.0	28.62		mg/L		98	75 - 125
Sodium, Dissolved	61.3		25.0	86.44		mg/L		100	75 - 125

Lab Sample ID: 480-221886-2 MSD
Matrix: Ground Water
Analysis Batch: 719603

Client Sample ID: JCL-WELL 12
Prep Type: Dissolved
Prep Batch: 719225

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron, Dissolved	0.073		0.500	0.579		mg/L		101	75 - 125	2	20
Calcium, Dissolved	122		25.0	150.9	4	mg/L		117	75 - 125	2	20
Magnesium, Dissolved	30.3		25.0	56.63		mg/L		105	75 - 125	2	20

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-221886-2 MSD
Matrix: Ground Water
Analysis Batch: 719603

Client Sample ID: JCL-WELL 12
Prep Type: Dissolved
Prep Batch: 719225

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Potassium, Dissolved	4.0		25.0	29.14		mg/L		100	75 - 125	2	20
Sodium, Dissolved	61.3		25.0	88.32		mg/L		108	75 - 125	2	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 480-719303/1-A
Matrix: Water
Analysis Batch: 719619

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 719303

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0010		mg/L		07/24/24 09:02	07/24/24 17:16	1
Arsenic	ND		0.0010		mg/L		07/24/24 09:02	07/24/24 17:16	1
Cadmium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:16	1
Lead	ND		0.0010		mg/L		07/24/24 09:02	07/24/24 17:16	1
Silver	ND		0.00050		mg/L		07/24/24 09:02	07/24/24 17:16	1
Thallium	ND		0.00020		mg/L		07/24/24 09:02	07/24/24 17:16	1
Zinc	ND		0.010		mg/L		07/24/24 09:02	07/24/24 17:16	1

Lab Sample ID: MB 480-719303/1-A
Matrix: Water
Analysis Batch: 719683

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 719303

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.0010		mg/L		07/24/24 09:02	07/25/24 14:23	1

Lab Sample ID: MB 480-719303/1-A
Matrix: Water
Analysis Batch: 719842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 719303

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.0010		mg/L		07/24/24 09:02	07/26/24 15:04	1
Nickel	ND		0.0010		mg/L		07/24/24 09:02	07/26/24 15:04	1

Lab Sample ID: LCS 480-719303/2-A
Matrix: Water
Analysis Batch: 719619

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719303

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony			0.0200	0.0188		mg/L		94	80 - 120		
Arsenic			0.0400	0.0398		mg/L		100	80 - 120		
Cadmium			0.0200	0.0197		mg/L		99	80 - 120		
Lead			0.0200	0.0194		mg/L		97	80 - 120		
Silver			0.0200	0.0196		mg/L		98	80 - 120		
Thallium			0.0400	0.0386		mg/L		97	80 - 120		
Zinc			0.0200	0.0201		mg/L		100	80 - 120		

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 480-719303/2-A
Matrix: Water
Analysis Batch: 719683

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719303

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Selenium	0.0400	0.0389		mg/L		97	80 - 120

Lab Sample ID: LCS 480-719303/2-A
Matrix: Water
Analysis Batch: 719842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 719303

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.0200	0.0215		mg/L		107	80 - 120
Nickel	0.0200	0.0215		mg/L		108	80 - 120

Method: 310.2 - Alkalinity

Lab Sample ID: MB 480-719410/156
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3)	ND		10.0	mg/L			07/23/24 12:25	1
Alkalinity, Carbonate	ND		10.0	mg/L			07/23/24 12:25	1

Lab Sample ID: MB 480-719410/168
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3)	ND		10.0	mg/L			07/23/24 12:28	1
Alkalinity, Carbonate	ND		10.0	mg/L			07/23/24 12:28	1

Lab Sample ID: MB 480-719410/72
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3)	ND		10.0	mg/L			07/23/24 10:57	1
Alkalinity, Carbonate	ND		10.0	mg/L			07/23/24 10:57	1

Lab Sample ID: MB 480-719410/84
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, bicarb (CaCO3)	ND		10.0	mg/L			07/23/24 11:03	1
Alkalinity, Carbonate	ND		10.0	mg/L			07/23/24 11:03	1

Lab Sample ID: LCS 480-719410/167
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, bicarb (CaCO3)	50.0	47.38		mg/L		95	90 - 110

Method: 310.2 - Alkalinity (Continued)

Lab Sample ID: LCS 480-719410/83
Matrix: Water
Analysis Batch: 719410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, bicarb (CaCO3)			50.0	51.69		mg/L		103	90 - 110		

Lab Sample ID: 480-221861-1 MS
Matrix: Leachate
Analysis Batch: 719410

Client Sample ID: SUMP 3 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, bicarb (CaCO3)	2120		20.0	1976	4	mg/L		-712	60 - 140		

Lab Sample ID: 480-221861-1 DU
Matrix: Leachate
Analysis Batch: 719410

Client Sample ID: SUMP 3 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity, bicarb (CaCO3)	2120			2123		mg/L				0.3	20
Alkalinity, Carbonate	ND			ND		mg/L				NC	20

Lab Sample ID: MB 480-720188/101
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 10:36	1

Lab Sample ID: MB 480-720188/107
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 10:44	1

Lab Sample ID: MB 480-720188/124
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 11:01	1

Lab Sample ID: MB 480-720188/136
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 11:13	1

Method: 310.2 - Alkalinity (Continued)

Lab Sample ID: MB 480-720188/148
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 11:33	1

Lab Sample ID: MB 480-720188/31
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 09:33	1

Lab Sample ID: MB 480-720188/49
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Bicarbonate	ND		10.0		mg/L			07/30/24 09:49	1

Lab Sample ID: LCS 480-720188/106
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, Bicarbonate			50.0	50.78		mg/L		102	90 - 110		

Lab Sample ID: LCS 480-720188/123
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, Bicarbonate			50.0	50.56		mg/L		101	90 - 110		

Lab Sample ID: LCS 480-720188/147
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, Bicarbonate			50.0	49.28		mg/L		99	90 - 110		

Lab Sample ID: LCS 480-720188/48
Matrix: Water
Analysis Batch: 720188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity, Bicarbonate			50.0	51.93		mg/L		104	90 - 110		

Method: 410.4 - COD

Lab Sample ID: MB 480-719824/3
Matrix: Water
Analysis Batch: 719824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0		mg/L			07/26/24 12:20	1

Lab Sample ID: MB 480-719824/51
Matrix: Water
Analysis Batch: 719824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0		mg/L			07/26/24 12:20	1

Lab Sample ID: LCS 480-719824/4
Matrix: Water
Analysis Batch: 719824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chemical Oxygen Demand			25.0	27.47		mg/L		110	90 - 110		

Lab Sample ID: LCS 480-719824/52
Matrix: Water
Analysis Batch: 719824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chemical Oxygen Demand			25.0	22.82		mg/L		91	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 480-720335/47
Matrix: Water
Analysis Batch: 720335

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.0240		0.010		mg/L			07/31/24 15:16	1

Lab Sample ID: HLCS 480-720335/22
Matrix: Water
Analysis Batch: 720335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.400	0.400		mg/L		100	90 - 110		

Lab Sample ID: LCS 480-720335/23
Matrix: Water
Analysis Batch: 720335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.250	0.256		mg/L		102	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: 480-221861-2 MS
Matrix: Leachate
Analysis Batch: 720335

Client Sample ID: SUMP 4 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total	ND	F1	0.100	0.0557	F1	mg/L		51	90 - 110		

Lab Sample ID: MB 480-720849/47
Matrix: Water
Analysis Batch: 720849

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND	^+	0.010		mg/L			08/06/24 12:43	1

Lab Sample ID: HLCS 480-720849/22
Matrix: Water
Analysis Batch: 720849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.400	0.416		mg/L		104	90 - 110		

Lab Sample ID: LCS 480-720849/23
Matrix: Water
Analysis Batch: 720849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.250	0.246		mg/L		98	90 - 110		

Method: 9038 - Sulfate, Turbidimetric

Lab Sample ID: MB 480-719577/146
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 10:41	1

Lab Sample ID: MB 480-719577/152
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 10:46	1

Lab Sample ID: MB 480-719577/159
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 10:48	1

Method: 9038 - Sulfate, Turbidimetric (Continued)

Lab Sample ID: MB 480-719577/166
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 10:51	1

Lab Sample ID: MB 480-719577/179
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 11:05	1

Lab Sample ID: MB 480-719577/185
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 11:13	1

Lab Sample ID: MB 480-719577/192
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/24/24 11:16	1

Lab Sample ID: LCS 480-719577/151
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			30.0	31.80		mg/L		106	90 - 110		

Lab Sample ID: LCS 480-719577/158
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			30.0	32.23		mg/L		107	90 - 110		

Lab Sample ID: LCS 480-719577/165
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			30.0	31.88		mg/L		106	90 - 110		

Lab Sample ID: LCS 480-719577/178
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			30.0	31.64		mg/L		105	90 - 110		

Method: 9038 - Sulfate, Turbidimetric

Lab Sample ID: LCS 480-719577/184
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	30.0	31.82		mg/L		106	90 - 110

Lab Sample ID: LCS 480-719577/191
Matrix: Water
Analysis Batch: 719577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	30.0	31.47		mg/L		105	90 - 110

Lab Sample ID: 480-221886-1 MS
Matrix: Ground Water
Analysis Batch: 719577

Client Sample ID: JCL-WELL 11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	15.5		20.0	39.73		mg/L		121	60 - 128

Lab Sample ID: 480-221886-1 MSD
Matrix: Ground Water
Analysis Batch: 719577

Client Sample ID: JCL-WELL 11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	15.5		20.0	34.75		mg/L		96	60 - 128	13	20

Lab Sample ID: MB 480-720275/13
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/31/24 12:16	1

Lab Sample ID: MB 480-720275/19
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/31/24 12:19	1

Lab Sample ID: MB 480-720275/26
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/31/24 12:21	1

Lab Sample ID: MB 480-720275/33
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0		mg/L			07/31/24 12:26	1

Method: 9038 - Sulfate, Turbidimetric

Lab Sample ID: LCS 480-720275/18
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	30.0	31.05		mg/L		104	90 - 110

Lab Sample ID: LCS 480-720275/32
Matrix: Water
Analysis Batch: 720275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	30.0	31.88		mg/L		106	90 - 110

Lab Sample ID: 480-221884-3 MS
Matrix: Ground Water
Analysis Batch: 720275

Client Sample ID: MW-62S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	ND		20.0	20.45		mg/L		94	60 - 128

Lab Sample ID: 480-221884-3 MSD
Matrix: Ground Water
Analysis Batch: 720275

Client Sample ID: MW-62S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	ND		20.0	21.32		mg/L		99	60 - 128	4	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-719774/52
Matrix: Water
Analysis Batch: 719774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			07/25/24 18:01	1

Lab Sample ID: LCS 480-719774/53
Matrix: Water
Analysis Batch: 719774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	60.0	62.17		mg/L		104	90 - 110

Lab Sample ID: 480-221861-1 MS
Matrix: Leachate
Analysis Batch: 719774

Client Sample ID: SUMP 3 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	10.4		23.3	34.81		mg/L		105	54 - 131

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 480-221861-2 DU
Matrix: Leachate
Analysis Batch: 719774

Client Sample ID: SUMP 4 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	11.2			16.72	F3	mg/L				39	20

Lab Sample ID: MB 480-719919/4
Matrix: Water
Analysis Batch: 719919

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			07/26/24 14:52	1

Lab Sample ID: LCS 480-719919/5
Matrix: Water
Analysis Batch: 719919

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			60.0	63.88		mg/L		106	90 - 110		

Method: 9066 - Phenolics, Total Recoverable

Lab Sample ID: MB 480-719462/130
Matrix: Water
Analysis Batch: 719462

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Recoverable Phenolics	ND		0.010		mg/L			07/24/24 02:14	1

Lab Sample ID: MB 480-719462/17
Matrix: Water
Analysis Batch: 719462

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Recoverable Phenolics	ND		0.010		mg/L			07/23/24 19:18	1

Lab Sample ID: LCS 480-719462/131
Matrix: Water
Analysis Batch: 719462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Recoverable Phenolics			0.100	0.0972		mg/L		97	90 - 110		

Lab Sample ID: LCS 480-719462/18
Matrix: Water
Analysis Batch: 719462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Recoverable Phenolics			0.100	0.0953		mg/L		95	90 - 110		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-719324/1
Matrix: Water
Analysis Batch: 719324

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			07/23/24 12:56	1

Lab Sample ID: LCS 480-719324/2
Matrix: Water
Analysis Batch: 719324

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			501	498.0		mg/L		99	85 - 115		

Method: SM 4110B - Ion Chromatography

Lab Sample ID: MB 480-719192/28
Matrix: Water
Analysis Batch: 719192

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/23/24 08:10	1
Sulfate	ND		2.0		mg/L			07/23/24 08:10	1

Lab Sample ID: LCS 480-719192/29
Matrix: Water
Analysis Batch: 719192

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			50.1	49.30		mg/L		98	90 - 110		
Sulfate			50.1	49.51		mg/L		99	90 - 110		

Lab Sample ID: MB 480-719366/28
Matrix: Water
Analysis Batch: 719366

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/23/24 22:38	1
Sulfate	ND		2.0		mg/L			07/23/24 22:38	1

Lab Sample ID: MB 480-719366/4
Matrix: Water
Analysis Batch: 719366

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/23/24 16:44	1
Sulfate	ND		2.0		mg/L			07/23/24 16:44	1

Lab Sample ID: LCS 480-719366/29
Matrix: Water
Analysis Batch: 719366

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			50.1	49.43		mg/L		99	90 - 110		
Sulfate			50.1	49.28		mg/L		98	90 - 110		

Method: SM 4110B - Ion Chromatography (Continued)

Lab Sample ID: LCS 480-719366/5
Matrix: Water
Analysis Batch: 719366

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			50.1	49.54		mg/L		99	90 - 110		
Sulfate			50.1	49.45		mg/L		99	90 - 110		

Lab Sample ID: 480-221861-1 MS
Matrix: Leachate
Analysis Batch: 719366

Client Sample ID: SUMP 3 Secondary
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	146		251	379.5		mg/L		93	81 - 120		
Sulfate	28.7		250	267.6		mg/L		95	80 - 120		

Lab Sample ID: 480-221885-5 MS
Matrix: Ground Water
Analysis Batch: 719366

Client Sample ID: MW-213
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	8.8		100	106.8		mg/L		98	81 - 120		
Sulfate	37.6		100	134.2		mg/L		97	80 - 120		

Lab Sample ID: 480-221885-5 MSD
Matrix: Ground Water
Analysis Batch: 719366

Client Sample ID: MW-213
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	8.8		100	105.6		mg/L		97	81 - 120	1	15
Sulfate	37.6		100	133.2		mg/L		96	80 - 120	1	15

GC/MS VOA

Analysis Batch: 719153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	8260C	
480-221858-2	PHASE V	Total/NA	Leachate	8260C	
MB 480-719153/9	Method Blank	Total/NA	Water	8260C	
LCS 480-719153/7	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 719212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	8260C	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	8260C	
MB 480-719212/8	Method Blank	Total/NA	Water	8260C	
LCS 480-719212/6	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 719339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221887-1	MW-60	Total/NA	Ground Water	8260C	
480-221887-2	MW-62S	Total/NA	Ground Water	8260C	
MB 480-719339/8	Method Blank	Total/NA	Water	8260C	
LCS 480-719339/6	Lab Control Sample	Total/NA	Water	8260C	

Metals

Prep Batch: 719223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	3005A	
480-221858-2	PHASE V	Total/NA	Leachate	3005A	
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	3005A	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	3005A	
MB 480-719223/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-719223/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 719225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221884-1	MW-19R	Dissolved	Ground Water	3005A	
480-221884-2	MW-59	Dissolved	Ground Water	3005A	
480-221884-3	MW-62S	Dissolved	Ground Water	3005A	
480-221885-1	MW-204	Dissolved	Ground Water	3005A	
480-221885-2	MW-206	Dissolved	Ground Water	3005A	
480-221885-3	MW-21	Dissolved	Ground Water	3005A	
480-221885-4	MW-212SR	Dissolved	Ground Water	3005A	
480-221885-5	MW-213	Dissolved	Ground Water	3005A	
480-221885-6	MW-214	Dissolved	Ground Water	3005A	
480-221885-7	MW-22R	Dissolved	Ground Water	3005A	
480-221885-8	MW-36	Dissolved	Ground Water	3005A	
480-221886-1	JCL-WELL 11	Dissolved	Ground Water	3005A	
480-221886-2	JCL-WELL 12	Dissolved	Ground Water	3005A	
480-221886-3	JCL-WELL 13	Dissolved	Ground Water	3005A	
480-221886-4	JCL-WELL 14	Dissolved	Ground Water	3005A	
480-221886-5	MW-20R	Dissolved	Ground Water	3005A	
480-221886-7	MW-62D	Dissolved	Ground Water	3005A	
MB 480-719225/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-719225/2-A	Lab Control Sample	Total/NA	Water	3005A	

Metals (Continued)

Prep Batch: 719225 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221886-2 MS	JCL-WELL 12	Dissolved	Ground Water	3005A	
480-221886-2 MSD	JCL-WELL 12	Dissolved	Ground Water	3005A	

Prep Batch: 719303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	3020A	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	3020A	
MB 480-719303/1-A	Method Blank	Total/NA	Water	3020A	
LCS 480-719303/2-A	Lab Control Sample	Total/NA	Water	3020A	

Analysis Batch: 719603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	6010C	719223
480-221858-2	PHASE V	Total/NA	Leachate	6010C	719223
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	6010C	719223
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	6010C	719223
480-221884-1	MW-19R	Dissolved	Ground Water	6010C	719225
480-221884-2	MW-59	Dissolved	Ground Water	6010C	719225
480-221884-3	MW-62S	Dissolved	Ground Water	6010C	719225
480-221885-1	MW-204	Dissolved	Ground Water	6010C	719225
480-221885-2	MW-206	Dissolved	Ground Water	6010C	719225
480-221885-3	MW-21	Dissolved	Ground Water	6010C	719225
480-221885-4	MW-212SR	Dissolved	Ground Water	6010C	719225
480-221885-5	MW-213	Dissolved	Ground Water	6010C	719225
480-221885-6	MW-214	Dissolved	Ground Water	6010C	719225
480-221885-7	MW-22R	Dissolved	Ground Water	6010C	719225
480-221885-8	MW-36	Dissolved	Ground Water	6010C	719225
480-221886-1	JCL-WELL 11	Dissolved	Ground Water	6010C	719225
480-221886-2	JCL-WELL 12	Dissolved	Ground Water	6010C	719225
480-221886-3	JCL-WELL 13	Dissolved	Ground Water	6010C	719225
480-221886-4	JCL-WELL 14	Dissolved	Ground Water	6010C	719225
480-221886-5	MW-20R	Dissolved	Ground Water	6010C	719225
480-221886-7	MW-62D	Dissolved	Ground Water	6010C	719225
MB 480-719223/1-A	Method Blank	Total/NA	Water	6010C	719223
MB 480-719225/1-A	Method Blank	Total/NA	Water	6010C	719225
LCS 480-719223/2-A	Lab Control Sample	Total/NA	Water	6010C	719223
LCS 480-719225/2-A	Lab Control Sample	Total/NA	Water	6010C	719225
480-221886-2 MS	JCL-WELL 12	Dissolved	Ground Water	6010C	719225
480-221886-2 MSD	JCL-WELL 12	Dissolved	Ground Water	6010C	719225

Analysis Batch: 719619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	6020A	719303
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	6020A	719303
MB 480-719303/1-A	Method Blank	Total/NA	Water	6020A	719303
LCS 480-719303/2-A	Lab Control Sample	Total/NA	Water	6020A	719303

Analysis Batch: 719683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	6020A	719303
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	6020A	719303

Metals (Continued)

Analysis Batch: 719683 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-719303/1-A	Method Blank	Total/NA	Water	6020A	719303
LCS 480-719303/2-A	Lab Control Sample	Total/NA	Water	6020A	719303

Analysis Batch: 719842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	6020A	719303
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	6020A	719303
MB 480-719303/1-A	Method Blank	Total/NA	Water	6020A	719303
LCS 480-719303/2-A	Lab Control Sample	Total/NA	Water	6020A	719303

General Chemistry

Analysis Batch: 719192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	SM 4110B	
480-221858-2	PHASE V	Total/NA	Leachate	SM 4110B	
MB 480-719192/28	Method Blank	Total/NA	Water	SM 4110B	
LCS 480-719192/29	Lab Control Sample	Total/NA	Water	SM 4110B	

Analysis Batch: 719324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	SM 2540C	
480-221858-2	PHASE V	Total/NA	Leachate	SM 2540C	
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	SM 2540C	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	SM 2540C	
MB 480-719324/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-719324/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 719366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	SM 4110B	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	SM 4110B	
480-221885-1	MW-204	Total/NA	Ground Water	SM 4110B	
480-221885-2	MW-206	Total/NA	Ground Water	SM 4110B	
480-221885-3	MW-21	Total/NA	Ground Water	SM 4110B	
480-221885-4	MW-212SR	Total/NA	Ground Water	SM 4110B	
480-221885-5	MW-213	Total/NA	Ground Water	SM 4110B	
480-221885-6	MW-214	Total/NA	Ground Water	SM 4110B	
480-221885-7	MW-22R	Total/NA	Ground Water	SM 4110B	
480-221885-8	MW-36	Total/NA	Ground Water	SM 4110B	
MB 480-719366/28	Method Blank	Total/NA	Water	SM 4110B	
MB 480-719366/4	Method Blank	Total/NA	Water	SM 4110B	
LCS 480-719366/29	Lab Control Sample	Total/NA	Water	SM 4110B	
LCS 480-719366/5	Lab Control Sample	Total/NA	Water	SM 4110B	
480-221861-1 MS	SUMP 3 Secondary	Total/NA	Leachate	SM 4110B	
480-221885-5 MS	MW-213	Total/NA	Ground Water	SM 4110B	
480-221885-5 MSD	MW-213	Total/NA	Ground Water	SM 4110B	

Analysis Batch: 719410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	310.2	

General Chemistry (Continued)

Analysis Batch: 719410 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	310.2	
MB 480-719410/156	Method Blank	Total/NA	Water	310.2	
MB 480-719410/168	Method Blank	Total/NA	Water	310.2	
MB 480-719410/72	Method Blank	Total/NA	Water	310.2	
MB 480-719410/84	Method Blank	Total/NA	Water	310.2	
LCS 480-719410/167	Lab Control Sample	Total/NA	Water	310.2	
LCS 480-719410/83	Lab Control Sample	Total/NA	Water	310.2	
480-221861-1 MS	SUMP 3 Secondary	Total/NA	Leachate	310.2	
480-221861-1 DU	SUMP 3 Secondary	Total/NA	Leachate	310.2	

Analysis Batch: 719462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	9066	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	9066	
MB 480-719462/130	Method Blank	Total/NA	Water	9066	
MB 480-719462/17	Method Blank	Total/NA	Water	9066	
LCS 480-719462/131	Lab Control Sample	Total/NA	Water	9066	
LCS 480-719462/18	Lab Control Sample	Total/NA	Water	9066	

Analysis Batch: 719577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221884-2	MW-59	Total/NA	Ground Water	9038	
480-221886-1	JCL-WELL 11	Total/NA	Ground Water	9038	
480-221886-2	JCL-WELL 12	Total/NA	Ground Water	9038	
480-221886-3	JCL-WELL 13	Total/NA	Ground Water	9038	
480-221886-4	JCL-WELL 14	Total/NA	Ground Water	9038	
480-221886-5	MW-20R	Total/NA	Ground Water	9038	
480-221886-6	MW-21	Total/NA	Ground Water	9038	
480-221886-7	MW-62D	Total/NA	Ground Water	9038	
MB 480-719577/146	Method Blank	Total/NA	Water	9038	
MB 480-719577/152	Method Blank	Total/NA	Water	9038	
MB 480-719577/159	Method Blank	Total/NA	Water	9038	
MB 480-719577/166	Method Blank	Total/NA	Water	9038	
MB 480-719577/179	Method Blank	Total/NA	Water	9038	
MB 480-719577/185	Method Blank	Total/NA	Water	9038	
MB 480-719577/192	Method Blank	Total/NA	Water	9038	
LCS 480-719577/151	Lab Control Sample	Total/NA	Water	9038	
LCS 480-719577/158	Lab Control Sample	Total/NA	Water	9038	
LCS 480-719577/165	Lab Control Sample	Total/NA	Water	9038	
LCS 480-719577/178	Lab Control Sample	Total/NA	Water	9038	
LCS 480-719577/184	Lab Control Sample	Total/NA	Water	9038	
LCS 480-719577/191	Lab Control Sample	Total/NA	Water	9038	
480-221886-1 MS	JCL-WELL 11	Total/NA	Ground Water	9038	
480-221886-1 MSD	JCL-WELL 11	Total/NA	Ground Water	9038	

Analysis Batch: 719774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	9060A	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	9060A	
MB 480-719774/52	Method Blank	Total/NA	Water	9060A	
LCS 480-719774/53	Lab Control Sample	Total/NA	Water	9060A	

General Chemistry (Continued)

Analysis Batch: 719774 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1 MS	SUMP 3 Secondary	Total/NA	Leachate	9060A	
480-221861-2 DU	SUMP 4 Secondary	Total/NA	Leachate	9060A	

Analysis Batch: 719824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	410.4	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	410.4	
MB 480-719824/3	Method Blank	Total/NA	Water	410.4	
MB 480-719824/51	Method Blank	Total/NA	Water	410.4	
LCS 480-719824/4	Lab Control Sample	Total/NA	Water	410.4	
LCS 480-719824/52	Lab Control Sample	Total/NA	Water	410.4	

Analysis Batch: 719919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-719919/4	Method Blank	Total/NA	Water	9060A	
LCS 480-719919/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 719959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	Inorganic N	
480-221858-2	PHASE V	Total/NA	Leachate	Inorganic N	
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	Inorganic N	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	Inorganic N	
480-221885-1	MW-204	Total/NA	Ground Water	Inorganic N	
480-221885-2	MW-206	Total/NA	Ground Water	Inorganic N	
480-221885-3	MW-21	Total/NA	Ground Water	Inorganic N	
480-221885-4	MW-212SR	Total/NA	Ground Water	Inorganic N	
480-221885-5	MW-213	Total/NA	Ground Water	Inorganic N	
480-221885-6	MW-214	Total/NA	Ground Water	Inorganic N	
480-221885-7	MW-22R	Total/NA	Ground Water	Inorganic N	
480-221885-8	MW-36	Total/NA	Ground Water	Inorganic N	

Analysis Batch: 720188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221885-2	MW-206	Total/NA	Ground Water	310.2	
480-221885-3	MW-21	Total/NA	Ground Water	310.2	
480-221885-5	MW-213	Total/NA	Ground Water	310.2	
480-221885-7	MW-22R	Total/NA	Ground Water	310.2	
480-221885-8	MW-36	Total/NA	Ground Water	310.2	
MB 480-720188/101	Method Blank	Total/NA	Water	310.2	
MB 480-720188/107	Method Blank	Total/NA	Water	310.2	
MB 480-720188/124	Method Blank	Total/NA	Water	310.2	
MB 480-720188/136	Method Blank	Total/NA	Water	310.2	
MB 480-720188/148	Method Blank	Total/NA	Water	310.2	
MB 480-720188/31	Method Blank	Total/NA	Water	310.2	
MB 480-720188/49	Method Blank	Total/NA	Water	310.2	
LCS 480-720188/106	Lab Control Sample	Total/NA	Water	310.2	
LCS 480-720188/123	Lab Control Sample	Total/NA	Water	310.2	
LCS 480-720188/147	Lab Control Sample	Total/NA	Water	310.2	
LCS 480-720188/48	Lab Control Sample	Total/NA	Water	310.2	

General Chemistry

Analysis Batch: 720275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221884-1	MW-19R	Total/NA	Ground Water	9038	
480-221884-3	MW-62S	Total/NA	Ground Water	9038	
MB 480-720275/13	Method Blank	Total/NA	Water	9038	
MB 480-720275/19	Method Blank	Total/NA	Water	9038	
MB 480-720275/26	Method Blank	Total/NA	Water	9038	
MB 480-720275/33	Method Blank	Total/NA	Water	9038	
LCS 480-720275/18	Lab Control Sample	Total/NA	Water	9038	
LCS 480-720275/32	Lab Control Sample	Total/NA	Water	9038	
480-221884-3 MS	MW-62S	Total/NA	Ground Water	9038	
480-221884-3 MSD	MW-62S	Total/NA	Ground Water	9038	

Analysis Batch: 720335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	9012B	
MB 480-720335/47	Method Blank	Total/NA	Water	9012B	
HLCS 480-720335/22	Lab Control Sample	Total/NA	Water	9012B	
LCS 480-720335/23	Lab Control Sample	Total/NA	Water	9012B	
480-221861-2 MS	SUMP 4 Secondary	Total/NA	Leachate	9012B	

Analysis Batch: 720849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	9012B	
MB 480-720849/47	Method Blank	Total/NA	Water	9012B	
HLCS 480-720849/22	Lab Control Sample	Total/NA	Water	9012B	
LCS 480-720849/23	Lab Control Sample	Total/NA	Water	9012B	

Field Service / Mobile Lab

Analysis Batch: 719397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-221858-1	PHASE III/IV COMP	Total/NA	Leachate	Field Sampling	
480-221858-2	PHASE V	Total/NA	Leachate	Field Sampling	
480-221861-1	SUMP 3 Secondary	Total/NA	Leachate	Field Sampling	
480-221861-2	SUMP 4 Secondary	Total/NA	Leachate	Field Sampling	
480-221885-1	MW-204	Total/NA	Ground Water	Field Sampling	
480-221885-2	MW-206	Total/NA	Ground Water	Field Sampling	
480-221885-3	MW-21	Total/NA	Ground Water	Field Sampling	
480-221885-4	MW-212SR	Total/NA	Ground Water	Field Sampling	
480-221885-5	MW-213	Total/NA	Ground Water	Field Sampling	
480-221885-6	MW-214	Total/NA	Ground Water	Field Sampling	
480-221885-7	MW-22R	Total/NA	Ground Water	Field Sampling	
480-221885-8	MW-36	Total/NA	Ground Water	Field Sampling	
480-221887-1	MW-60	Total/NA	Ground Water	Field Sampling	
480-221887-2	MW-62S	Total/NA	Ground Water	Field Sampling	

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: PHASE III/IV COMP

Lab Sample ID: 480-221858-1

Date Collected: 07/18/24 10:45
Date Received: 07/19/24 12:00

Matrix: Leachate

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		5	719153	ERS	EET BUF	07/22/24 20:44
Total/NA	Prep	3005A			719223	ET	EET BUF	07/24/24 09:10
Total/NA	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 16:58
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:25
Total/NA	Analysis	SM 2540C		1	719324	AB	EET BUF	07/23/24 12:56
Total/NA	Analysis	SM 4110B		100	719192	AF	EET BUF	07/23/24 11:07
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 10:45

Client Sample ID: PHASE V

Lab Sample ID: 480-221858-2

Date Collected: 07/18/24 11:00
Date Received: 07/19/24 12:00

Matrix: Leachate

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		10	719153	ERS	EET BUF	07/22/24 21:07
Total/NA	Prep	3005A			719223	ET	EET BUF	07/24/24 09:10
Total/NA	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 17:00
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:26
Total/NA	Analysis	SM 2540C		1	719324	AB	EET BUF	07/23/24 12:56
Total/NA	Analysis	SM 4110B		100	719192	AF	EET BUF	07/23/24 11:22
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 11:00

Client Sample ID: SUMP 3 Secondary

Lab Sample ID: 480-221861-1

Date Collected: 07/18/24 10:00
Date Received: 07/19/24 12:00

Matrix: Leachate

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	719212	ERS	EET BUF	07/23/24 04:38
Total/NA	Prep	3005A			719223	ET	EET BUF	07/24/24 09:10
Total/NA	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 17:24
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719619	BMB	EET BUF	07/24/24 17:46
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719683	BMB	EET BUF	07/25/24 14:28
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719842	BMB	EET BUF	07/26/24 15:08
Total/NA	Analysis	310.2		50	719410	CG	EET BUF	07/23/24 12:36
Total/NA	Analysis	410.4		1	719824	RMJ	EET BUF	07/26/24 12:20
Total/NA	Analysis	9012B		1	720849	CLT	EET BUF	08/06/24 12:10
Total/NA	Analysis	9060A		1	719774	AF	EET BUF	07/25/24 18:58
Total/NA	Analysis	9066		1	719462	GW	EET BUF	07/24/24 02:35
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:27
Total/NA	Analysis	SM 2540C		1	719324	AB	EET BUF	07/23/24 12:56
Total/NA	Analysis	SM 4110B		5	719366	AF	EET BUF	07/23/24 21:39

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: SUMP 3 Secondary
Date Collected: 07/18/24 10:00
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-1
Matrix: Leachate

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 10:00

Client Sample ID: SUMP 4 Secondary
Date Collected: 07/18/24 10:15
Date Received: 07/19/24 12:00

Lab Sample ID: 480-221861-2
Matrix: Leachate

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	719212	ERS	EET BUF	07/23/24 05:02
Total/NA	Prep	3005A			719223	ET	EET BUF	07/24/24 09:10
Total/NA	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 17:26
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719619	BMB	EET BUF	07/24/24 17:48
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719683	BMB	EET BUF	07/25/24 14:30
Total/NA	Prep	3020A			719303	ET	EET BUF	07/24/24 09:02
Total/NA	Analysis	6020A		1	719842	BMB	EET BUF	07/26/24 15:11
Total/NA	Analysis	310.2		50	719410	CG	EET BUF	07/23/24 12:36
Total/NA	Analysis	410.4		1	719824	RMJ	EET BUF	07/26/24 12:20
Total/NA	Analysis	9012B		1	720335	GW	EET BUF	07/31/24 14:31
Total/NA	Analysis	9060A		1	719774	AF	EET BUF	07/25/24 19:58
Total/NA	Analysis	9066		1	719462	GW	EET BUF	07/24/24 02:38
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:29
Total/NA	Analysis	SM 2540C		1	719324	AB	EET BUF	07/23/24 12:56
Total/NA	Analysis	SM 4110B		10	719366	AF	EET BUF	07/23/24 23:08
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 10:15

Client Sample ID: MW-19R
Date Collected: 07/18/24 12:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:16
Total/NA	Analysis	9038		5	720275	CG	EET BUF	07/31/24 12:27

Client Sample ID: MW-59
Date Collected: 07/18/24 10:45
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:18
Total/NA	Analysis	9038		1	719577	CG	EET BUF	07/24/24 11:02

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-62S
Date Collected: 07/18/24 11:20
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221884-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:20
Total/NA	Analysis	9038		1	720275	CG	EET BUF	07/31/24 12:20

Client Sample ID: MW-204
Date Collected: 07/18/24 14:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:56
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:30
Total/NA	Analysis	SM 4110B		2	719366	AF	EET BUF	07/23/24 23:22
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 14:35

Client Sample ID: MW-206
Date Collected: 07/18/24 11:05
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:57
Total/NA	Analysis	310.2		5	720188	CG	EET BUF	07/30/24 10:58
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:32
Total/NA	Analysis	SM 4110B		2	719366	AF	EET BUF	07/23/24 23:37
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 11:05

Client Sample ID: MW-21
Date Collected: 07/18/24 13:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:59
Total/NA	Analysis	310.2		26	720188	CG	EET BUF	07/30/24 12:18
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:38
Total/NA	Analysis	SM 4110B		5	719366	AF	EET BUF	07/23/24 23:52
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 13:00

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-212SR
Date Collected: 07/18/24 10:40
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:01
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:43
Total/NA	Analysis	SM 4110B		2	719366	AF	EET BUF	07/24/24 00:07
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 10:40

Client Sample ID: MW-213
Date Collected: 07/18/24 13:40
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:03
Total/NA	Analysis	310.2		5	720188	CG	EET BUF	07/30/24 10:59
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:44
Total/NA	Analysis	SM 4110B		2	719366	AF	EET BUF	07/24/24 00:21
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 13:40

Client Sample ID: MW-214
Date Collected: 07/18/24 13:25
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:11
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:45
Total/NA	Analysis	SM 4110B		2	719366	AF	EET BUF	07/24/24 01:35
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 13:25

Client Sample ID: MW-22R
Date Collected: 07/18/24 11:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-7
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:13
Total/NA	Analysis	310.2		5	720188	CG	EET BUF	07/30/24 11:02
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:47
Total/NA	Analysis	SM 4110B		5	719366	AF	EET BUF	07/24/24 01:50
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 11:35

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-36
Date Collected: 07/18/24 09:55
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221885-8
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 19:15
Total/NA	Analysis	310.2		5	720188	CG	EET BUF	07/30/24 11:03
Total/NA	Analysis	Inorganic N		1	719959	DLG	EET BUF	07/22/24 15:48
Total/NA	Analysis	SM 4110B		5	719366	AF	EET BUF	07/24/24 02:05
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 09:55

Client Sample ID: JCL-WELL 11
Date Collected: 07/18/24 14:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:29
Total/NA	Analysis	9038		1	719577	CG	EET BUF	07/24/24 11:03

Client Sample ID: JCL-WELL 12
Date Collected: 07/18/24 12:25
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:31
Total/NA	Analysis	9038		1	719577	CG	EET BUF	07/24/24 11:05

Client Sample ID: JCL-WELL 13
Date Collected: 07/18/24 13:30
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:40
Total/NA	Analysis	9038		5	719577	CG	EET BUF	07/24/24 11:14

Client Sample ID: JCL-WELL 14
Date Collected: 07/18/24 13:35
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:48
Total/NA	Analysis	9038		5	719577	CG	EET BUF	07/24/24 11:14

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Client Sample ID: MW-20R
Date Collected: 07/18/24 12:30
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:50
Total/NA	Analysis	9038		5	719577	CG	EET BUF	07/24/24 11:15

Client Sample ID: MW-21
Date Collected: 07/18/24 13:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9038		5	719577	CG	EET BUF	07/24/24 11:17

Client Sample ID: MW-62D
Date Collected: 07/18/24 12:05
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221886-7
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			719225	ET	EET BUF	07/24/24 09:08
Dissolved	Analysis	6010C		1	719603	NZG	EET BUF	07/24/24 18:52
Total/NA	Analysis	9038		5	719577	CG	EET BUF	07/24/24 11:20

Client Sample ID: MW-60
Date Collected: 07/18/24 15:00
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	719339	ERS	EET BUF	07/24/24 05:28
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 15:00

Client Sample ID: MW-62S
Date Collected: 07/18/24 11:20
Date Received: 07/20/24 10:00

Lab Sample ID: 480-221887-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	719339	ERS	EET BUF	07/24/24 05:53
Total/NA	Analysis	Field Sampling		1	719397	C1P	EET BUF	07/18/24 11:20

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Laboratory: Eurofins Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0807	03-31-25
Georgia	State	10026 (NY)	03-31-25
Georgia	State Program	N/A	03-31-09 *
Illinois	NELAP	200003	09-30-24
Iowa	State	374	03-01-25
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	02-01-25
Kentucky (UST)	State	108092	04-01-25
Kentucky (WW)	State	KY90029	12-31-24
Maine	State	NY00044	12-04-24
Maryland	State	294	06-30-25
Massachusetts	State	M-NY044	07-01-25
Michigan	State	9937	03-31-25
Michigan	State Program	9937	04-01-09 *
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-17-24
New Jersey	NELAP	NY455	07-02-25
New York	NELAP	10026	03-31-25
Pennsylvania	NELAP	68-00281	08-31-24
Rhode Island	State	LAO00378	12-30-24
Virginia	NELAP	460185	09-14-24
Washington	State	C784	02-10-25
Wisconsin	State	998310390	08-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	EET BUF
6010C	Metals (ICP)	SW846	EET BUF
6020A	Metals (ICP/MS)	SW846	EET BUF
310.2	Alkalinity	EPA	EET BUF
410.4	COD	EPA	EET BUF
9012B	Cyanide, Total and/or Amenable	SW846	EET BUF
9038	Sulfate, Turbidimetric	SW846	EET BUF
9060A	Organic Carbon, Total (TOC)	SW846	EET BUF
9066	Phenolics, Total Recoverable	EPA	EET BUF
Inorganic N	Nitrogen, Total Inorganic	EPA	EET BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET BUF
SM 4110B	Ion Chromatography	SM	EET BUF
Field Sampling	Field Sampling	EPA	EET BUF
3005A	Preparation, Total Metals	SW846	EET BUF
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET BUF
3020A	Preparation, Total Metals	SW846	EET BUF
5030C	Purge and Trap	SW846	EET BUF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-221858-1	PHASE III/IV COMP	Leachate	07/18/24 10:45	07/19/24 12:00
480-221858-2	PHASE V	Leachate	07/18/24 11:00	07/19/24 12:00
480-221861-1	SUMP 3 Secondary	Leachate	07/18/24 10:00	07/19/24 12:00
480-221861-2	SUMP 4 Secondary	Leachate	07/18/24 10:15	07/19/24 12:00
480-221884-1	MW-19R	Ground Water	07/18/24 12:35	07/20/24 10:00
480-221884-2	MW-59	Ground Water	07/18/24 10:45	07/20/24 10:00
480-221884-3	MW-62S	Ground Water	07/18/24 11:20	07/20/24 10:00
480-221885-1	MW-204	Ground Water	07/18/24 14:35	07/20/24 10:00
480-221885-2	MW-206	Ground Water	07/18/24 11:05	07/20/24 10:00
480-221885-3	MW-21	Ground Water	07/18/24 13:00	07/20/24 10:00
480-221885-4	MW-212SR	Ground Water	07/18/24 10:40	07/20/24 10:00
480-221885-5	MW-213	Ground Water	07/18/24 13:40	07/20/24 10:00
480-221885-6	MW-214	Ground Water	07/18/24 13:25	07/20/24 10:00
480-221885-7	MW-22R	Ground Water	07/18/24 11:35	07/20/24 10:00
480-221885-8	MW-36	Ground Water	07/18/24 09:55	07/20/24 10:00
480-221886-1	JCL-WELL 11	Ground Water	07/18/24 14:00	07/20/24 10:00
480-221886-2	JCL-WELL 12	Ground Water	07/18/24 12:25	07/20/24 10:00
480-221886-3	JCL-WELL 13	Ground Water	07/18/24 13:30	07/20/24 10:00
480-221886-4	JCL-WELL 14	Ground Water	07/18/24 13:35	07/20/24 10:00
480-221886-5	MW-20R	Ground Water	07/18/24 12:30	07/20/24 10:00
480-221886-6	MW-21	Ground Water	07/18/24 13:00	07/20/24 10:00
480-221886-7	MW-62D	Ground Water	07/18/24 12:05	07/20/24 10:00
480-221887-1	MW-60	Ground Water	07/18/24 15:00	07/20/24 10:00
480-221887-2	MW-62S	Ground Water	07/18/24 11:20	07/20/24 10:00

Quantitation Limit Exceptions Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-221858-1

The requested project specific reporting limits listed below were less than laboratory standard quantitation limits (PQL) but greater than or equal to the laboratory method detection limits (MDL). It must be noted that results reported below lab standard quantitation limits may result in false positive/false negative values and less accurate quantitation. Routine laboratory procedures do not indicate corrective action for detections below the laboratory's PQL.

Method	Analyte	Matrix	Prep Type	Unit	Client RL	Lab PQL
8260C	Acetone	Ground Water	Total/NA	ug/L	5.0	10
8260C	Acetone	Leachate	Total/NA	ug/L	5.0	10
8260C	Methyl ethyl ketone (MEK)	Ground Water	Total/NA	ug/L	5.0	10
8260C	Methyl ethyl ketone (MEK)	Leachate	Total/NA	ug/L	5.0	10
6010C	Beryllium	Leachate	Total/NA	mg/L	0.00070	0.002
6010C	Chromium	Leachate	Total/NA	mg/L	0.0015	0.004
6010C	Iron	Leachate	Total/NA	mg/L	0.020	0.05
6010C	Vanadium	Leachate	Total/NA	mg/L	0.0015	0.005
6020A	Cadmium	Leachate	Total/NA	mg/L	0.00020	0.0005
9038	Sulfate	Ground Water	Total/NA	mg/L	2.0	5.0

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins | Environment Testing

Client Information	Sampler: James Wooster	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197230-11330.1
Client Contact: Steve Walters	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 1
Company: Waste Management	PWSID:			Job #:
Address: Pine Tree Acres Landfill 36600 29 Mile Rd.	Due Date Requested:			
City: Lenox	TAT Requested (days):			
State, Zip: MI, 48048	Compliance Project: Δ Yes Δ No			
Phone: 586-749-6122(Tel)	PO #: 11229043			
Email: swalter3@wm.com	WO #:			
Project Name: McGill Road Landfill/MI11 Event Desc: Qtrly Leach - Active (1,7,1	Project #: 48002771			
Site: Michigan	SSOW#:			

Analysis Requested

Preservation Codes:
N - None
S - H2SO4
D - HNO3
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SM4110B_28D - Chloride, Sulfate	350.1, 353.2_Prec, Nitrogen,Inorg	6010C - Iron	2540C_Calcd - Total Dissolved Solids	FieldSampling - Field	8260C - Volatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	S	D	N	N	N		
PHASE III/IV COMP	07/18/24	1045	G	Water	N	N	X	X	X	X	X	X	7	
PHASE V	07/18/24	1100	G	Water	N	N	X	X	X	X	X	X	7	

480-221858 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 07/18/24 1510	Company ESG	Received by:	Date/Time: 7/19/24 1510	Company EFNA
Relinquished by:	Date/Time: 7/19/24	Company EFNA	Received by:	Date/Time: 7/19/24 1200	Company EFA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.0# ICE

Ver: 04/02/2024

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins | Environment Testing

Client Information	Sampler: James Wooster	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197231-11335.1
Client Contact: Steve Walters	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 1
Company: Waste Management	PWSID:			Job #:
Address: Pine Tree Acres Landfill 36600 29 Mile Rd.	Due Date Requested:			
City: Lenox	TAT Requested (days):			
State, Zip: MI, 48048	Compliance Project: Δ Yes Δ No			
Phone: 586-749-6122(Tel)	PO #: 11229043			
Email: swalter3@wm.com	WO #:			
Project Name: McGill Road Landfill/MI11 Event Desc: Secondary Leachate Colle	Project #: 48002771			
Site: Michigan	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SM4110B_28D - Chloride, Sulfate	350.1, 353.2_Pres, 410.4, Nitrogen,Inorg	6010C, 6020A	9066 - Total Recoverable Phenolics	9060A - Total Organic Carbon	2540C_Calcd - Total Dissolved Solids	FieldSampling - Field	9012B - Cyanide, Total	8260C - Volatiles	310.2 - Alkalinity				Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	S	D	S	S	N	N	B	N	N					
SUMP 3 Secondary	07/18/24	1000	G	Water	N	N	X	X	X	X	X	X	X	X	X	X				16	
SUMP 4 Secondary	07/18/24	1015	G	Water	N	N	X	X	X	X	X	X	X	X	X	X				16	

480-221861 Chain of Custody

Preservation Codes:
N - None
S - H2SO4
D - HNO3
B - NaOH
Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	James Wooster	07/18/24 1510	ESS	Kelly M	7/18/24 1510	EEDA
2	Kelly M	7/18/24	EEDA	[illegible]	7/19/24 1200	TA
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.3 # 1+1E

Ver: 04/02/2024

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins | Environment Testing

Client Information

Client Contact: Steve Walters	Sampler: James Webster	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197227-12117.1
Company: Waste Management	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Address: C/O Venice Park RDF	PWSID:			Job #:
City: Lennon	Due Date Requested:			
State, Zip: MI, 48449	TAT Requested (days):			
Phone: 586-749-6122(Tel)	Compliance Project: Δ Yes Δ No			
Email: swalter3@wm.com	PO #: 11229043			
Project Name: McGill Road Landfill/MI11 Event Desc: Quarterly RAP Mont. (1,7	WO #:			
Site: Michigan	Project #: 48002771			
	SSOW#:			

Analysis Requested

Preservation Codes:
D - HNO3
N - None

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C - Boron, Dissolved	9038 - Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N		
MW-19R	07/18/24	1235	G	Water	Y	N	X	X	2	
MW-59	07/18/24	1045	G	Water	Y	N	X	X	2	
MW-62S	07/18/24	1120	G	Water	Y	N	X	X	2	

480-221884 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 07/19/24 1015	Company ESS	Received by:	Date/Time: 7/19/24 10:20am	Company EETA		
Relinquished by:	Date/Time: 7/19/24 10:27	Company EETA	Received by:	Date/Time: 7/20/24 1000	Company TAS		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: #1 2.6

Ver: 04/02/2024

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins | Environment Testing

Client Information	Sampler: James Wooster	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197226-12116.1
Client Contact: Steve Walters	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Waste Management	PWSID:			Job #:
Address: C/O Venice Park RDF	Due Date Requested:			
City: Lennon	TAT Requested (days):			
State, Zip: MI, 48449	Compliance Project: Δ Yes Δ No			
Phone: 586-749-6122(Tel)	PO #: 11229043			
Email: swalter3@wm.com	WO #:			
Project Name: McGill Road Landfill/MI11 Event Desc: Quarterly GW - Active (1,	Project #: 48002771			
Site: Michigan	SSOW#:			

Analysis Requested

Preservation Codes:
N - None
S - H2SO4
D - HNO3

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SM4110B_28D - Chloride	350.1, 353.2_Pres, Nitrogen,Inorg	6010C - Dissolved Metals ICP	FieldSampling - Field	Total Number of containers
Preservation Code:							N	S	D	N	
MW-204	07/18/24	1435	G	Water	Y	N	X	X	X	X	3
MW-206	07/18/24	1105	G	Water	Y	N	X	X	X	X	3
MW-21	07/18/24	1300	G	Water	Y	N	X	X	X	X	3
MW-212SR	07/18/24	1040	G	Water	Y	N	X	X	X	X	3
MW-213	07/18/24	1340	G	Water	Y	N	X	X	X	X	3
MW-214	07/18/24	1325	G	Water	Y	N	X	X	X	X	3
MW-22R	07/18/24	1135	G	Water	Y	N	X	X	X	X	3
MW-36	07/18/24	0955	G	Water	Y	N	X	X	X	X	3

480-221885 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	James Wooster	07/19/24 1015	ESS		7/19/24 10:20am	EETA
2		7/19/24 10:27	EETA	Cwallace	7/20/24 1000	TMB
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		#1 2.6

Ver: 04/02/2024

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins Environment Testing

Client Information	Sampler: James Wooster	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197228-11331.1
Client Contact: Steve Walters	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Waste Management	PWSID:			Job #:

Address: Pine Tree Acres Landfill 36600 29 Mile Rd.	Due Date Requested:	Analysis Requested	Preservation Codes: N - None D - HNO3
City: Lenox	TAT Requested (days):		
State, Zip: MI, 48048	Compliance Project: Δ Yes Δ No		
Phone: 586-749-6122(Tel)	PO #: 11229043		
Email: swalter3@wm.com	WO #:		
Project Name: McGill Road Landfill/MI11 Event Desc: Quarterly RAP Mont. (1,4	Project #: 48002771		
Site: Michigan	SSOW#:		Other:

480-221886 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9038 - Sulfate	6010C - Boron, Dissolved	Total Number of co	Special Instructions/Note:
			Preservation Code:				N	D		
MW-21	07/18/24	1300	G	Water	N	N	X		1	
JCL-WELL 11	07/18/24	1400	G	Water	Y	N	X	X	2	
JCL-WELL 12	07/18/24	1225	G	Water	Y	N	X	X	2	
JCL-WELL 13	07/18/24	1330	G	Water	Y	N	X	X	2	
JCL-WELL 14	07/18/24	1335	G	Water	Y	N	X	X	2	
MW-20R	07/18/24	1230	G	Water	Y	N	X	X	2	
MW-62D	07/18/24	1205	G	Water	Y	N	X	X	2	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	07/19/24 1015	ESS	[signature]	7/19/24 10:20am	EETA
2	[signature]	7/19/24 10:27	EETA	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	[signature]	7/20/24 1006	EMO

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Ice #1 3.4

Ver: 04/02/2024

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

MICHIGAN 190

eurofins Environment Testing

Client Information	Sampler: James Woosfer	Lab PM: Proulx, Katelyn M	Carrier Tracking No(s):	COC No: 480-197229-12115.1
Client Contact: Steve Walters	Phone: 248-417-9052	E-Mail: Katelyn.Proulx@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Waste Management	PWSID:			Job #:
Address: C/O Venice Park RDF	Due Date Requested:			
City: Lennon	TAT Requested (days):			
State, Zip: MI, 48449	Compliance Project: Δ Yes Δ No			
Phone: 586-749-6122(Tel)	PO #: 11229043			
Email: swalter3@wm.com	WO #:			
Project Name: McGill Road Landfill/MI11 Event Desc: Qtrly GW - Active Unmon	Project #: 48002771			
Site: Michigan	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
N - None

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - Volatiles	FieldSampling - Field	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N		
MW-60	07/18/24	1500	G	Water	N	N	X	X	3	
MW-62S	07/18/24	1120	G	Water	N	N	X	X	3	
TB				Water						

480-221887 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	James Woosfer	07/19/24 1015	ESS	Felicia Flores	7/19/24 10:20am	EETA
2	Felicia Flores	7/19/24 10:27	EETA	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 7/20/24 1000	Company TMTO

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.4 #6 IR5

Ver: 04/02/2024

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: PMW-5R, MW-1, MW-2, MW-3, MW-4, MW-5
Sample ID

This Waste Management Field Information Form is Required.
This form is to be completed, in addition to any State Forms. This Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is released to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vol Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: Y or N

Purging Device: A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device:

X-Other:

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Filter Type: A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: A-Yellow, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (site datum, from TOC)
(ft/msl)	(ft)	(ft/msl)

Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
(ft)	(ft)	(in)	

Note: Total Well Depth, Stick Up, Casing ID, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L – ppm)	eH/ORP (mV)	DTW (ft)
	1st	1st	1st					
	2nd	2nd	2nd					
	3rd	3rd	3rd					
	4th	4th	4th					

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: Phase IV
Sample ID:

This Waste Management Field Information Form is Required. This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hr:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: Y or N
Purging Device: A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Sampling Device:
X-Other:
Filter Device: Y or N — 0.45 µ or ____ µ (Circle or fill in)
Filter Type: A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC) (ft/msl)
Depth to Water (DTW) (from TOC) (ft)
Groundwater Elevation (file datum, from TOC) (ft/msl)
Total Well Depth (from TOC) (ft)
Stick Up (from ground elevation) (ft)
Casing ID (in)
Casing Material
Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (nts)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	1st	1st	1st					
	2nd	2nd	2nd					
	3rd	3rd	3rd					
	4th	4th	4th					
Suggested range for 3 cons. readings or per Permit/State requirements:		+/- 0.2	+/- 3%	+/-	+/-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (nts)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units
07/18/24	7.32	9780	16.3				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Cloudy — Odor: Yes — Color: Brown — Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: NE 5-10 — Outlook: Sunny & Cool — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

Sampled @ 1100

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Winston		ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-6000WM (1013)

FIELD INFORMATION FORM

Site Name: McGrill Rd Landfill
Site No.:
Sample Point: SW-3
Sample ID:

This Waste Management Field Information Form is Required. This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is released to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (in min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: Y or N

Purging Device: A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device:

X-Other:

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Filter Type: A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC) (Msl)	Depth to Water (DTW) (from TOC) (ft)	Groundwater Elevation (site datum, from TOC) (Msl)

Total Well Depth (from TOC) (ft)	Stick Up (from ground elevation) (ft)	Casing ID (in)	Casing Material

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (umhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
	1st	1st	1st					
	2nd	2nd	2nd					
	3rd	3rd	3rd					
	4th	4th	4th					
		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Suggested range for 3 consec. readings or with less if three consecutive Stabilization Data Variances Continue (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
071824	7.29	3260	15.3				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: SL. cloudy — Odor: Yes — Color: SL. Brown — Other:

Weather Conditions (required daily, or as conditions change): — Direction/Speed: N 5-10 — Outlook: Sunny & hot — Precipitation: Y or (N)

Specific Comments (including purge/vol. volume calculations if required):

FIELD COMMENTS

Sampled @ 1000

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wunsch	James Wunsch	ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8020WM (1013)

8/7/2024

FIELD INFORMATION FORM

WM WASTE MANAGEMENT

Site Name: McGill Rd Landfill
Site No.:
Sample Point: SW MW Sequential Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hundth)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. After changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: [Y] or [N]
Filter Device: [Y] or [N] [0.45 µ] or [ ] µ (circle or fill in)

Purging Device: A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Sampling Device:
X-Other:

Filter Type: A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC) (ft/msl)	Depth to Water (DTW) (from TOC) (ft)	Groundwater Elevation (site datum, from TOC) (ft/msl)

Total Well Depth (from TOC) (ft)	Stick Up (from ground elevation) (ft)	Casing ID (in)	Casing Material

Note: Total Well Depth, Stick Up, Casing ID, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
		1st	1st					
		2nd	2nd					
		3rd	3rd					
		4th	4th					
		+/- 0.2	+/- 5%	--	--	+/- 10%	+/- 25 mV	Stabilize

Suggested range for 3 consec. readings or site/State/Permit requirements

Parameter Stabilization Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/18/24	7.18	3150	15.4				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, possible sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: Sl. Cloudy Odor: Yes Color: Sl. Brown Other:

Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 Outlook: Sunny & 60's Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Sampled @ 1015

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wheeler	James Wheeler	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8022WM (1018)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-19R (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	1140		20	20	1

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N

Purging Device: C
Sampling Device: C
X-Other:

A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Device: (Y) or N (0.45 µ) or ____ µ (circle or fill in)
Filter Type: A (A-In-line Disposable, B-Pressure, C-Vacuum, X-Other)
Sample Tube Type: D (A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other)

WELL DATA

Well Elevation (at TOC): 951.89 (ft/msl)
Depth to Water (DTW) (from TOC): 10.10 (ft)
Groundwater Elevation (site datum, from TOC): 941.79 (ft/msl)
Total Well Depth (from TOC): 22.90 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____

Note: Total Well Depth, Stick Up, Casing ID, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
		1st	1st					
		2nd	2nd					
		3rd	3rd					
		4th	4th					
		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Suggested range for 3 consec. readings or note Permit/State requirements.

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/18/24	7.11	1401	12.0				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: Clear
Odor: None
Color: Clear
Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: NE 5 MPH
Outlook: Sunny 70's
Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CFM ML/min

Sampled @ 1235

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-9029WM (1013)

FIELD INFORMATION FORM

WM WASTE MANAGEMENT

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-59
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED
07/18/24	1015		30	90	3.0

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N

Purging Device: C
Sampling Device: C
X-Other:

A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other ____
Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other ____

WELL DATA

Well Elevation (at TOC): 945.71 (feet)
Depth to Water (DTW) (from TOC): 11.10 (ft)
Groundwater Elevation (site datum, from TOC): 934.61 (feet)
Total Well Depth (from TOC): 29.70 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be entered.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (nts)	D.O. (mg/L or ppm)	eH/ORP (mV)	DTW (ft)
1025	1st	7.26	1530	12.0				
1035	2nd	7.82	1503	12.1				
1045	3rd	7.29	1497	12.0				
	4th							
Suggested range for 3 cons. readings or state Permit/State requirements:		+/-0.2	+/-3%	--	--	+/-10%	+/-20 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more field sheets recommended, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (nts)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units: ____
07/18/24	7.24	4997	12.0				

Most Field Readings recommended (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: Used — Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 — Outlook: Sunny, 80's — Precipitation: Y or N
Specific Comments (including purge/well volume calculations if required):

Compressor Controller PSI CPM ml/min
1200

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	Victor Mistretta	Victor Mistretta	ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-62S (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	1110		18	55	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N

Purging Device: C — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device: C — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

X-Other:

Filter Device: (Y) or N — 0.45 µ — Size: ____ µ (circle one)

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other: ____

Sample Tube Type: D — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: ____

WELL DATA

Well Elevation (at TOC): 9494 (ft msl)
Depth to Water (DTW) (from TOC): 184.0 (ft)
Groundwater Elevation (site datum, from TOC): 931.04 (ft msl)
Total Well Depth (from TOC): 299.0 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by SitePursuit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1105	1 1st	7.25 1st	569 1st	12.4				
1113	1 2nd	7.33 2nd	563 2nd	11.8				
1120	1 3rd	7.40 3rd	564 3rd	12.1				
	4th	4th	4th					
Suggested range for 3 consec. readings or per Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units
07/18/24	7.40	564	12.1				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: clear — Odor: None — Color: Clear — Other:

Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 — Outlook: Sunny 60's — Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CPM ml/min
1200

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/18/24	Victor McTarsie		ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-20H
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only(Lab) ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Seconds)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED
07 17 24	1350		21	65	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: (Y) or N
Purging Device: C
Sampling Device: C
A-Submersible Pump B-Peristaltic Pump C-QED Bladder Pump D-Bailer E-Piston Pump F-Dipper/Bottle
X-Other:
Filter Device: (Y) or N 0.45 µ or ____ µ (circle or fill in)
Filter Type: A
A-In-line Disposable B-Pressure C-Vacuum X-Other
Sample Tube Type: D
A-Teflon B-Stainless Steel C-PVC D-Polypropylene X-Other:

WELL DATA

Well Elevation (at TOC): 954.19 (ft msl)
Depth to Water (DTW) (from TOC): 24.47 (ft)
Groundwater Elevation (site datum, from TOC): 931.72 (ft msl)
Total Well Depth (from TOC): 35.65 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____
Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1410 15	1"	6.97	1" 1625	12.7				
1412 10	2"	6.94	2" 1634	12.6				
1418 15	3"	6.95	3" 1621	12.6				
	4"		4"					
Suggested range for 3 consec. readings or per Permit/State requirements		+/- 0.2	+/- 5%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields of same are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units:
07 17 24	6.95	1621	12.6				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear
Odor: None
Color: Clear
Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 Outlook: Sunny 70's Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

Compressor Controller PSI CPM ml/min

Tall Vegitation - Well not Visible - Tree down over access path

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/17/24	James Wurster	James Wurster	ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-6029WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.: [ ]
Sample Point: MW-206
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Optional)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07 18 24	1050		15	45	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment ... Dedicated: (Y) or N
Purging Device: C
Sampling Device: C
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
X-Other:
Filter Device: (Y) or N — 0.45 µ or [ ] µ (circle or fill in)
Filter Type: A (A-In-line Disposable, B-Pressure, C-Vacuum, X-Other)
Sample Tube Type: D (A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other)

WELL DATA

Well Elevation (at TOC): 990.20 (ft/msl)
Depth to Water (DTW) (from TOC): 42.77 (ft)
Groundwater Elevation (pls datum, from TOC): 947.43 (ft/msl)
Total Well Depth (from TOC): 52.00 (ft)
Stick Up (from ground elevation): [ ] (ft)
Casing ID: [ ] (in)
Casing Material: [ ]
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1055	1st	7.18	1542	12.0				
1100	2nd	7.19	1517	12.0				
1105	3rd	7.17	1519	11.9				
	4th							
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units:
07 18 24	7.17	519	11.9				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: Clear — Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: NE-10 — Outlook: Cloudy 60's — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

Compressor Controller PSI CPM ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster		ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-0020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.: [ ]
Sample Point: MW-21R (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hours)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED
07/18/24	1242		20	60	6

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: (Y) or N

Purging Device: C — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle, X-Other:

Sampling Device: C

Filter Device: (Y) or N — 0.45 µ or [ ] µ (circle or fill in)

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: D — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (From TOC)	Groundwater Elevation (site datum, from TOC)	Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
958.07 (ft msl)	18.01 (ft)	944.06 (ft msl)	36.0 (ft)		(in)	

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (nts)	D.O. (mg/L - ppm)	oR/ORP (mV)	DTW (ft)
1250	1"	6.94	1" 1805	11.8				
1255	2"	6.95	2" 1742	11.7				
1300	3"	6.96	3" 1745	11.7				
	4"		4"					
		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Suggested range for 3 consec. readings or auto Parameter requirements

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (nts)	DO (mg/L-ppm)	oR/ORP (mV)	Other: Units
07/18/24	6.96	1745	11.7				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, purging sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: Clear — Other:

Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 — Outlook: Sunny 70's — Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

Compressor Controller PSI CPM Ml/Min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-9022WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd LandFill
Site No.:
Sample Point: MW-2 12 SR
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. This Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is shipped to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07 18 24	1010		45	50	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment..., Dedicated: (Y) or N
Filter Diameter: (Y) or N (0.45 µ) or _____ µ (circle or fill in)

Purging Device: C
Sampling Device: C
X-Other:

A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Digger/Bottle

Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other _____

Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other _____

WELL DATA

Well Elevation (at TOC): 992.40 (ft msl)
Depth to Water (DTW) (from TOC): 53.38 (ft)
Groundwater Elevation (elev. datum, from TOC): 939.02 (ft msl)
Total Well Depth (from TOC): 53.00 (ft)
Stick Up (from ground elevation): _____ (ft)
Casing ID: _____ (in)
Casing Material: _____

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1020	1st	7.26	1st 1614	12.3				
1030	2nd	7.25	2nd 1627	12.2				
1040	3rd	7.26	3rd 1632	12.2				
	4th		4th					
Suggested range for 3 consec. readings or note Permit/State requirements		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stable

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units:
07 18 24	7.26	1632	12.2				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: Clear
Odor: None
Color: Clear
Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 Outlook: Sunny Hot Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PST CPM Ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wheeler	James Wheeler	ESS, Inc
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-213
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. who the sample container is entrusted to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Optional)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	1315		25	75	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N
Filter Device: (Y) or N — 0.45 µ or _____ µ (circle or fill in)
Purging Device: C
Sampling Device: C
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other _____
X-Other:
Sample Tube Type: D — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: _____

WELL DATA

Well Elevation (at TOC): 956.74 (ft msl)
Depth to Water (DTW) (from TOC): 19.23 (ft)
Groundwater Elevation (elev datum, from TOC): 937.51 (ft msl)
Total Well Depth (from TOC): 34.10 (ft)
Stick Up (from ground elevation): _____ (ft)
Casing ID: _____ (in)
Casing Material: _____
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by SitePermit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (C)	Turbidity (ntu)	D.O. (mg/L - ppm)	sH/ORP (mV)	DTW (ft)
1325	1st	7.13	622	14.2				
1332	2nd	7.11	634	13.6				
1340	3rd	7.11	634	13.4				
	4th							
Suggested range for 3 consec. readings or auto Stabilization requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (micromhos @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	sH/ORP (mV)	Other: _____ Units
07/18/24	7.13	634	13.4				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: Clear
Odor: None
Color: Clear
Other: _____
Weather Conditions (required daily, or as conditions change): Direction/Speed: NW 5-10 Outlook: Sunny 70s Precipitation: Y or N
Specific Comments (including purge/well volume calculations if required): _____

FIELD COMMENTS

Compressor Controller PSI CPM Ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	Victor Contreras	Victor Contreras	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-214
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. This Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	1305		16	50	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: (Y) or N
Purging Device: C — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Sampling Device: C
X-Other:
Filter Device: (Y) or N — 0.45 µ or _____ µ (circle or fill in)
Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: D — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (Site datum, from TOC)	Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
958.29 (ft msl)	22.96 (ft)	935.33 (ft msl)	33.10 (ft)	(ft)	(In)	

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1312	1st	7.40	1571	13.6				
1320	2nd	7.35	1553	12.6				
1325	3rd	7.27	1554	12.2				
	4th							
Suggested range for 3 consec. readings or state Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used when four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units
07/18/24	7.27	1554	12.2				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Clear — Odor: None — Color: Clear — Other:
Weather Conditions (required daily, or as conditions change): — Direction/Speed: N 5-10 — Outlook: Sunny 60's — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CPM ml/min
1200

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	Victor m Tepper II		ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-22R
Sample ID:

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the sealed that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Formula)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED
07/18/24	1115		260	160	36

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N
Filter Device: (Y) or N 0.45 u or ____ u (circle or fill in)
Purging Device: C
Sampling Device: C
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
X-Other:
Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 9924.14 (ft msl)
Depth to Water (DTW) (from TOC): 50.96 (ft)
Groundwater Elevation (elev datum, from TOC): 944.18 (ft msl)
Total Well Depth (From TOC): 63.50 (ft)
Risk Up (From ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (umhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	oH/ORP (mV)	DTW (ft)
1121	1st	7.16	1641	12.5				
1128	2nd	7.18	1632	12.4				
1135	3rd	7.17	1625	11.3				
	4th							
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	oH/ORP (mV)	Other: ____ Units: ____
07/18/24	7.17	1625	12.3				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Clear
Odor: None
Color: Clear
Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: NE 5-10 Outlook: Sunny 70's Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PST CPM ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-36
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. This Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is assigned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	0925		10	30	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N

Purging Device: C — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Sampling Device: C
X-Other:

Filter Device: (Y) or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other:
Sample Tube Type: D — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (elev datum, from TOC)	Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
997.05 (Elevat)	16.04 (ft)	981.01 (Elevat)	52.55 (ft)		(in)	

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (nts)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1st 0914		1st 7.11	1st 1417	12.6				
2nd 0918		2nd 7.15	2nd 1432	12.4				
3rd 0955		3rd 7.16	3rd 1463	12.4				
4th		4th	4th					
Suggested range for 3 consec. readings or see Permit/Site Specific Criteria:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields must be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (nts)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units: ____
07/18/24	7.16	1463	12.4				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, purge/sample readings before sampling) for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: Clear — Other:
Weather Conditions (required daily, or as conditions change): — Direction/Speed: NE-10 — Outlook: Sunny/Cool's — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

Compressor Controller PSI CPM ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Points: SCL-111
Sample ID

This Waste Management Field Information Form is Required. This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

WM WASTE MANAGEMENT

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLS PURGED
07/18/24	1345		26	60	3

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: Y or N

Purging Device: D — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device: D

X-Other:

Filter Device: Y or N — 0.45 µ or ____ µ (circle or fill in)

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: X — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (Mtn datum, from TOC)
942.20 (Mean)	13.07 (ft)	929.13 (Mean)

Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
25.45 (ft)	(ft)	(in)	

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by State Forms. Mtn Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1350	1	6.84	1317	12.4				
1355	2	6.86	1306	12.3				
1400	3	6.87	1321	12.2				
	4							

Suggested range for 3 consec. readings or note Permit/State requirements: +/- 0.2 | +/- 3% | - | - | +/- 10% | +/- 25 mV | Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit(s). If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units
07/18/24	6.87	3211	12.2				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit(s).

Sample Appearance: Clear — Odor: None — Color: Clear — Other:

Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 — Outlook: Sunny 70's — Precipitation: Y or N

Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Woodard	James Woodard	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

8/7/2024

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MCL-12
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (Optional)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07 18 24	1157		60	180	3

Note: For Position Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: (Y) or N
Purging Device: D
Sampling Device: D
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Digger/Bottle
X-Other:
Filter Device: (Y) or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: P
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: X
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 942.40 (ft msl)
Depth to Water (DTW) (from TOC): 13.01 (ft)
Groundwater Elevation (elev datum, from TOC): 929.39 (ft msl)
Total Well Depth (from TOC): 50.86 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____
Note: Total Well Depth, Stick Up, Casing ID, etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1205	1st	7.10	1502	12.0				
1210	2nd	7.07	1481	11.8				
1215	3rd	7.06	1473	11.8				
	4th							
Suggested range for 3 stable readings or note Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 20 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units ____
07 18 24	7.06	1473	11.8				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.

Sample Appearance: Clear — Odor: None — Color: Clear — Other:
Weather Conditions (record daily, or as conditions change): Direction/Speed: NE 5-10 — Outlook: Sunny 70's — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

I certify that sampling procedures were in accordance with applicable EPA, State, and WM requirements (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: SCL-113
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hours)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	1315		116	50	36

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: [Y] or N

Purging Device: D — A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Sampling Device: D

X-Other:

Filter Device: Y or N — (0.45 µ) or ____ µ (circle or fill in)

Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other: ____

Sample Tube Type: X — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: ____

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (elev datum, from TOC)	Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
934.00 (feet)	10.50 (ft)	923.50 (feet)	21.60 (ft)	(ft)	(in)	

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by State/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1320	1st	6.84 1st	1614 1st	12.5				
1325	2nd	6.81 2nd	1631 2nd	12.4				
1330	3rd	6.82 3rd	1641 3rd	12.3				
	4th	4th						
Suggested range for 3 consec. readings or state Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more field citizen are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L - ppm)	eH/ORP (mV)	Other: Units:
07/18/24	6.82	1641	12.3				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling, for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear — Odor: None — Color: Clear — Other:

Weather Conditions (record daily, or as conditions change): Direction/Speed: N 5-10 — Outlook: Sunny 70s — Precipitation: Y or N

Specific Comments (including purge/well volume calculations if required):

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Wooster	James Wooster	ESS, Inc.

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8022WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: SCL-114
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hr:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
07/18/24	0900		58	70	10

Mean: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment... Dedicated: (Y) or N

Purging Device: D
Sampling Device: D
X-Other:

A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Device: (Y) or N — 0.45 µ or ____ µ (Circle or fill in)
Filter Type: A — A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: X — A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (site datum, from TOC)	Total Well Depth (from TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
933.83 (ft msl)	16.02 (ft)	923.81 (ft msl)	45.52 (ft)	(ft)	(in)	

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORF (mV)	DTW (ft)
1st	1st	1st	1st					
2nd	2nd	2nd	2nd					
3rd	3rd	3rd	3rd					
4th	4th	4th	4th					
		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Optional ranges for 3 excess readings or site Permit/Plan requirements.
Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by Wkl, Site, or State). These fields may be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORF (mV)	Other: Units:
07/18/24	6.96	501	12.4				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, purge/sample readings before sampling for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear
Odor: None
Color: Clear
Other:
Weather Conditions (required daily, or as conditions change):
Direction/Speed: NNW 10
Outlook: Sunny 70's
Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):
Sampled @ 1335

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	James Winslow	James Winslow	ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-5022WM (1013)

FIELD INFORMATION FORM

Site Name: McGrill Rd Landfill
Site No.: [ ]
Sample Point: MW-20R (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any Store Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID: [ ]

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hr:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED
07/18/24	1150	1	39	120	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment . . . Dedicated: (Y) or N
Purging Device: C
Sampling Device: C
X-Other:
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
Filter Device: (Y) or N — 0.45 µ or [ ] µ (circle or fill in)
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 952.10 (ft msl)
Depth to Water (DTW) (from TOC): 11.35 (ft)
Groundwater Elevation (elev datum, from TOC): 940.75 (ft msl)
Total Well Depth (from TOC): 35.98 (ft)
Stick Up (from ground elevation): [ ] (ft)
Casing ID: [ ] (in)
Casing Material: [ ]
Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permits. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (umhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1210	1"	6.91	1587	12.0				
1215	2"	6.94	1562	11.8				
1230	3"	6.95	1543	11.8				
	4"							
Suggested range for 3 consec. readings or your Permit/State requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Helps with Clarity! (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
07/18/24	6.95	1543	11.8				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

Sample Appearance: Clear — Odor: None — Color: Clear — Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: NE 5-10 — Outlook: Sunny 70's — Precipitation: Y or (N)
Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CPM ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
07/18/24	Jarrod Worster	Jarrod Worster	ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-6020WM (1013)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-16216
Sample ID

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
01/18/24	1128		190	112.0	3.0

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N
Purging Device: C
Sampling Device: C
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
X-Other:
Filter Device: (Y) or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other
Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 950.67 (ft msl)
Depth to Water (DTW) (from TOC): 19.52 (ft)
Groundwater Elevation (elev datum, from TOC): 931.15 (ft msl)
Total Well Depth (from TOC): 44.40 (ft)
Stick Up (from ground elevation): ____ (ft)
Casing ID: ____ (in)
Casing Material: ____
Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit		pH (std)		Conductance (SC/EC) (µmhos/cm@25°C)		Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1140		1st	7.39	1st	1686		12.8				
1150		2nd	7.34	2nd	1692		12.1				
1205		3rd	7.26	3rd	1697		12.2				
		4th		4th							
Suggested range for 3 cons. readings or note Permit/State requirements:			+/-0.2		+/-3%		-	-	+/-10%	+/-25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (µmhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units:
01/18/24	7.26	1697	12.2				

Final Field Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling) for all field parameters required by State/Permit/Site.

FIELD COMMENTS

Sample Appearance: Clear
Odor: None Color: Clear Other:
Weather Conditions (required daily, or as conditions change): Direction/Speed: N 5-10 Outlook: Sunny 60's Precipitation: Y or N
Specific Comments (including purge/well volume calculations if required):

Compressor Controller PST CPM ml/min

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (If more than one sampler, all should sign):

Date	Name	Signature	Company
01/18/24	Victor Torres		ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-0026WM (1019)

FIELD INFORMATION FORM

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-60
Sample ID:

This Waste Management Field Information Form is Required.
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (minutes)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOL PURGED
07 18 24	14:45		25	75	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment...Dedicated: (Y) or N
Purging Device: D
Sampling Device: D
A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle
X-Other:
Filter Device: (Y) or N — 0.45 µ or ____ µ (circle or fill in)
Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other ____
Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other: ____

WELL DATA

Well Elevation (at TOC)	Depth to Water (DTW) (from TOC)	Groundwater Elevation (site datum, from TOC)
961.49 (feet)	30.49 (ft)	931.00 (feet)

Total Well Depth (From TOC)	Stick Up (from ground elevation)	Casing ID	Casing Material
440.0 (ft)	(ft)	(in)	

Note: Total Well Depth, Stick Up, Casing Id, etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (su)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1450	1st	7.39	1481	12.6				
1455	2nd	7.37	1475	12.5				
1500	3rd	7.38	1493	12.4				
	4th							
Suggested range for 3 cons. readings or per Permit/Site requirements:		+/- 0.2	+/- 3%	-	-	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional (i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (su)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: ____ Units ____
07 18 24	7.38	1493	12.4				

Real Time Readings are required (i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site).

Sample Appearance: Sl. Cloudy
Odor: None
Color: Sl. Grey
Other:
Weather Conditions (required daily, or as conditions change):
Direction/Speed: N 5-10
Outlook: Sunny 80's
Precipitation: Y or (N)
Sparging Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CPM ml/min
Well Wizard Pump Stalled Working - Pump Pulled - Well Sampled via Bailer

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
7/18/24	Marvin Jacobs	[signature]	ESS, Inc.
/ /			

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-6029WM (1013)

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221858
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	ESS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221861
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	ESS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221884
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221885
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221886
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	ESS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-221858-1

Login Number: 221887
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	ESS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Walters
Waste Management
3895 McGill Road
Jackson, Michigan 49201

Generated 9/17/2024 11:27:13 AM

JOB DESCRIPTION

McGill Road Landfill

JOB NUMBER

480-223203-1

Eurofins Buffalo
10 Hazelwood Drive
Amherst NY 14228-2298

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization



Generated
9/17/2024 11:27:13 AM

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Table of Contents

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Definitions/Glossary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-223203-1 Eurofins Buffalo

Job Narrative
480-223203-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The sample was received on 9/9/2024 9:15 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.7°C.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Client Sample ID: MW-21

Lab Sample ID: 480-223203-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Boron, Dissolved	0.048		0.020		mg/L	1		6010C	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Client Sample ID: MW-21

Date Collected: 09/06/24 12:30
Date Received: 09/09/24 09:15

Lab Sample ID: 480-223203-1

Matrix: Water

Method: SW846 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	0.048		0.020		mg/L		09/13/24 08:38	09/13/24 20:26	1

QC Sample Results

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-724935/1-A
Matrix: Water
Analysis Batch: 725173

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 724935

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Boron, Dissolved	ND		0.020		mg/L		09/13/24 08:38	09/13/24 20:22	1

Lab Sample ID: LCS 480-724935/2-A
Matrix: Water
Analysis Batch: 725173

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 724935

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Boron, Dissolved			0.500	0.509		mg/L		102	80 - 120		

Lab Sample ID: 480-223203-1 MS
Matrix: Water
Analysis Batch: 725173

Client Sample ID: MW-21
Prep Type: Dissolved
Prep Batch: 724935

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Boron, Dissolved	0.048		0.500	0.567		mg/L		104	75 - 125		

Lab Sample ID: 480-223203-1 MSD
Matrix: Water
Analysis Batch: 725173

Client Sample ID: MW-21
Prep Type: Dissolved
Prep Batch: 724935

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron, Dissolved	0.048		0.500	0.533		mg/L		97	75 - 125	6	20

QC Association Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Metals

Prep Batch: 724935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-223203-1	MW-21	Dissolved	Water	3005A	
MB 480-724935/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-724935/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-223203-1 MS	MW-21	Dissolved	Water	3005A	
480-223203-1 MSD	MW-21	Dissolved	Water	3005A	

Analysis Batch: 725173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-223203-1	MW-21	Dissolved	Water	6010C	724935
MB 480-724935/1-A	Method Blank	Total/NA	Water	6010C	724935
LCS 480-724935/2-A	Lab Control Sample	Total/NA	Water	6010C	724935
480-223203-1 MS	MW-21	Dissolved	Water	6010C	724935
480-223203-1 MSD	MW-21	Dissolved	Water	6010C	724935

Lab Chronicle

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Client Sample ID: MW-21

Date Collected: 09/06/24 12:30
Date Received: 09/09/24 09:15

Lab Sample ID: 480-223203-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			724935	EMO	EET BUF	09/13/24 08:38
Dissolved	Analysis	6010C		1	725173	BMB	EET BUF	09/13/24 20:26

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Laboratory: Eurofins Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-00686	07-06-25
Connecticut	State	PH-0807	03-31-25
Georgia	State	10026 (NY)	03-31-25
Georgia	State Program	N/A	03-31-09 *
Illinois	NELAP	200003	09-30-24
Iowa	State	374	03-01-25
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	02-01-25
Kentucky (UST)	State	108092	04-01-25
Kentucky (WW)	State	KY90029	12-31-24
Maine	State	NY00044	12-04-24
Maryland	State	294	06-30-25
Massachusetts	State	M-NY044	07-01-25
Michigan	State	9937	03-31-25
Michigan	State Program	9937	04-01-09 *
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-17-24
New Jersey	NELAP	NY455	07-02-25
New York	NELAP	10026	03-31-25
Pennsylvania	NELAP	68-00281	08-31-25
Rhode Island	State	LAO00378	12-30-24
Virginia	NELAP	460185	09-14-24
Washington	State	C784	02-10-25
Wisconsin	State	998310390	08-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	EET BUF
3005A	Preparation, Total Metals	SW846	EET BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Waste Management
Project/Site: McGill Road Landfill

Job ID: 480-223203-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-223203-1	MW-21	Water	09/06/24 12:30	09/09/24 09:15

Address: Buffalo

Steve Walters

Chain of Custody Record

MICHIGAN 190

640108

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9/17/2024

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Frank Kaklyn	Site Contact: Steve Walters	Date: 9-6-24	COC No:
Company Name: Waste Management	Tel/Email:	Lab Contact: Frank Kaklyn	Carrier:	1 of 1 COCs
Address: C/O Venice Park RDF	Analysis Turnaround Time			Sampler: ESS - Jim Wooster
City/State/Zip: Lennon MI 48449	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 586-749-6122	TAT if different from Below STD			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: McGill RD LF - Sample	☐ 1 week			
Site: Michigan	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Dissolved Boron	Sample Specific Notes:
MW 21	9-6-24	1230	G	WK	1	N	N		

480-223203 Chain of Custody

MICHIGAN 190

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

3.7 #1 Ice

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by: James M. Wooster	Company: ESS	Date/Time: 9/6/24 1350	Received by: [signature]	Company: EEA	Date/Time: 9/6/24 1350
Relinquished by: [signature]	Company: EEA	Date/Time: 9/6/24 1400	Received by: [signature]	Company: 9/9/24 915	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

FIELD INFORMATION FORM

WASTE MANAGEMENT

Site Name: McGill Rd Landfill
Site No.:
Sample Point: MW-21R (Sample ID)

This Waste Management Field Information Form is Required
This form is to be completed, in addition to any State Forms. The Field Form is submitted along with the Chain of Custody Forms that accompany the sample containers (i.e. with the cooler that is returned to the laboratory).

Laboratory Use Only/Lab ID:

PURGE INFO

PURGE DATE (MM DD YY)	PURGE TIME (2400 Hr Clock)	ELAPSED HRS (hrs:min)	WATER VOL IN CASING (Gallons)	ACTUAL VOL PURGED (Gallons)	WELL VOLs PURGED
09/06/24	1207		21	65	30

Note: For Passive Sampling, replace "Water Vol in Casing" and "Well Vols Purged" w/ Water Vol in Tubing/Flow Cell and Tubing/Flow Cell Vols Purged. Mark changes, record field data, below.

PURGE/SAMPLE EQUIPMENT

Purging and Sampling Equipment . . . Dedicated: (Y) or N

Filter Device: (Y) or N (0.45 µ) or _____ µ (circle or fill in)

Purging Device: C
Sampling Device: C
X-Other:

A-Submersible Pump, B-Peristaltic Pump, C-QED Bladder Pump, D-Bailer, E-Piston Pump, F-Dipper/Bottle

Filter Type: A
A-In-line Disposable, B-Pressure, C-Vacuum, X-Other

Sample Tube Type: D
A-Teflon, B-Stainless Steel, C-PVC, D-Polypropylene, X-Other:

WELL DATA

Well Elevation (at TOC): 958.07 (ft/msl)
Depth to Water (DTW) (from TOC): 18.00 (ft)
Groundwater Elevation (site datum, from TOC): 940.07 (ft/msl)
Total Well Depth (from TOC): 31.30 (ft)
Stick Up (from ground elevation): (ft)
Casing ID: (in)
Casing Material:

Note: Total Well Depth, Stick Up, Casing Id. etc. are optional and can be from historical data, unless required by Site/Permit. Well Elevation, DTW, and Groundwater Elevation must be current.

STABILIZATION DATA (Optional)

Sample Time (2400 Hr Clock)	Rate/Unit	pH (std)	Conductance (SC/EC) (µmhos/cm@25°C)	Temp. (°C)	Turbidity (ntu)	D.O. (mg/L - ppm)	eH/ORP (mV)	DTW (ft)
1214	1st	7.08	606	13.7				
1222	2nd	7.07	593	13.4				
1230	3rd	7.07	585	13.2				
	4th							
Suggested range for 3 consec. readings or note Permit/State requirements:		+/- 0.2	+/- 3%	–	–	+/- 10%	+/- 25 mV	Stabilize

Stabilization Data Fields are Optional *(i.e. complete stabilization readings for parameters required by WM, Site, or State). These fields can be used where four (4) field measurements are required by State/Permit/Site. If a Data Logger or other Electronic format is used, fill in final readings below and submit electronic data separately to Site. If more fields above are needed, use separate sheet or form.*

FIELD DATA

SAMPLE DATE (MM DD YY)	pH (std)	CONDUCTANCE (umhos/cm @ 25°C)	TEMP. (°C)	TURBIDITY (ntu)	DO (mg/L-ppm)	eH/ORP (mV)	Other: Units
09/06/24	7.07	585	13.2				

Final Field Readings are required *(i.e. record field measurements, final stabilized readings, passive sample readings before sampling for all field parameters required by State/Permit/Site.*

Sample Appearance: Clear
Odor: None
Color: Clear
Other:

Weather Conditions (required daily, or as conditions change):
Direction/Speed: NW 5to
Outlook: Cloudy 60's
Precipitation: Y or (N)

Specific Comments (including purge/well volume calculations if required):

FIELD COMMENTS

Compressor Controller PSI CPM ML/Min
BeSample Dissolved Boron

I certify that sampling procedures were in accordance with applicable EPA, State, and WM protocols (if more than one sampler, all should sign):

Date	Name	Signature	Company
09/06/24	Jim Wooster	Jim M Wooster	ESS, Inc

DISTRIBUTION: WHITE/ORIGINAL - Stays with Sample, YELLOW - Returned to Client, PINK - Field Copy

TAL-8029WM (1013)

Login Sample Receipt Checklist

Client: Waste Management

Job Number: 480-223203-1

Login Number: 223203
List Number: 1
Creator: Stapleton, Kaitlyn

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7 #1 ice
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	ESS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

APPENDIX B

Statistical Analyses

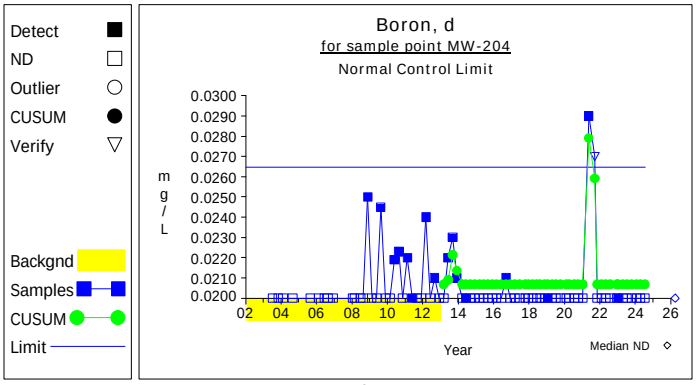
Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

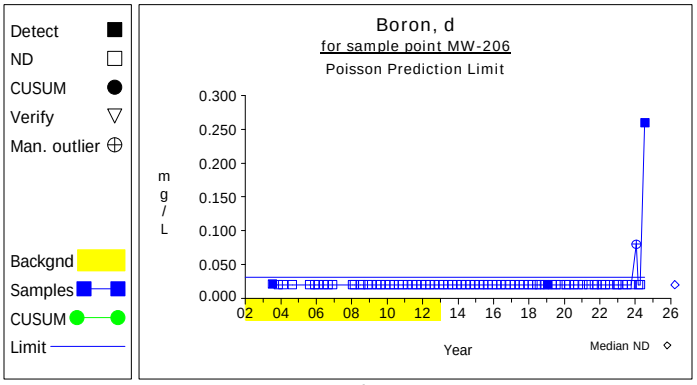
Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	
Boron, d	mg/L	MW-204	30	47	77	0.0207	0.0014	0.0200	0.0200	0.0207	0.0207	0.0265	normal	
Boron, d	mg/L	MW-206	31	47	79			0.0200	0.2600			0.0307	poisson	**
Boron, d	mg/L	MW-21	35	47	83			0.5400	0.0480			0.0473	poisson	**
Boron, d	mg/L	MW-212SR	30	46	76			0.0200	0.0200			0.0311	poisson	**
Boron, d	mg/L	MW-213	24	47	71	0.0220	0.0042	0.0200	0.0230	0.0220	0.0220	0.0386	normal	
Boron, d	mg/L	MW-214	24	47	71			0.0200	0.0200			0.0307	poisson	**
Boron, d	mg/L	MW-22R	24	47	71			0.0200	0.0200			0.0309	poisson	**
Boron, d	mg/L	MW-36	45	46	91	0.0355	0.0339	0.0200	0.0200	0.0355	0.0355	0.1712	normal	
Chloride	mg/L	MW-204	30	47	77	4.6267	1.9360	1.4000	3.9000	4.6267	4.6267	12.3708	normal	
Chloride	mg/L	MW-206	31	47	79	12.4452	3.6592	11.0000	13.9000	12.4452	12.4452	27.0820	normal	
Chloride	mg/L	MW-21	40	47	87	6.6850	2.6946	37.2000	49.4000	35.1791	47.3791	17.4633	normal	
Chloride	mg/L	MW-212SR	29	46	76	3.3345	0.6602	21.7000	30.1000	21.2048	29.6048	5.9754	normal	
Chloride	mg/L	MW-213	24	47	71	5.2417	1.4975	1.3000	8.8000	5.2417	7.6769	11.2317	normal	
Chloride	mg/L	MW-214	23	47	71	7.4913	1.2120	1.3000	2.0000	7.4913	7.4913	12.3394	normal	
Chloride	mg/L	MW-22R	24	47	71	15.6250	1.6066	41.5000	42.9000	40.2951	41.6951	22.0513	normal	
Chloride	mg/L	MW-36	50	46	96	21.6660	8.1581	21.1000	29.8000	29.9968	32.0122	54.2985	normal	
Potassium, Dissolved	mg/L	MW-204	30	47	77	1.0963	0.1660	0.5600	0.6200	1.0963	1.0963	1.7604	normal	
Potassium, Dissolved	mg/L	MW-206	31	47	79	1.2248	0.1892	0.9700	0.9900	1.2248	1.2248	1.9817	normal	
Potassium, Dissolved	mg/L	MW-21	29	47	76	1.0353	0.0812	0.9300	1.1000	1.1803	1.1841	1.3602	normal	
Potassium, Dissolved	mg/L	MW-212SR	30	46	76	1.0540	0.1801	1.4000	1.4000	1.3977	1.6087	1.7745	normal	
Potassium, Dissolved	mg/L	MW-213	24	47	71	1.0477	0.1399	0.5000	1.0000	1.0477	1.0477	1.6072	normal	
Potassium, Dissolved	mg/L	MW-214	24	47	71	0.9417	0.1187	0.5200	0.6900	0.9417	0.9417	1.4166	normal	
Potassium, Dissolved	mg/L	MW-22R	24	47	71	1.0275	0.1413	1.0000	1.1000	1.3934	1.3599	1.5925	normal	
Potassium, Dissolved	mg/L	MW-36	50	46	96	1.6336	0.2208	1.4000	1.5000	1.6336	1.6336	2.5167	normal	
Sodium, Dissolved	mg/L	MW-204	30	47	77	4.3867	1.7312	2.1000	1.9000	4.3867	4.3867	11.3115	normal	
Sodium, Dissolved	mg/L	MW-206	31	47	79	4.9387	0.7168	5.4000	6.0000	7.0757	7.5994	7.8059	normal	
Sodium, Dissolved	mg/L	MW-21	29	46	76	35.2517	8.2866	11.7000	18.1000	35.2517	35.2517	68.3981	normal	
Sodium, Dissolved	mg/L	MW-212SR	30	46	76	5.2133	0.8613	18.8000	15.8000	20.0760	17.0760	8.6586	normal	
Sodium, Dissolved	mg/L	MW-213	24	47	71	4.0125	0.6510	2.1000	4.4000	4.0125	4.0125	6.6163	normal	
Sodium, Dissolved	mg/L	MW-214	24	47	71	5.6292	0.5385	2.1000	2.1000	5.6292	5.6292	7.7832	normal	
Sodium, Dissolved	mg/L	MW-22R	24	47	71	3.9042	0.4676	4.9000	5.0000	6.0297	6.1297	5.7747	normal	
Sodium, Dissolved	mg/L	MW-36	54	46	100	11.2583	3.8984	18.5000	16.3000	15.5762	17.6941	26.8517	normal	
Total Inorganic Nitrogen	mg/L	MW-204	28	47	77	0.4036	0.3376	0.2000	0.1800	0.4036	0.4036	1.7541	normal	
Total Inorganic Nitrogen	mg/L	MW-206	31	47	79	0.0691	0.0539	0.0500	0.0660	0.0691	0.0691	0.2848	normal	
Total Inorganic Nitrogen	mg/L	MW-21	38	47	85	0.0374	0.0490	0.0600	0.0500	0.0991	0.0374	0.2332	normal	
Total Inorganic Nitrogen	mg/L	MW-212SR	30	46	76	0.0971	0.1489	0.0500	0.0500	0.0971	0.0971	0.6928	normal	
Total Inorganic Nitrogen	mg/L	MW-213	24	47	71	0.0808	0.1073	0.3000	0.0650	0.5255	0.2905	0.5102	normal	
Total Inorganic Nitrogen	mg/L	MW-214	24	47	71	0.7938	0.3940	0.2100	0.2600	0.7938	0.7938	2.3698	normal	
Total Inorganic Nitrogen	mg/L	MW-22R	23	47	71	0.0454	0.0469	0.0500	0.1200	0.0454	0.0848	0.2330	normal	
Total Inorganic Nitrogen	mg/L	MW-36	61	46	108	0.0713	0.0793	0.0520	0.0580	0.0713	0.0713	0.3884	normal	

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

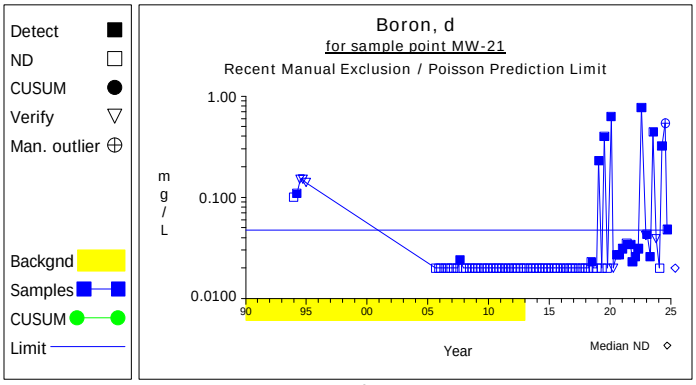
Intra-Well Control Charts / Prediction Limits



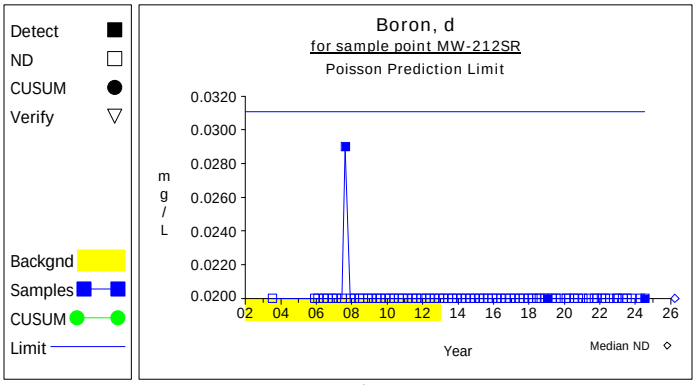
Graph 1



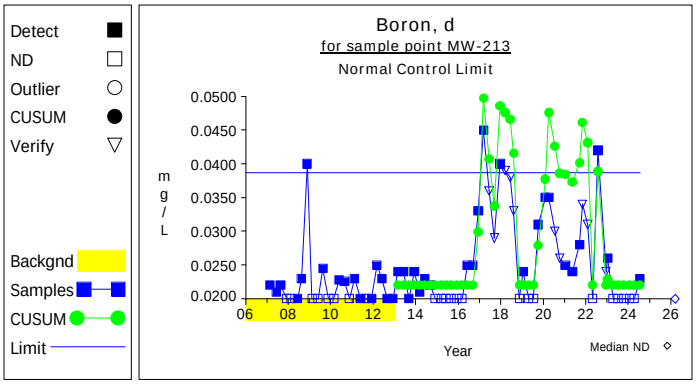
Graph 2



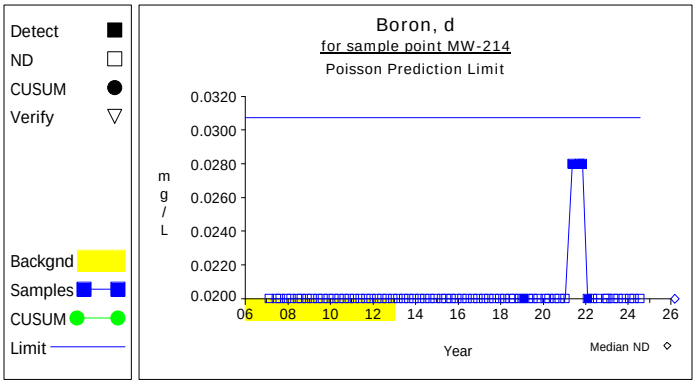
Graph 3



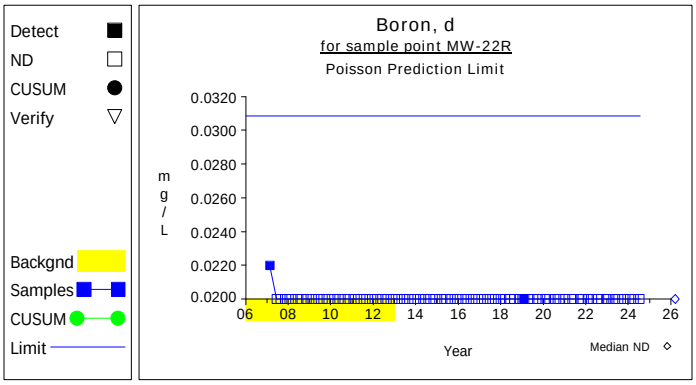
Graph 4



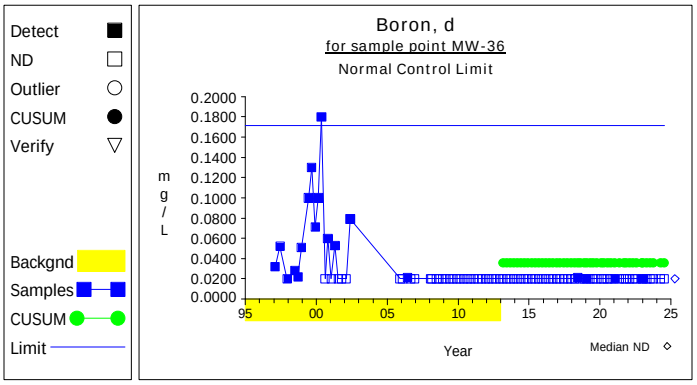
Graph 5



Graph 6



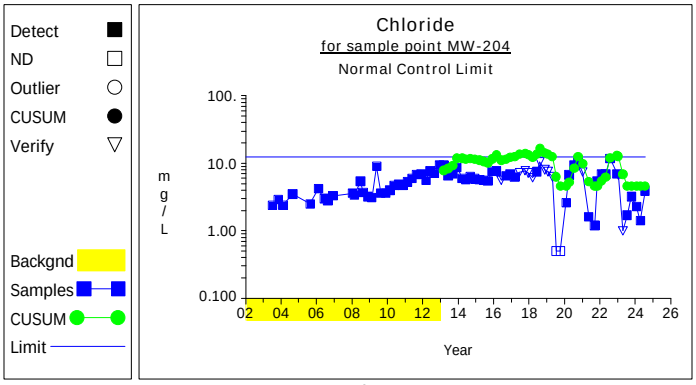
Graph 7



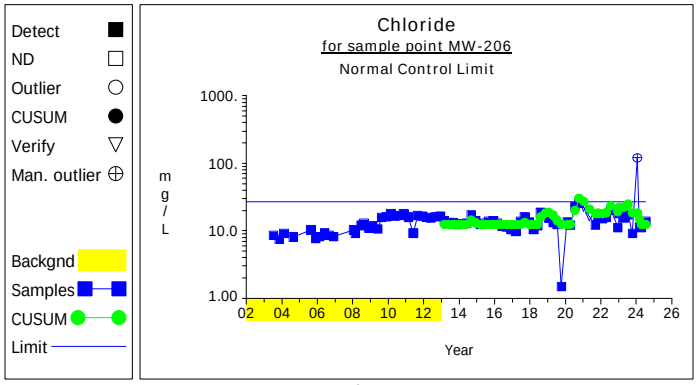
Graph 8

Prepared by: WSP USA Inc.

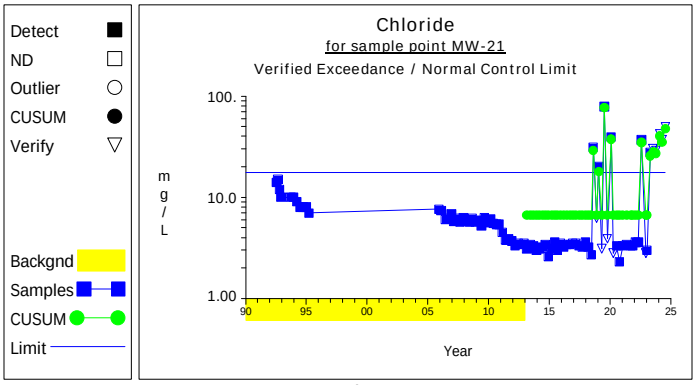
Intra-Well Control Charts / Prediction Limits



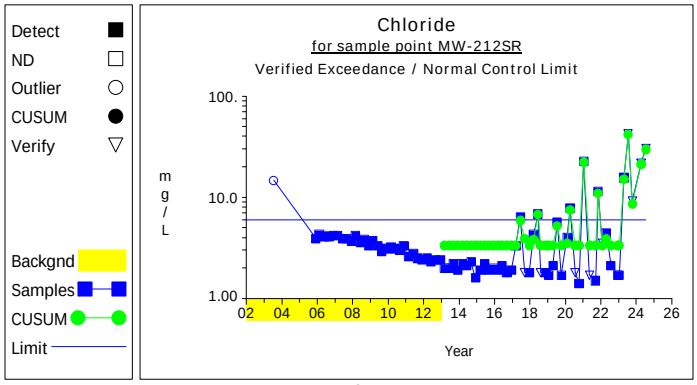
Graph 9



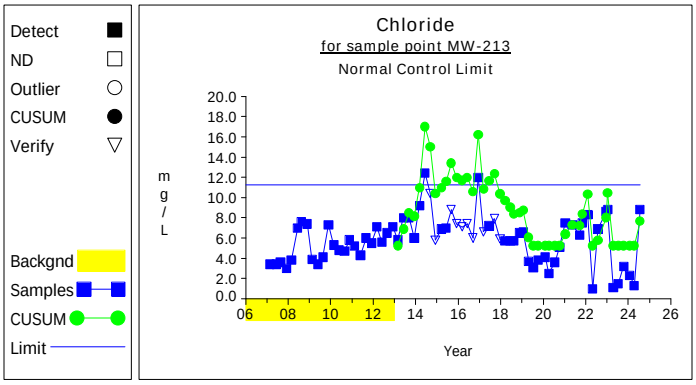
Graph 10



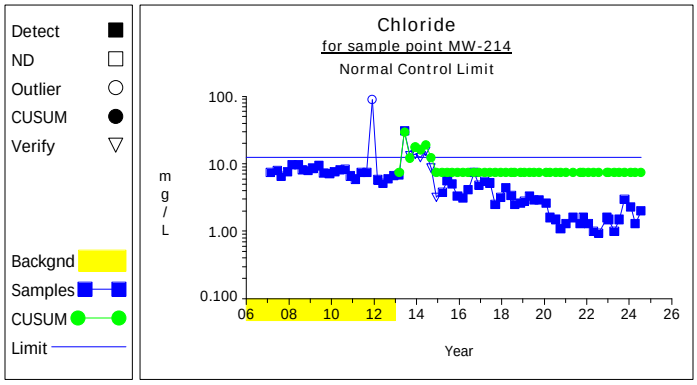
Graph 11



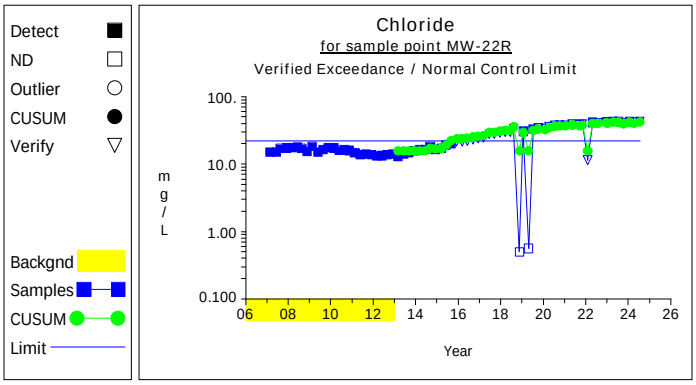
Graph 12



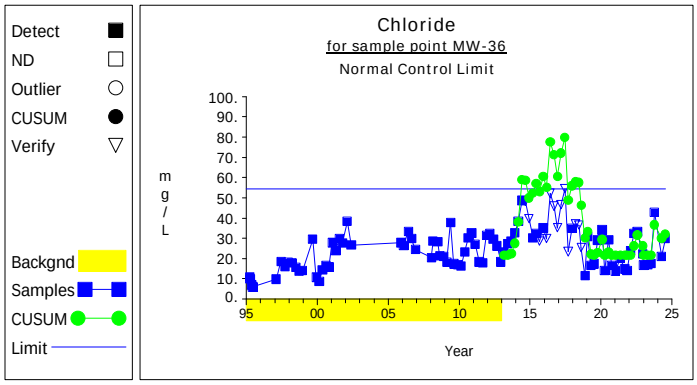
Graph 13



Graph 14



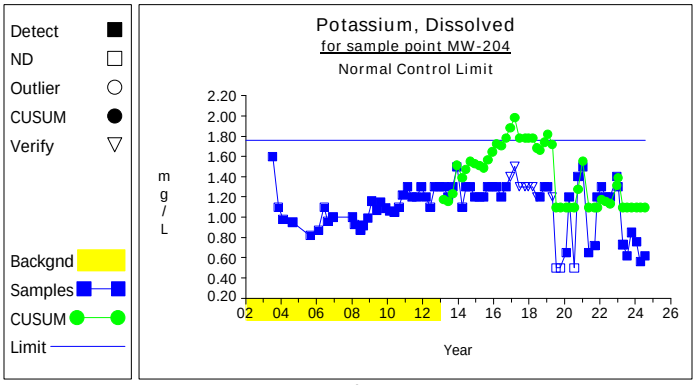
Graph 15



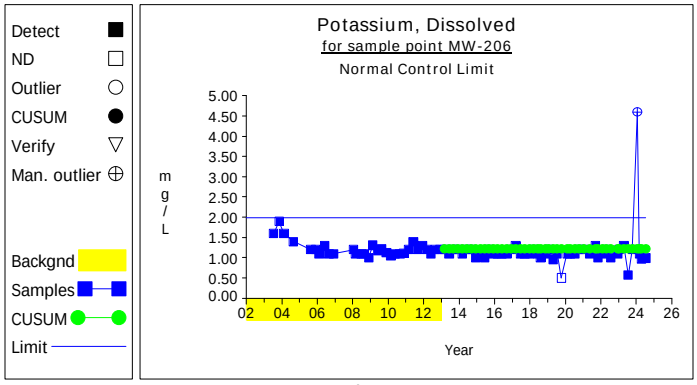
Graph 16

Prepared by: WSP USA Inc.

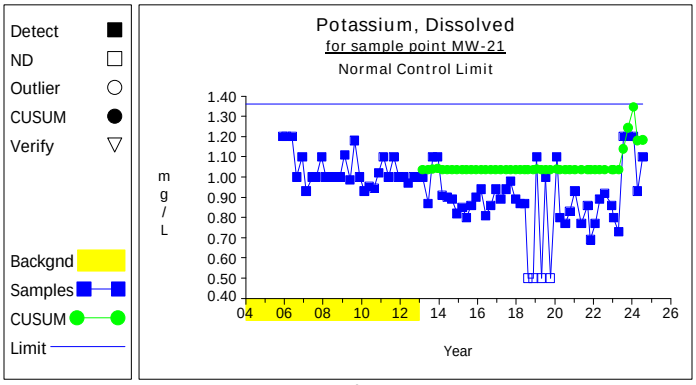
Intra-Well Control Charts / Prediction Limits



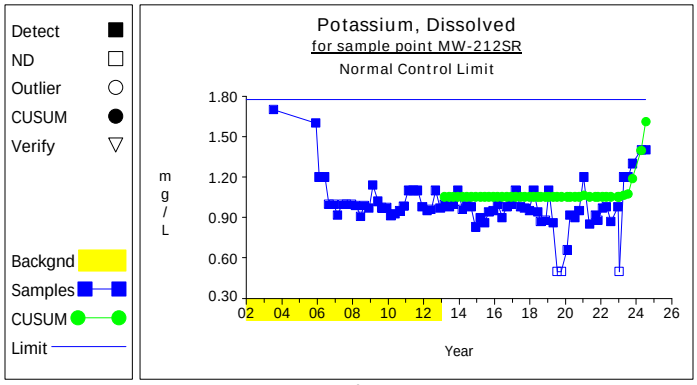
Graph 17



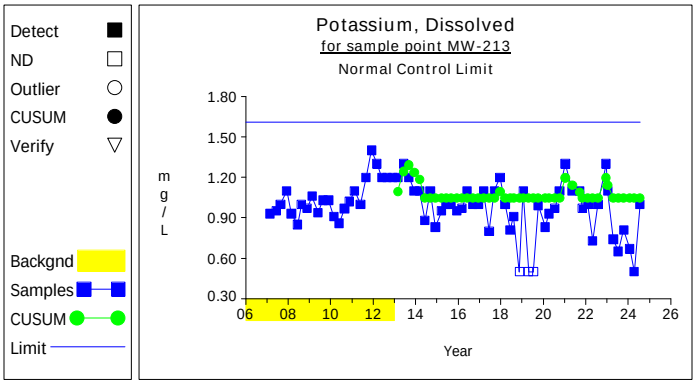
Graph 18



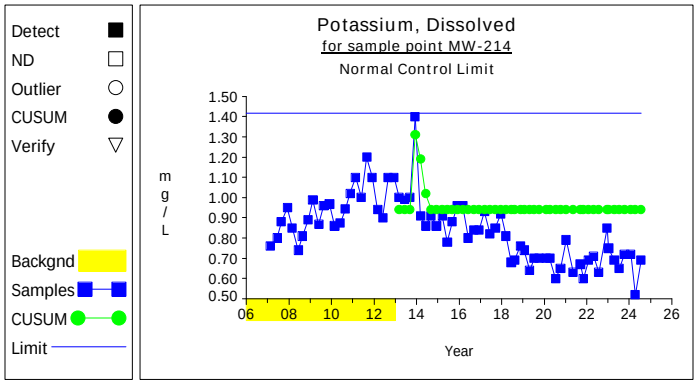
Graph 19



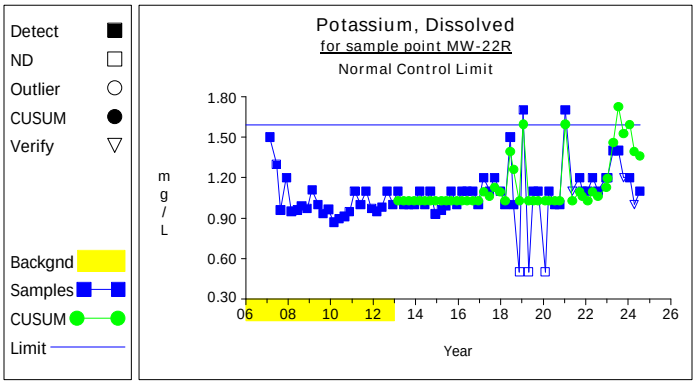
Graph 20



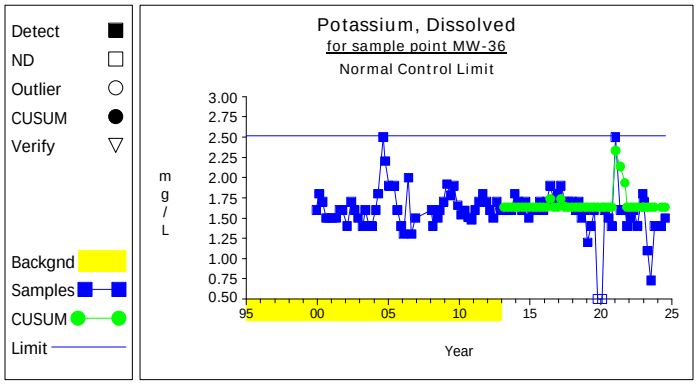
Graph 21



Graph 22



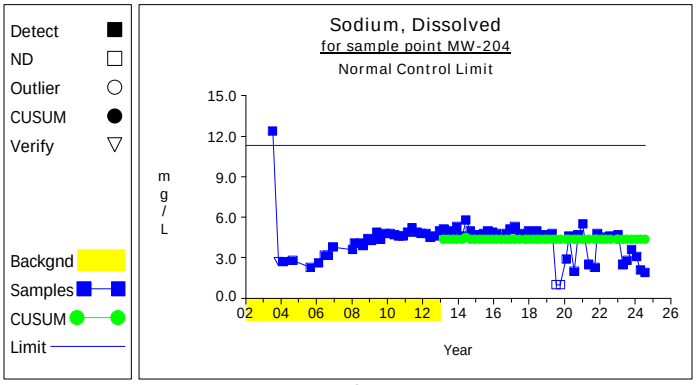
Graph 23



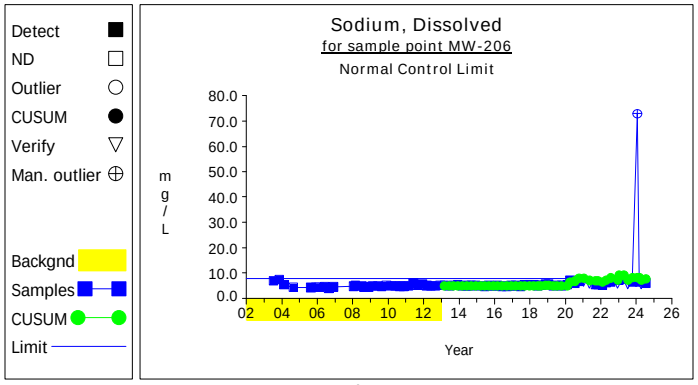
Graph 24

Prepared by: WSP USA Inc.

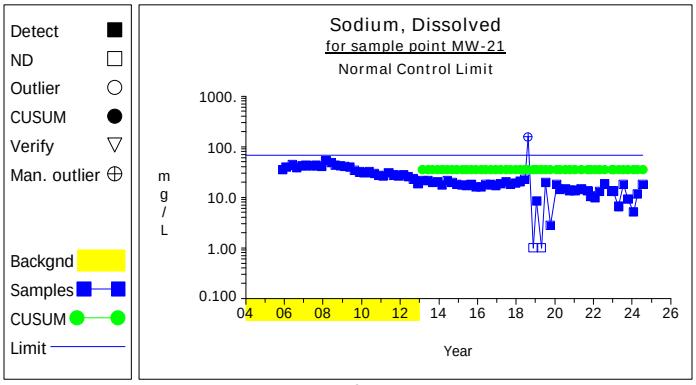
Intra-Well Control Charts / Prediction Limits



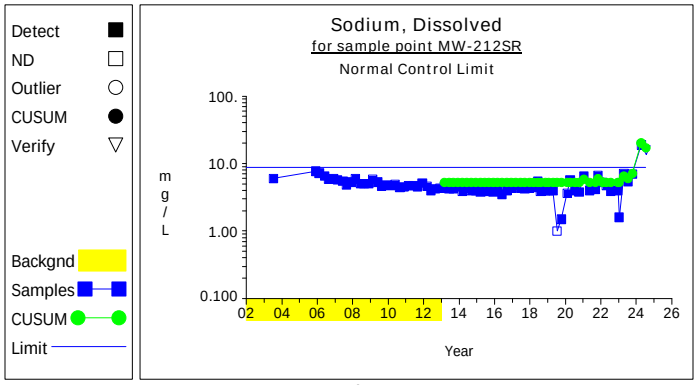
Graph 25



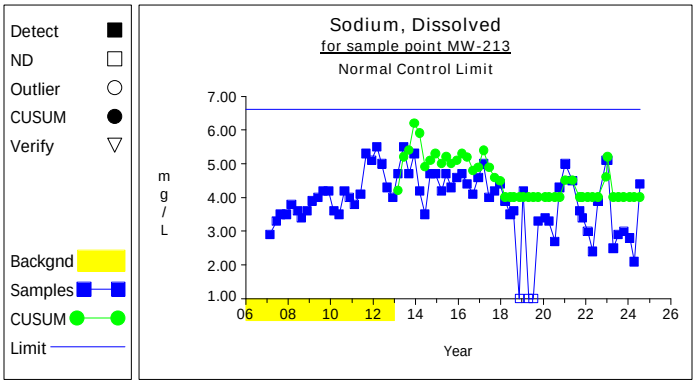
Graph 26



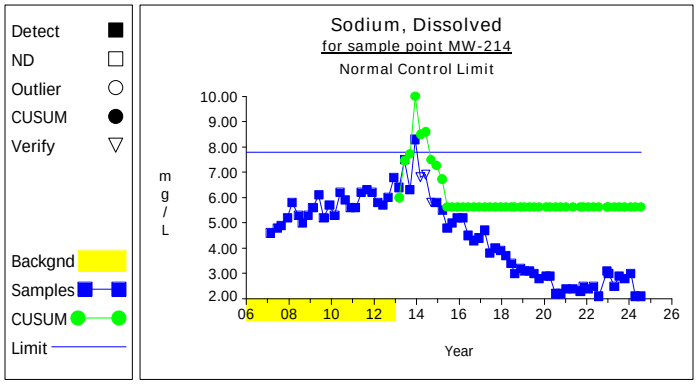
Graph 27



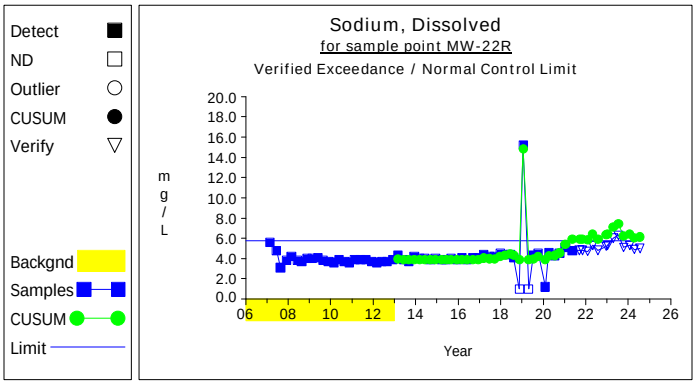
Graph 28



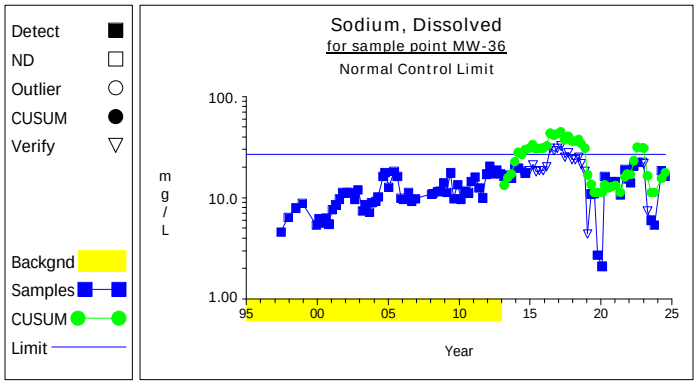
Graph 29



Graph 30



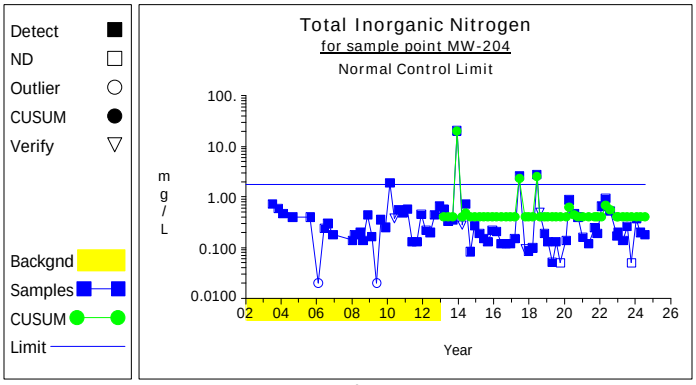
Graph 31



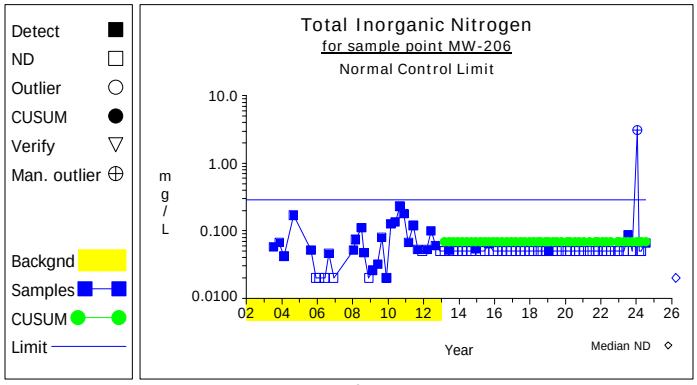
Graph 32

Prepared by: WSP USA Inc.

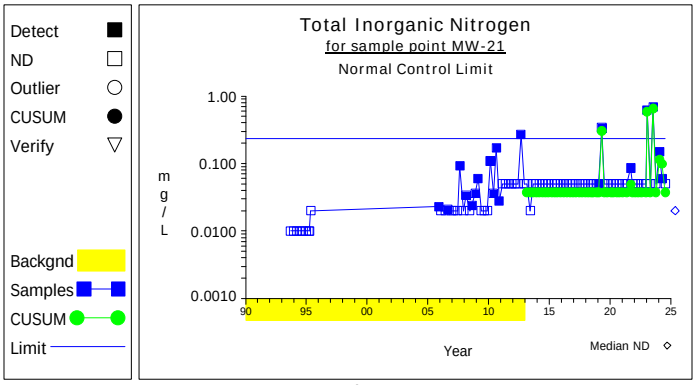
Intra-Well Control Charts / Prediction Limits



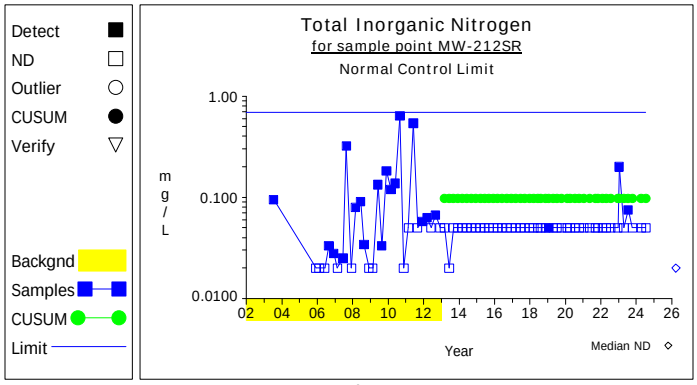
Graph 33



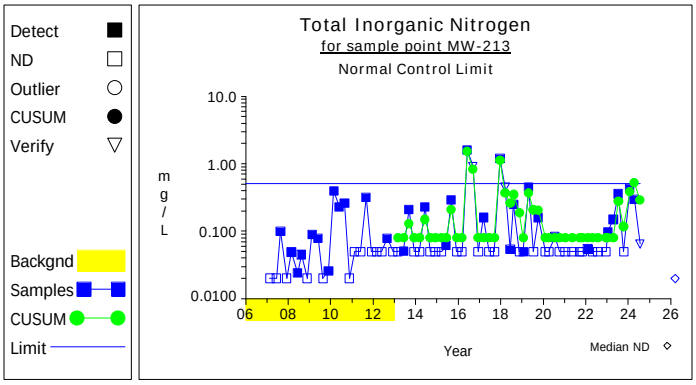
Graph 34



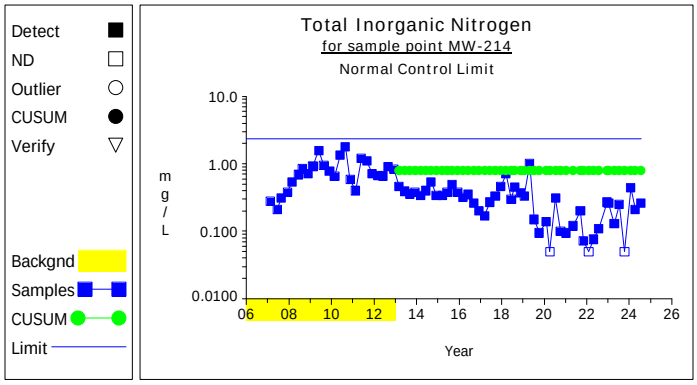
Graph 35



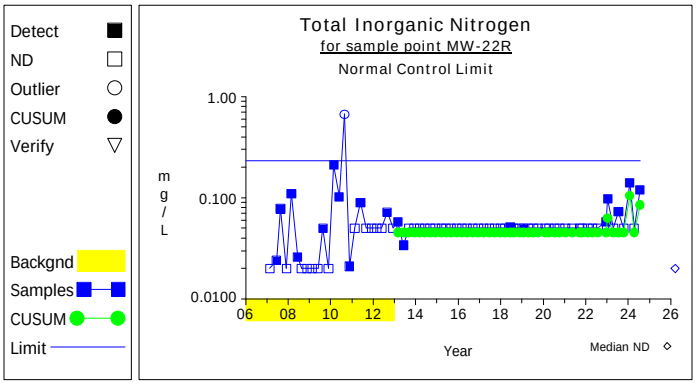
Graph 36



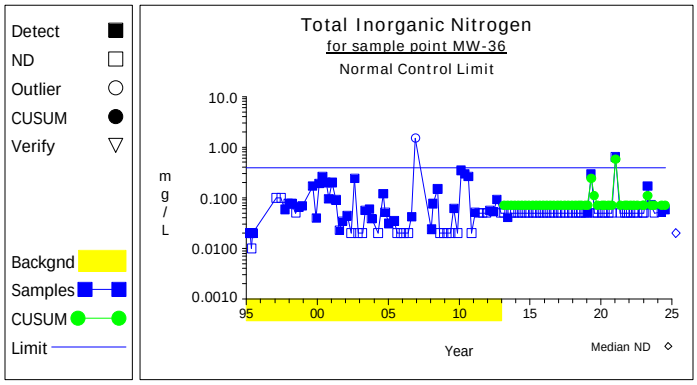
Graph 37



Graph 38



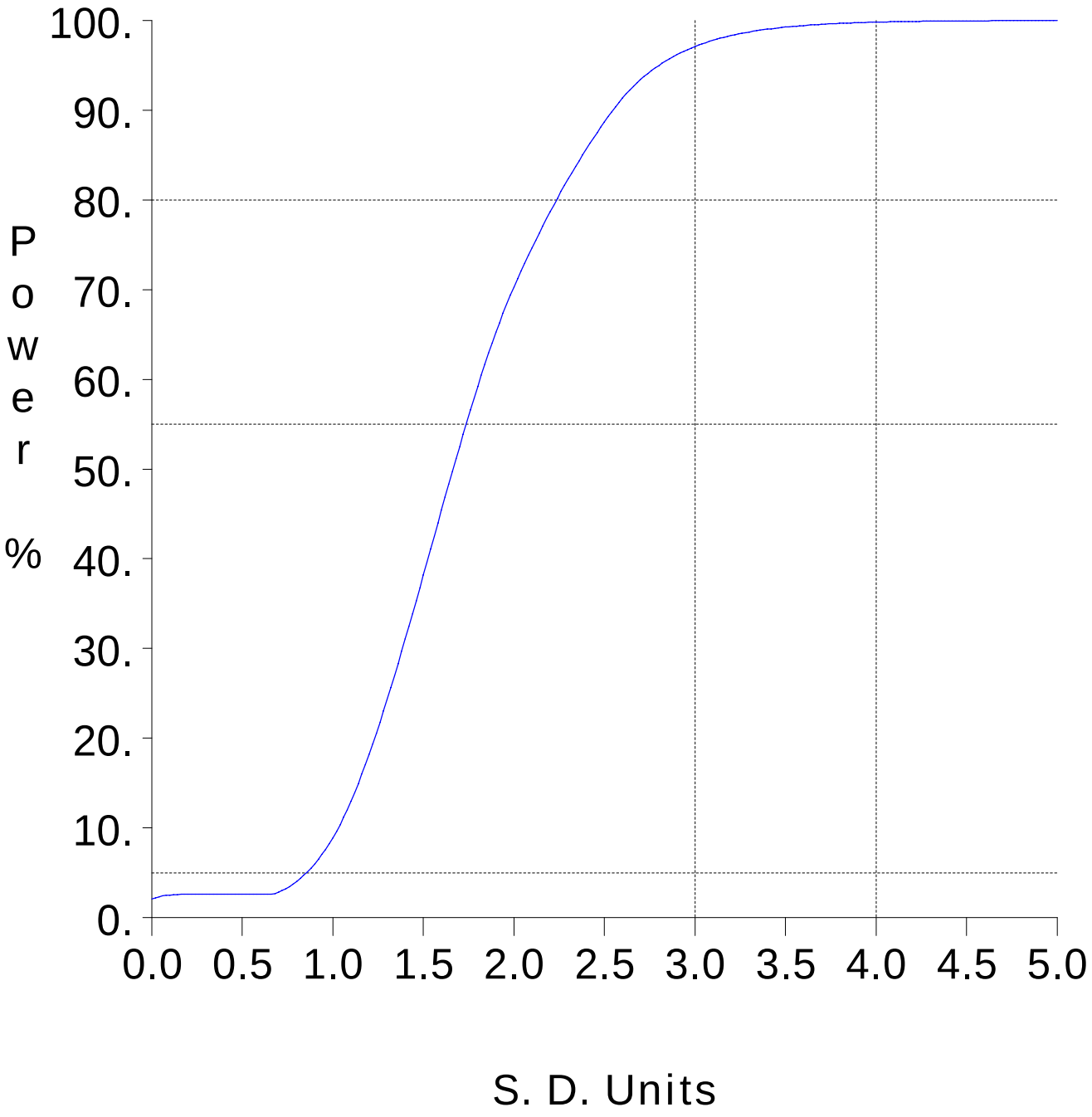
Graph 39



Graph 40

Prepared by: WSP USA Inc.

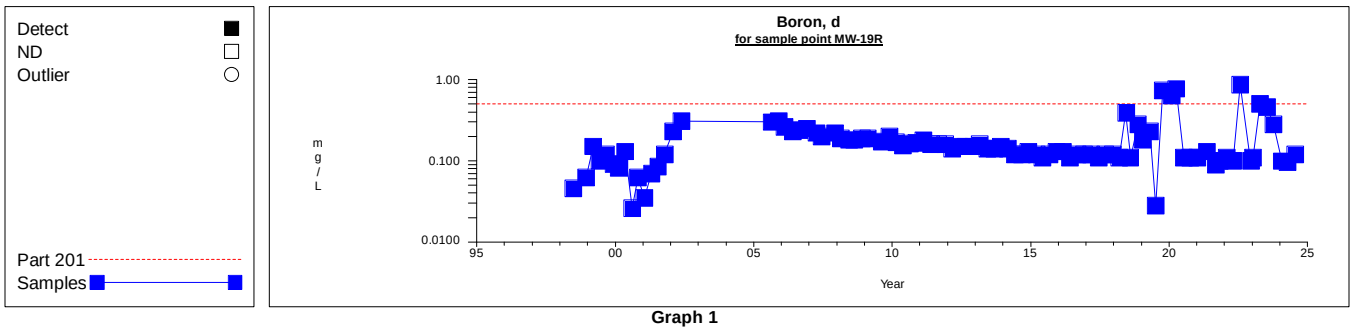
False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



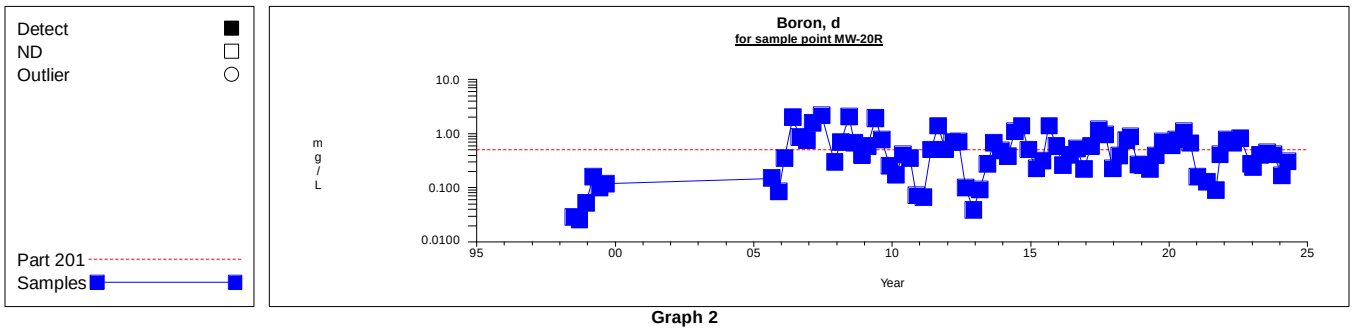
APPENDIX C

Time Series Plots

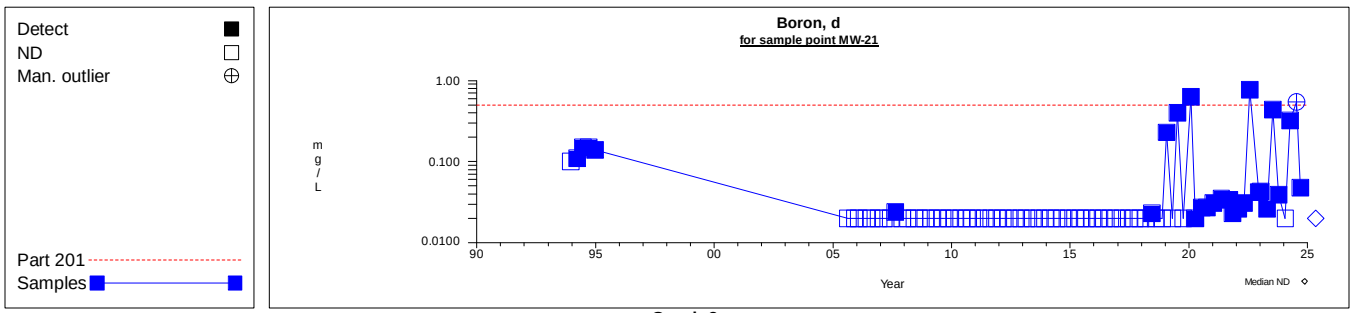
Time Series



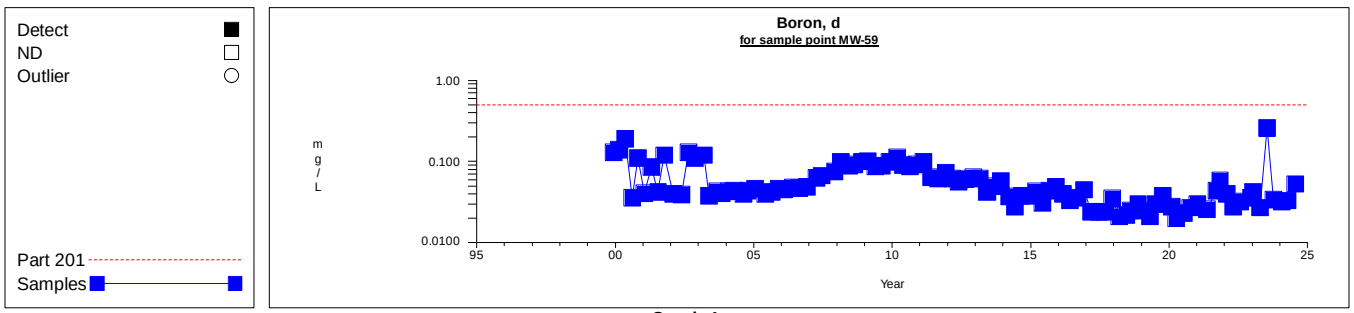
Graph 1



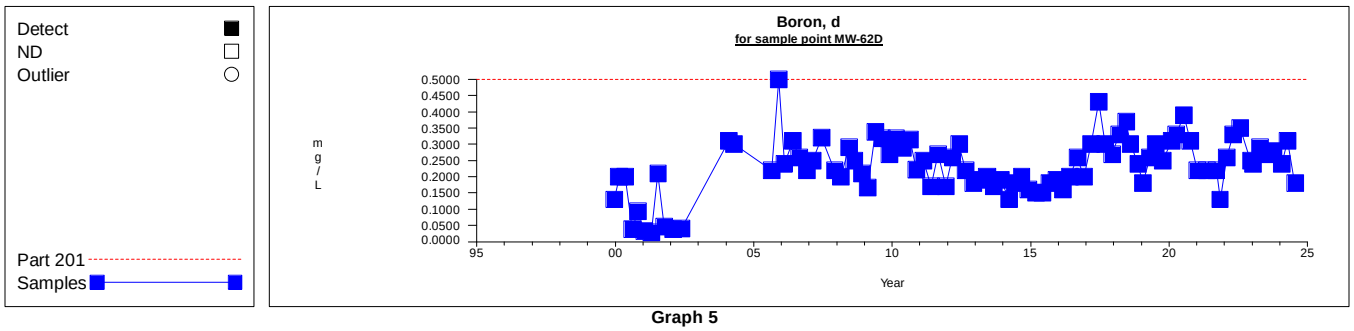
Graph 2



Graph 3



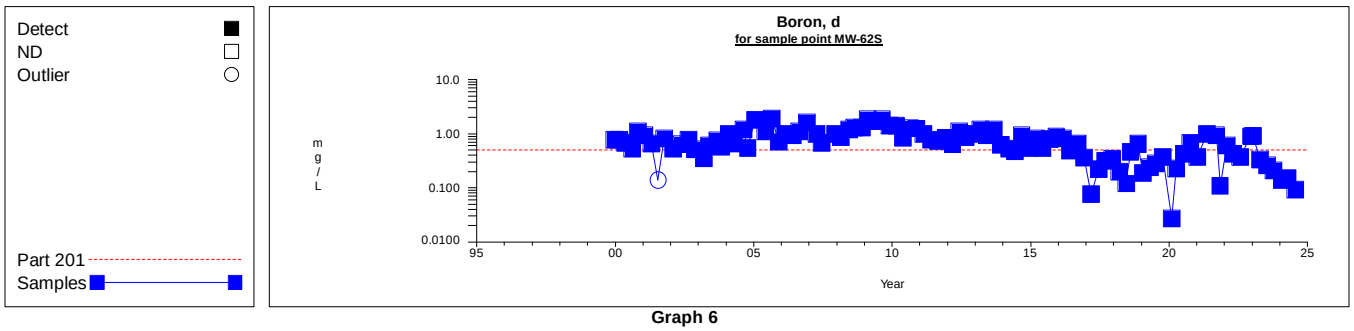
Graph 4



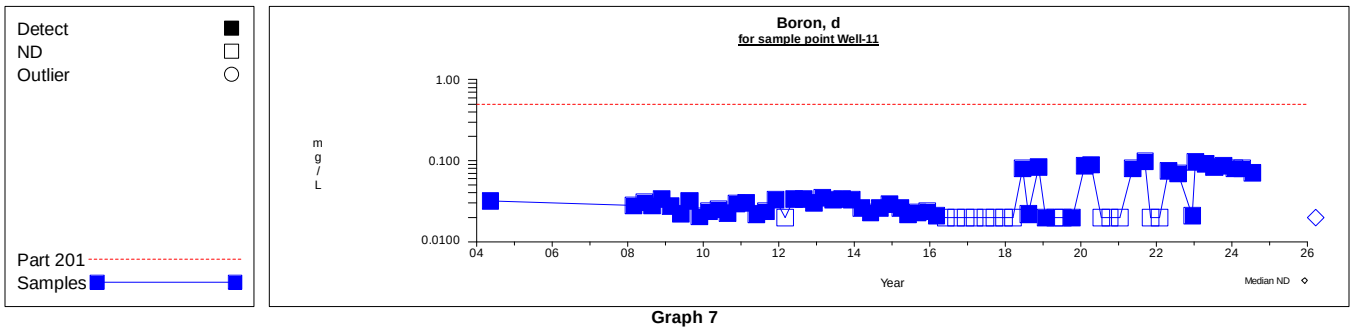
Graph 5

Prepared by: WSP USA Inc.

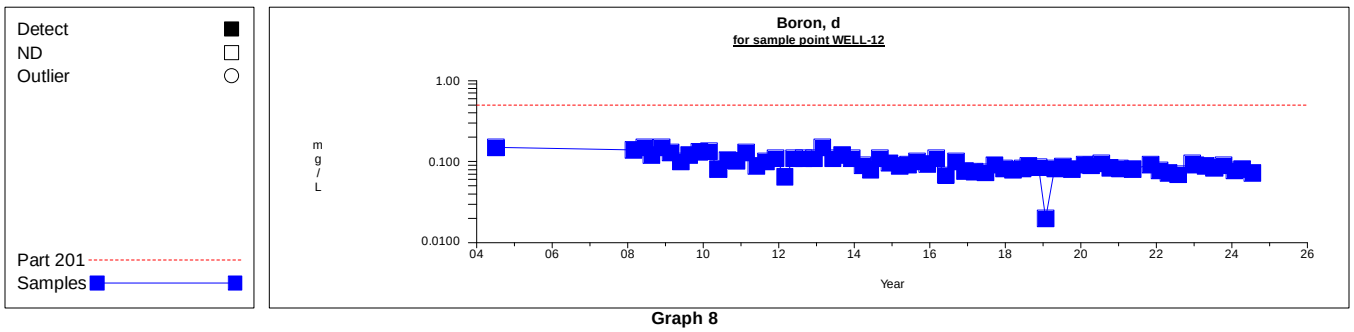
Time Series



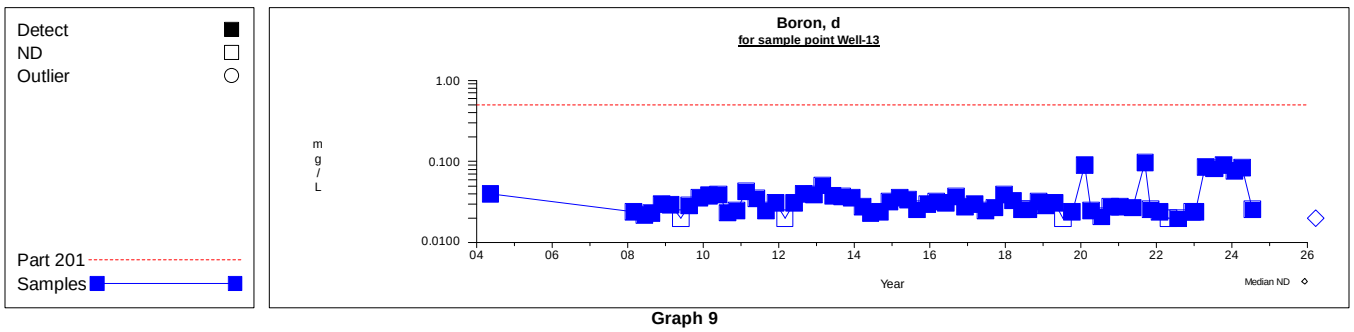
Graph 6



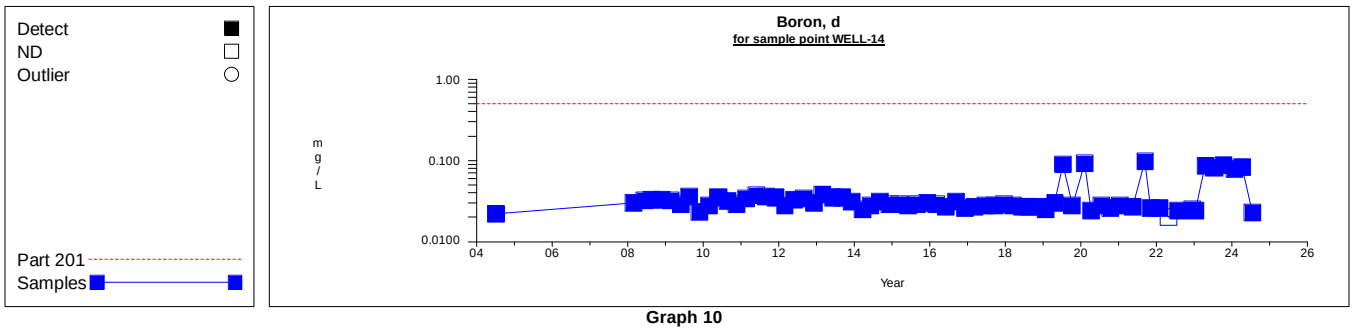
Graph 7



Graph 8



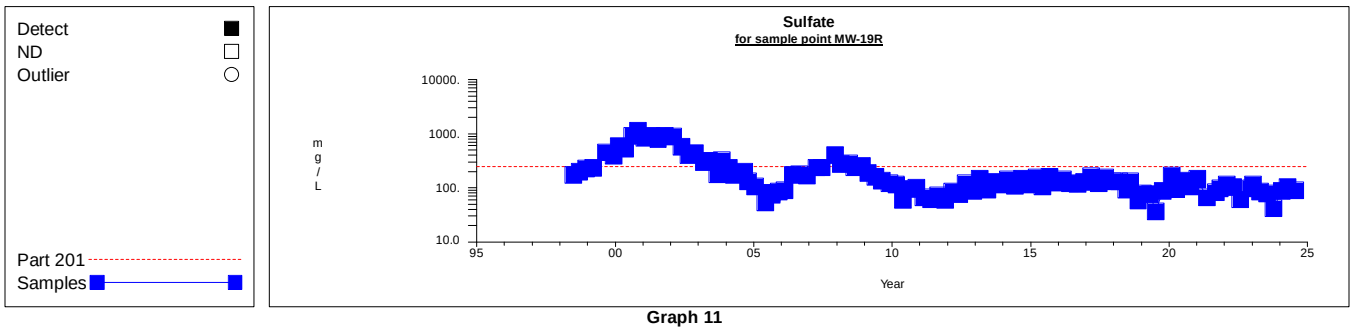
Graph 9



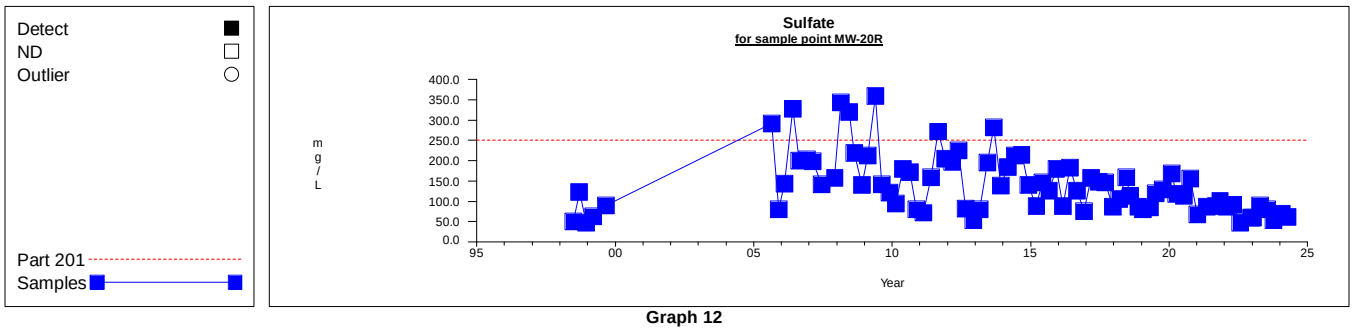
Graph 10

Prepared by: WSP USA Inc.

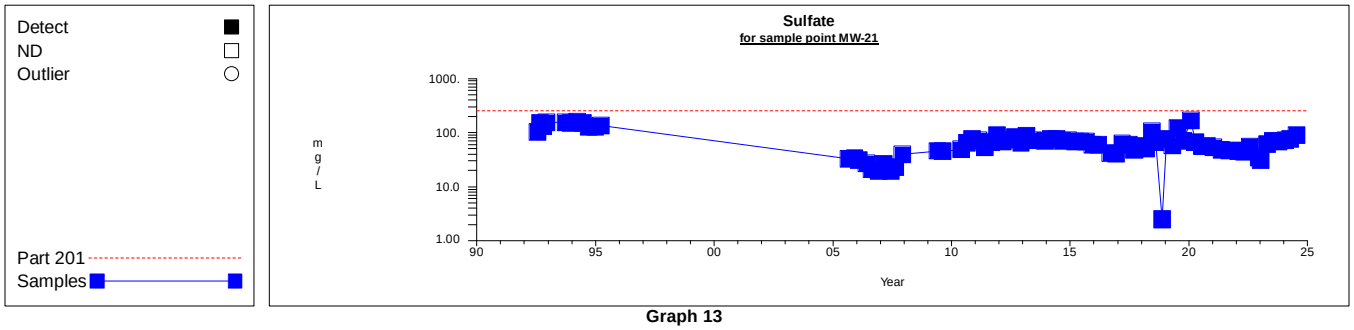
Time Series



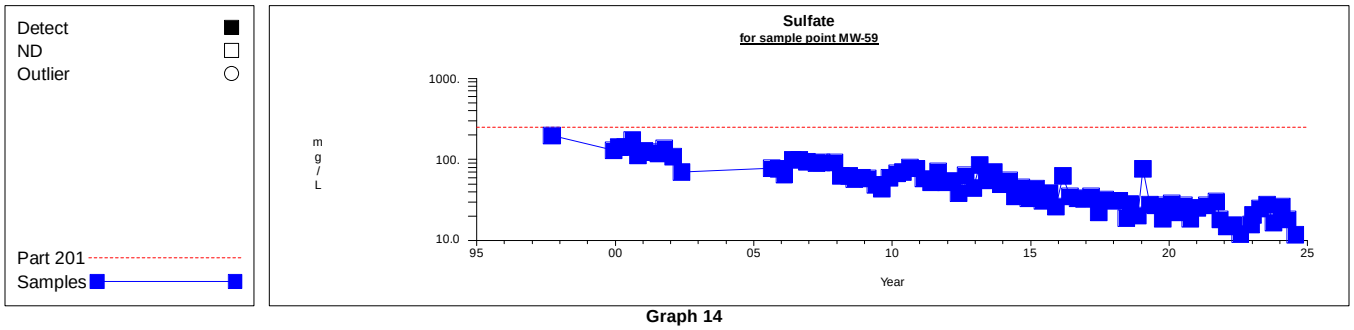
Graph 11



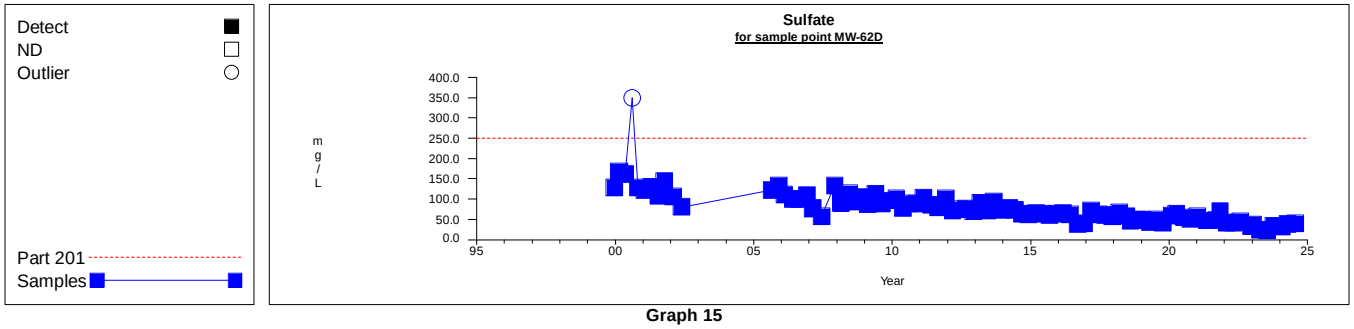
Graph 12



Graph 13



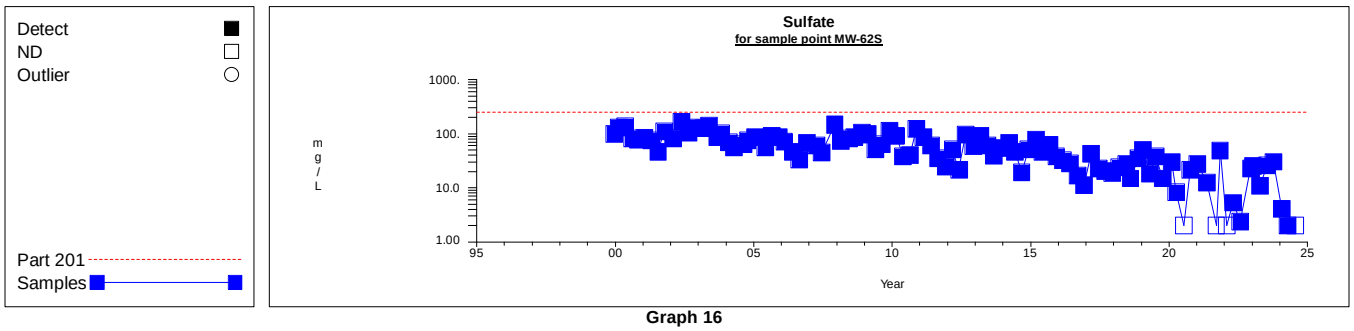
Graph 14



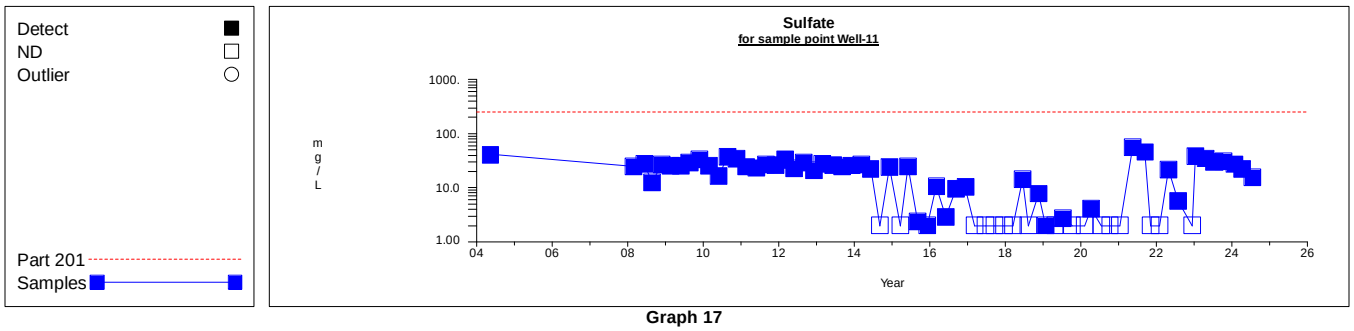
Graph 15

Prepared by: WSP USA Inc.

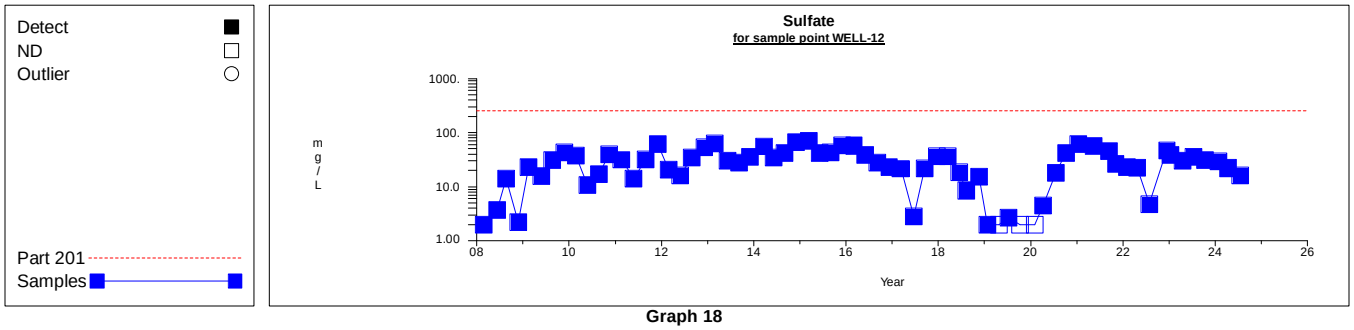
Time Series



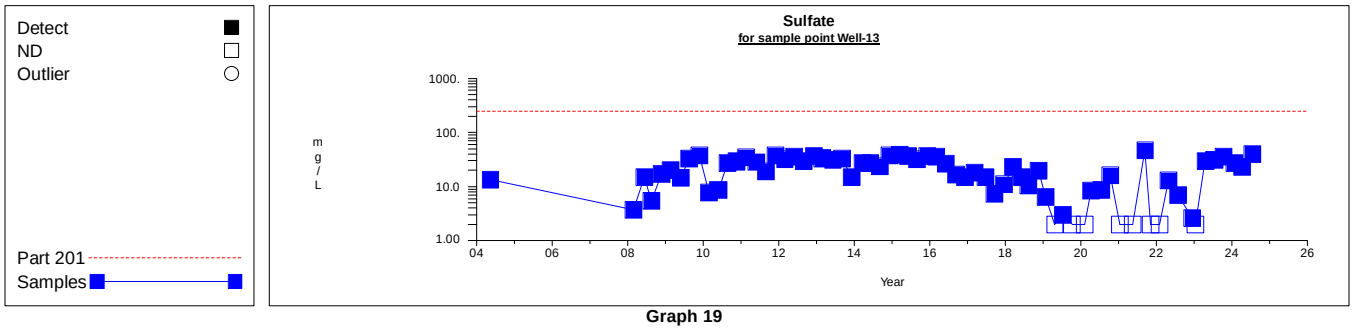
Graph 16



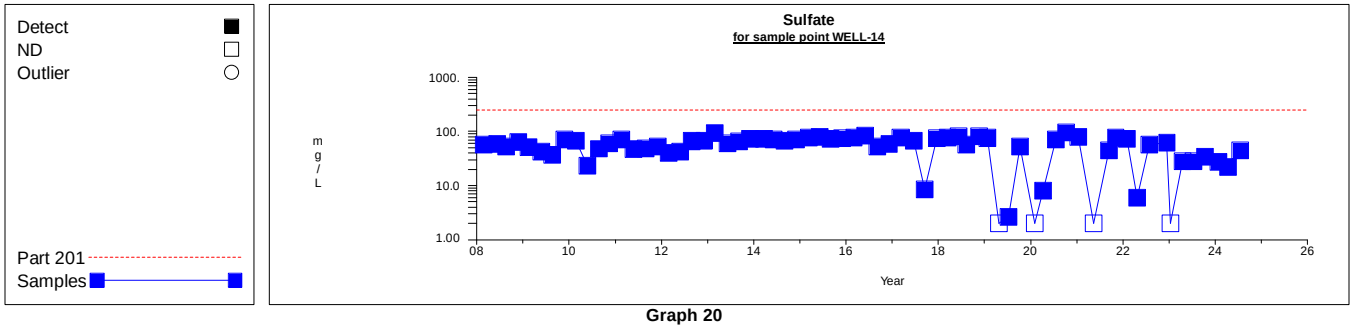
Graph 17



Graph 18



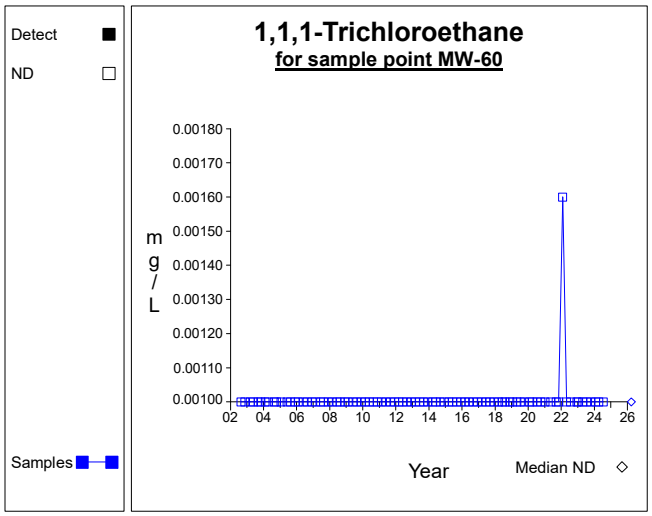
Graph 19



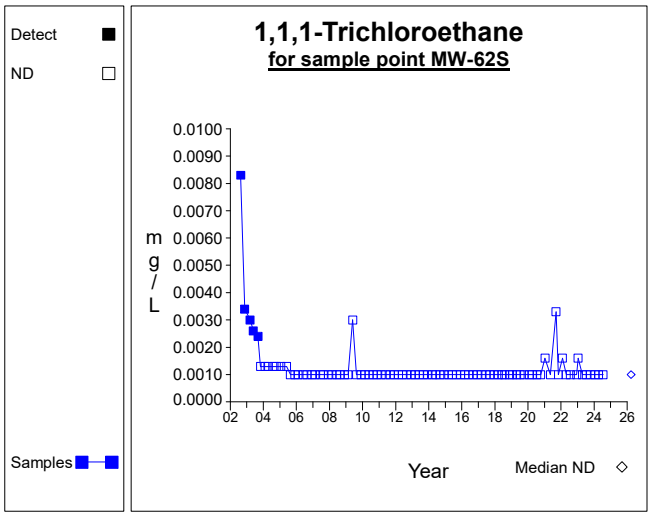
Graph 20

Prepared by: WSP USA Inc.

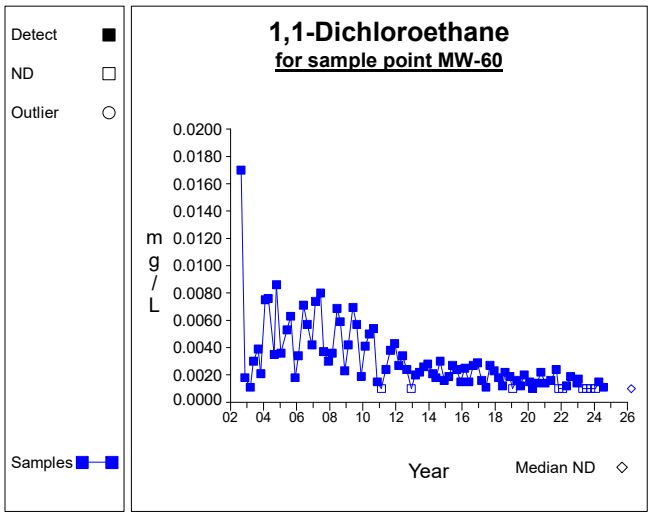
Time Series



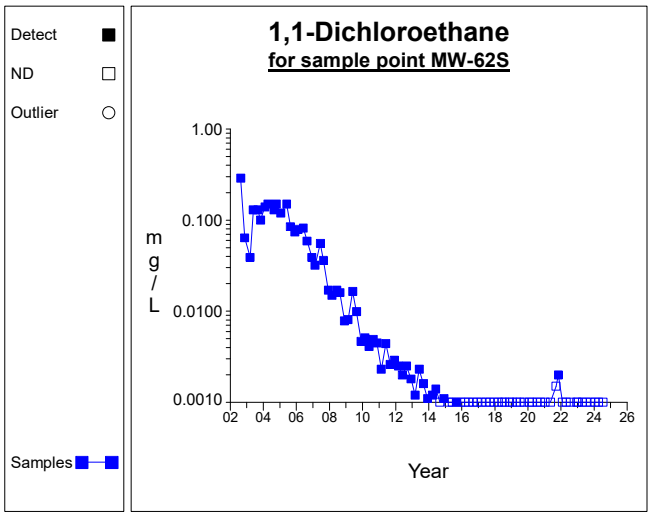
Graph 1



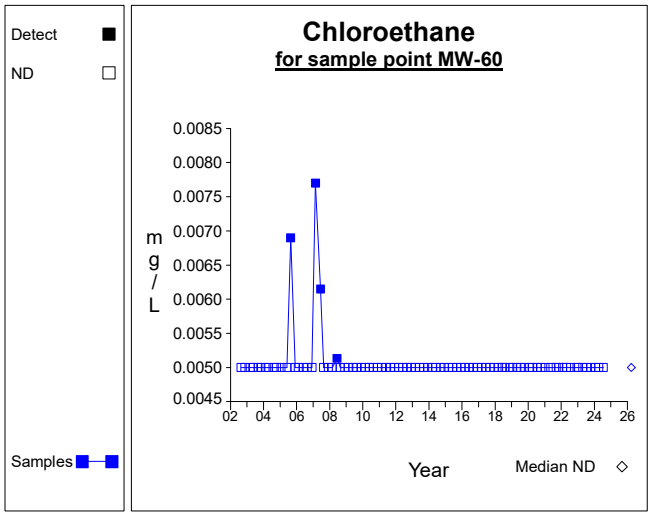
Graph 2



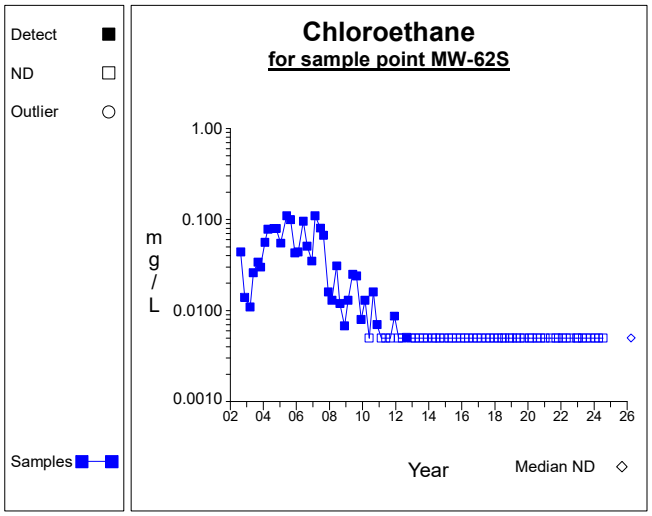
Graph 3



Graph 4

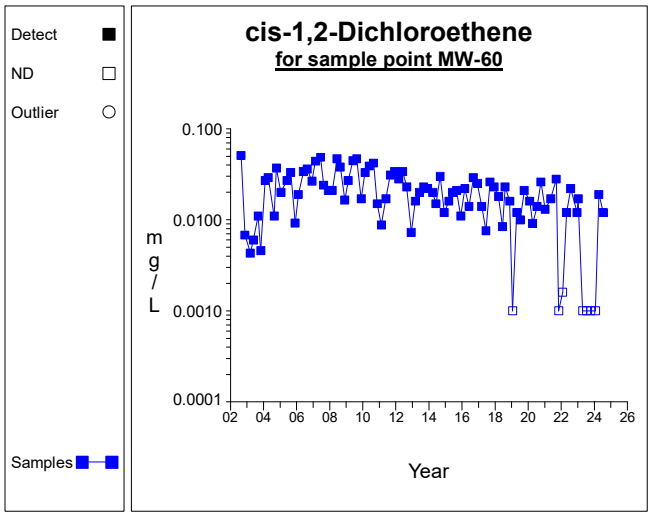


Graph 5

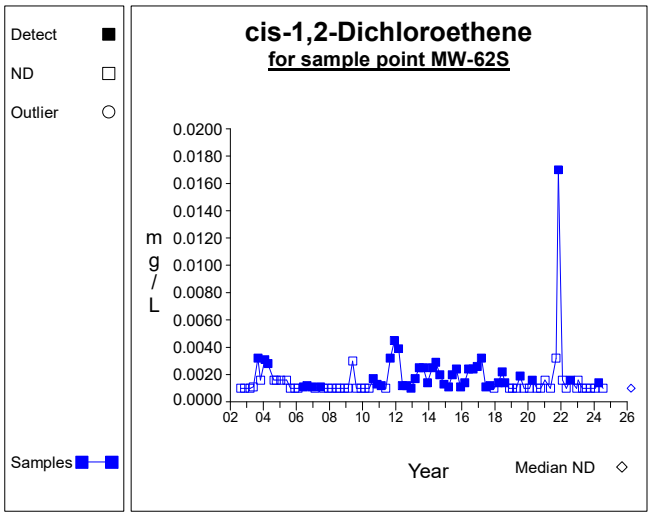


Graph 6

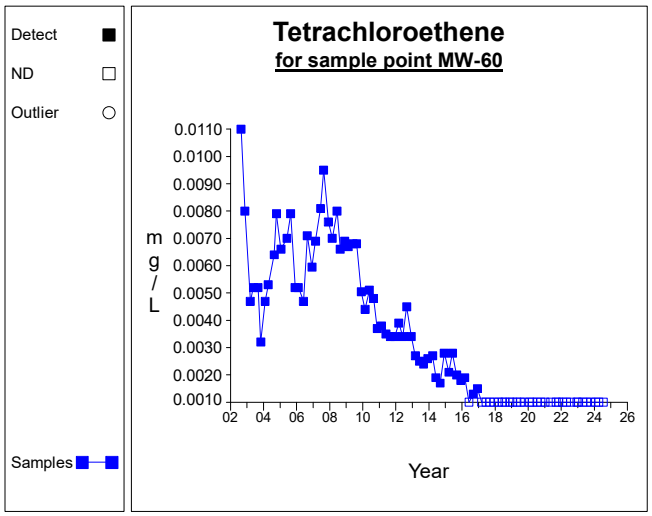
Time Series



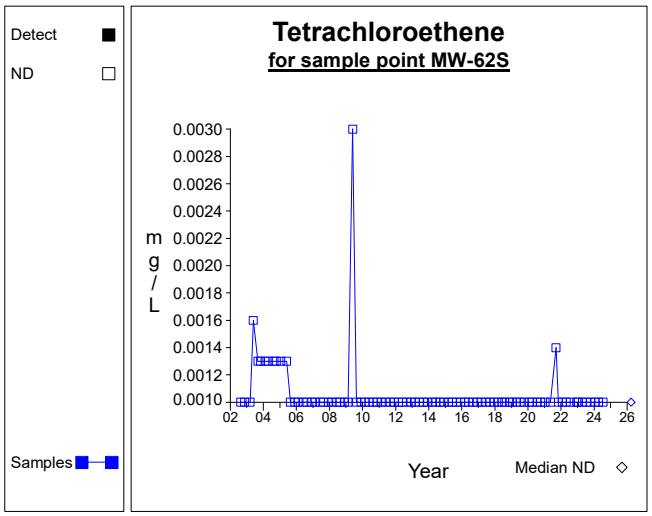
Graph 7



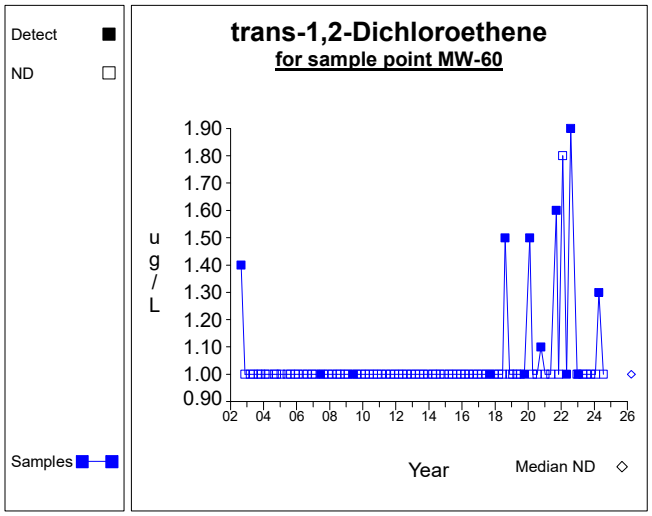
Graph 8



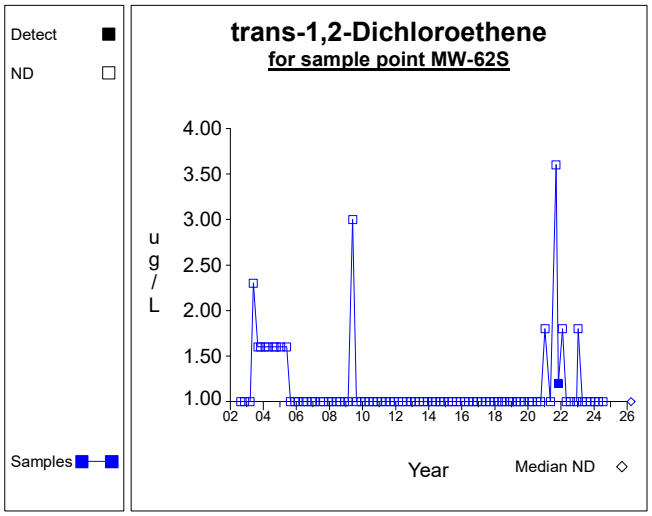
Graph 9



Graph 10



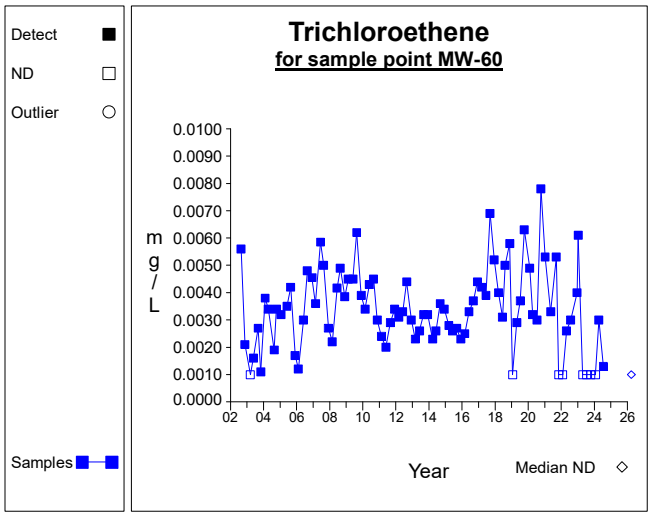
Graph 11



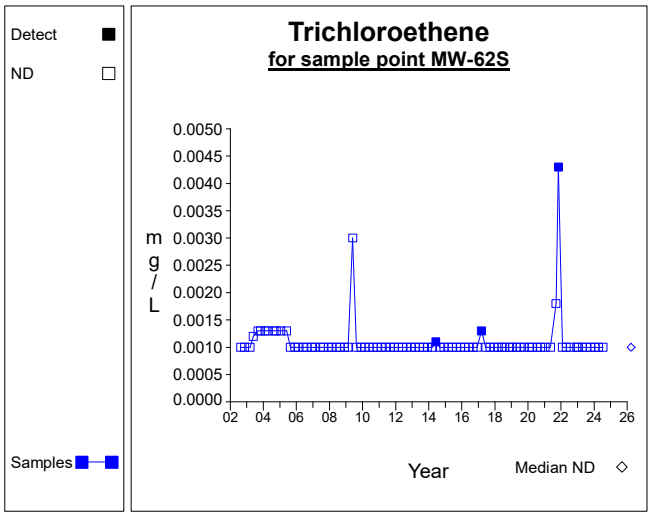
Graph 12

Prepared by: Golder Associates Inc.

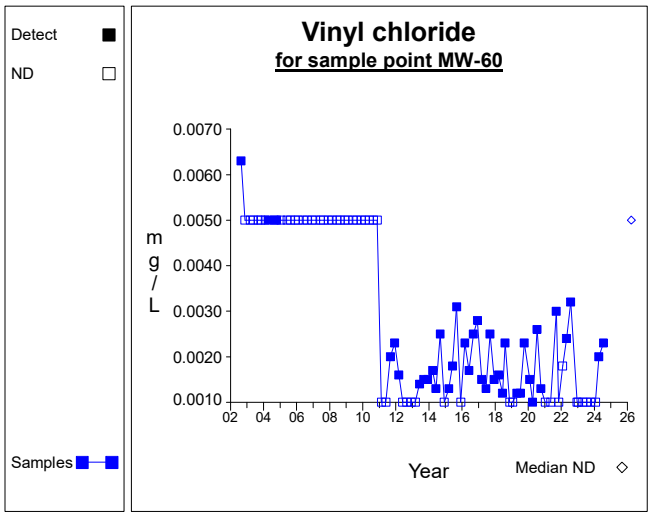
Time Series



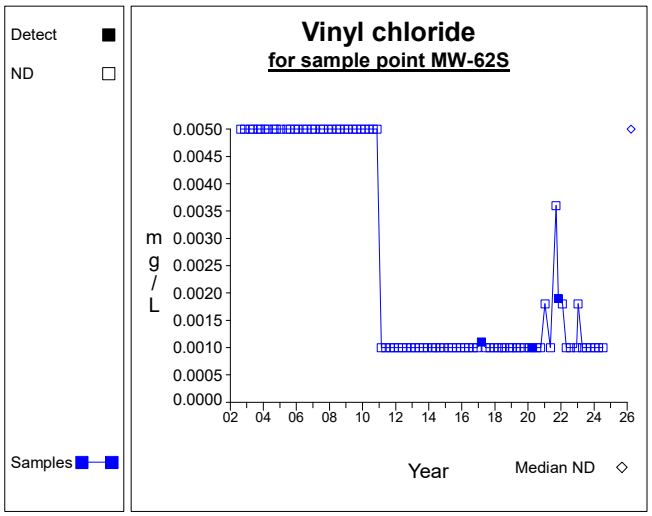
Graph 13



Graph 14



Graph 15



Graph 16



wsp.com

Appendix C

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID: 38720113301

Tax No:	Permit No:	County: Jackson	Township: Blackman

Well ID: 38000000664

Elevation: 924 ft.
Latitude: 42.291977
Longitude: -84.376298
Method of Collection: GPS Std Positioning Svc SA Off

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	13	Active	6370	SMSP WELL #4

Distance and Direction from Road Intersection:
WSSN# 06370

Well Owner: STATE OF MICHIGAN, DMB

Well Address:	Owner Address:
SMSP WELL #4 JACKSON, MI	131 STEVENS MASON BUILDING LANSING, MI 48909

Drilling Method: Unknown
Well Depth: 300.00 ft. **Well Use:** Type I public
Well Type: Replacement **Date Completed:**

Casing Type: Unknown **Height:** 0.00 ft. below grade
Casing Joint: Unknown
Casing Fitting: None

Diameter: 12.00 in. to 0.00 ft. depth

Borehole:

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:**
Manufacturer: Other **Pump Type:** Other
Model Number: **Pump Capacity:** 1100 GPM
Drop Pipe Length: 0.00 ft. **Pump Voltage:**
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 16.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown

Formation Description	Thickness	Depth to Bottom
No Log	300.00	300.00

Screen Installed: Yes **Filter Packed:** No
Screen Diameter: 12.00 in. **Blank:** 0.00 ft. Above
Screen Material Type:
Screen Installation Type: Unknown

Slot	Length	Set Between
0.00	0.00 ft.	0.00 ft. and 0.00 ft.

Fittings: None

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Unknown	0.00	None	0.00 ft. to 0.00 ft.

Wellhead Completion: Other, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown	0 ft.	

Abandoned Well Plugged: No
Reason Not Plugged:

Geology Remarks:

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Unknown **Reg No:**
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: THE PUMP TYPE IS A VERTICAL TURBINE;NO WELL LOG PROVIDED; NO INFORMATION ON SCREEN TYPE PROVIDED;
Other Remarks: Wellhead Completion:12 inch Above Grade, Pump Manufacturer:Pump Manufacturer unknown, Pump Type:Type Unknown

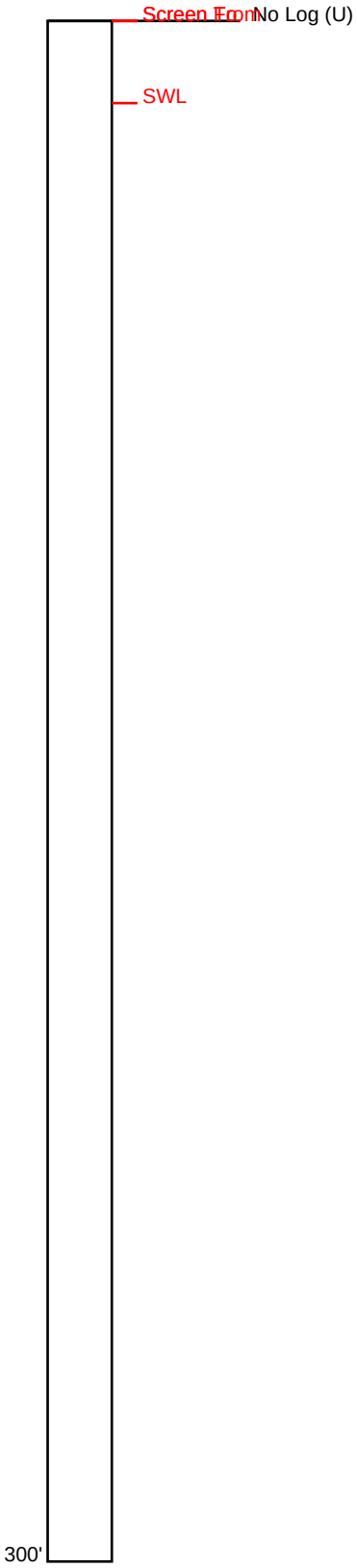
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000000664
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	13
Owner	
Well Status	ACT
Aquifer Type	DRIFT
Well Depth	300
Case Depth	0
Screen From	0
Screen To	0
Static Water Level	16
Elevation (DEM)	935
Elevation (Well Log)	924

Well Lithology Profile



Lithology Records for 38000000664									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	No Log		300	300	U	NA		NA	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Jackson	Township: Blackman

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	13	Inactive	6370	SPSM WELL #3

Well ID: 38000000955

Elevation: 924 ft.
Latitude: 42.291967
Longitude: -84.376293
Method of Collection: GPS Std Positioning Svc SA Off

Distance and Direction from Road Intersection:

Well Owner: STATE OF MICHIGAN, DMB

Well Address:
SPSM WELL #3
JACKSON, MI

Owner Address:
131 STEVENS MASON BUILDING
LANSING, MI 48909

Drilling Method: Unknown
Well Depth: 352.00 ft. **Well Use:** Type I public
Well Type: New **Date Completed:** 1/17/1956

Casing Type: Unknown **Height:** 0.00 ft. below grade
Casing Joint: Unknown
Casing Fitting: None

Diameter: 12.00 in. to 103.00 ft. depth

Borehole:

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:**
Manufacturer: Other **Pump Type:** Submersible
Model Number: **Pump Capacity:** 350 GPM
Drop Pipe Length: **Pump Voltage:**
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 72.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown
Pumping level 55.00 ft. after 8.00 hrs. at 520 GPM

Formation Description	Thickness	Depth to Bottom
Gravel & Clay	15.00	15.00
Sand	3.00	18.00
Brown Clay	35.00	53.00
Red Clay	31.00	84.00
Sand Wet/Moist	8.00	92.00
Sandstone Soft	6.00	98.00
Sandstone Hard	18.00	116.00
Shale Hard	35.00	151.00
Sandstone	5.00	156.00
Shale Soft	3.00	159.00
Sandstone	120.00	279.00
Shale	2.00	281.00
Sandstone	71.00	352.00

Screen Installed: Yes **Filter Packed:** No
Screen Diameter: 12.00 in. **Blank:** 0.00 ft. Above
Screen Material Type: Unknown
Screen Installation Type: Unknown

Slot	Length	Set Between
0.00	0.00 ft.	

Fittings: None

Well Grouted:

Geology Remarks:

Wellhead Completion: 12 inches above grade

Drilling Machine Operator Name: T.R. BREWER
Employment: Unknown

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown		

Contractor Type: Unknown **Reg No:**
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: WELL IS LISTED ON LOG AS DRILLED;
Other Remarks: Pump Manufacturer:Pump Manufacturer unknown

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID: 38720124401

Tax No:	Permit No:	County: Jackson	Township: Blackman

Well ID: 38000000956

Elevation: 965 ft.
Latitude: 42.28377
Longitude: -84.36793
Method of Collection: GPS Std Positioning Svc SA Off

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active	2066138	001

Distance and Direction from Road Intersection:
2066138; 1 ST DEMETRIUS

Well Owner: ST DEMETRIUS

Well Address:
3043 SEYMOUR
JACKSON, MI 49201

Owner Address:
PO BOX 125
JACKSON, MI 49204

Drilling Method: Unknown
Well Depth: ft. **Well Use:** Type II public
Well Type: Replacement **Date Completed:**

Casing Type: Unknown **Height:** 0.00 ft. below grade
Casing Joint: Unknown
Casing Fitting: None

Diameter:

Borehole:

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 999.99 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown

Screen Installed: No **Intake:** Unknown

Formation Description	Thickness	Depth to Bottom
No Log	0.00	0.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Unknown	0.00	None	0.00 ft. to 0.00 ft.

Wellhead Completion: Unknown, Other, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown	0 ft.	

Abandoned Well Plugged: No
Reason Not Plugged:

Geology Remarks:

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Unknown **Reg No:**
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: No Log Available
Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID: 38727119401

Tax No:	Permit No:	County: Jackson	Township: Leoni

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
01S 01E	19	Active	2039538	001

Well ID: 38000001486

Elevation:
Latitude: 42.2818
Longitude: -84.3647
Method of Collection: GPS Differential (DGPS)

Distance and Direction from Road Intersection:
2039538; 1 KINGDOM HALL

Well Owner: KINGDOM HALL

Well Address:	Owner Address:
3377 DETTMAN JACKSON, MI 49201	3377 DETTMAN JACKSON, MI 49201

Drilling Method: Unknown
Well Depth: ft. **Well Use:** Type II public
Well Type: Replacement **Date Completed:**
Casing Type: Unknown **Height:** 0.00 ft. below grade
Casing Joint: Unknown
Casing Fitting: None
Diameter:
Borehole:

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 999.99 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown

Screen Installed: No **Intake:** Unknown

Formation Description	Thickness	Depth to Bottom
No Log	0.00	0.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Unknown	0.00	None	0.00 ft. to 0.00 ft.

Wellhead Completion: Unknown, Other, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown	0 ft.	

Abandoned Well Plugged: No
Reason Not Plugged:

Geology Remarks:

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Unknown **Reg No:**
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: No Log Available
Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No: 000082442600470	**Permit No:** 19305	**County:** Jackson		**Township:** Blackman
		Town/Range: 02S 01W	**Section:** 24	**Well Status:** Active	**WSSN:** 2066138	**Source ID/Well No:** 002

Well ID: 38000014242

Elevation:

Latitude: 42.28371

Longitude: -84.36814

Method of Collection: GPS Std Positioning Svc SA Off

Distance and Direction from Road Intersection:
Just east of Seymour, west of Dettman on the south side of Seymour

Well Owner: St. Demetrius Church

Well Address:
3215 Seymour Rd
Jackson, MI 49201

Owner Address:
3215 Seymour Rd
Jackson, MI 49201

Drilling Method: Rotary
Well Depth: 200.00 ft. **Well Use:** Type II public
Well Type: Replacement **Date Completed:** 9/18/2018

Casing Type: PVC plastic **Height:** 1.00 ft. above grade
Casing Joint: Solvent welded/glued
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 106.00 ft. depth SDR: 21.00

Borehole: 8.75 in. to 105.00 ft. depth
4.50 in. to 200.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** Yes
Pump Installation Date: 10/8/2018 **HP:** 2.00
Manufacturer: Franklin Electric **Pump Type:** Submersible
Model Number: 355DQP-280 **Pump Capacity:** 35 GPM
Drop Pipe Length: 60.00 ft. **Pump Voltage:** 230
Drop Pipe Diameter: 1.25 in. **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Diaphragm/bladder
Manufacturer: Flex-Lite-Flexcon
Model Number: FL-7 **Tank Capacity:** 22.0 Gallons
Pressure Relief Valve Installed: Yes

Static Water Level: 40.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 80.00 ft. after 1.00 hrs. at 50 GPM

Screen Installed: No **Intake:** Bedrock Well

Formation Description	Thickness	Depth to Bottom
Brown Sand & Clay	18.00	18.00
Brown Sand	16.00	34.00
Gray Clay & Stones	28.00	62.00
Black Shale	7.00	69.00
Gray Shale & Limestone	31.00	100.00
Gray Sandstone	24.00	124.00
Gray Sandstone	14.00	138.00
Limestone Hard	6.00	144.00
Limestone & Sandstone	56.00	200.00

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing

Grouting Material	Bags	Additives	Depth
Bentonite slurry	10.00	None	0.00 ft. to 105.00 ft.

Wellhead Completion: 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	94 ft.	Southeast
Other	1140 ft.	North

Abandoned Well Plugged: Yes

Casing Diameter: 4 in. **Casing Removed:** No
Plugging Material: Neat cement
No. of Bags: 10.00 **Well Depth:** 120 ft.

Geology Remarks:

Drilling Machine Operator Name: Anthony Sebastian
Employment: Employee
Pump Installer: Matt Kleinfelt

Contractor Type: Water Well Drilling Contractor **Reg No:** 13-2480
Business Name: Sebastian & Sons
Business Address: 28731 U Drive N, Springport, MI, 49284

Water Well Contractor's Certification

This well and/or pump installation was performed under my registration.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks: Contamination Source 2:Landfill

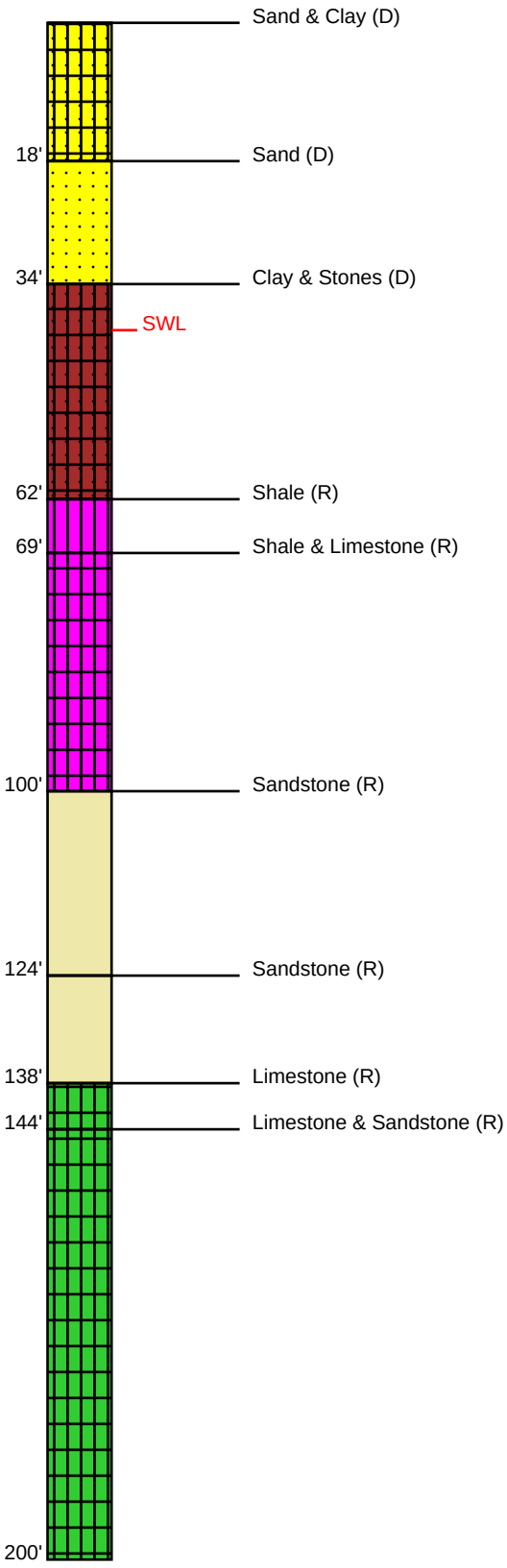
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000014242
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	
Well Depth	200
Case Depth	106
Screen From	
Screen To	
Static Water Level	40
Elevation (DEM)	989
Elevation (Well Log)	

Well Lithology Profile



Lithology Records for 38000014242									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand & Clay		18	18	D	PCM		PCM	Brown
2	Sand		34	16	D	AQ		AQ	Brown
3	Clay & Stones		62	28	D	PCM		PCM	Gray
4	Shale		69	7	R	CM		CM	Black
5	Shale & Limestone		100	31	R	PCM		PCM	Gray
6	Sandstone		124	24	R	AQ		AQ	Gray
7	Sandstone		138	14	R	AQ		AQ	Gray
8	Limestone	Hard	144	6	R	MAQ		MAQ	
9	Limestone & Sandstone		200	56	R	MAQ		MAQ	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No: 0356	County: Jackson	Township: Blackman

Well ID: 38000000952

Elevation: 958 ft.
Latitude: 42.2867524339
Longitude: -84.3725286792
Method of Collection: Interpolation-Map

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active		

Distance and Direction from Road Intersection:
1/4 MI W OF SEYMOUR ON E SIDE OF ST MARK

Well Owner: INMAN, DONAL

Well Address:	Owner Address:
3705 ST MARK JACKSON, MI 49201	3705 ST MARK JACKSON, MI 49204

Drilling Method: Rotary
Well Depth: 69.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 12/13/1994

Casing Type: PVC plastic **Height:**
Casing Joint: Unknown
Casing Fitting: Drive shoe

Diameter: 5.00 in. to 60.00 ft. depth

Borehole: 7.88 in. to 60.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:** 0.50
Manufacturer: Flint & Walling **Pump Type:** Submersible
Model Number: 4F10605-005 **Pump Capacity:** 10 GPM
Drop Pipe Length: 47.00 ft. **Pump Voltage:** 115
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Unknown
Manufacturer: Clayton Mark
Model Number: CM202 **Tank Capacity:** 40.0 Gallons
Pressure Relief Valve Installed: Unknown

Static Water Level: 27.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown
Pumping level 69.00 ft. after 2.00 hrs. at 50 GPM

Screen Installed: No **Intake:** Unknown

Formation Description	Thickness	Depth to Bottom
Brown Clay & Stones	20.00	20.00
Gray Clay & Stones	23.00	43.00
Gravel	5.00	48.00
Gray Sandstone	8.00	56.00
Green Sandstone W/Limestone Strips	13.00	69.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Bentonite slurry	0.00	None	0.00 ft. to 60.00 ft.

Wellhead Completion: Other, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	60 ft.	

Abandoned Well Plugged: No
Reason Not Plugged: Unknown

Geology Remarks:

Drilling Machine Operator Name: TERRY
Employment: Unknown

Contractor Type: Water Well Drilling Contractor **Reg No:** 23-2033
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: UPDATED SITE DESCRIPTION, GEOLOGY, CONTRACTOR TYPE, PUMP & PRESSURE - MR 12/08/2022
Other Remarks: Wellhead Completion:12 inch Above Grade

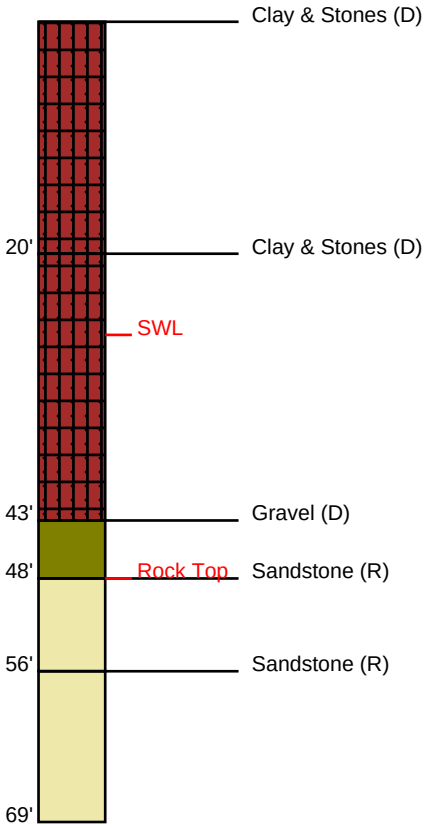
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000000952
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	ROCK
Well Depth	69
Case Depth	60
Screen From	
Screen To	
Static Water Level	27
Elevation (DEM)	955
Elevation (Well Log)	958

Well Lithology Profile



Lithology Records for 38000000952

SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Clay & Stones		20	20	D	PCM		PCM	Brown
2	Clay & Stones		43	23	D	PCM		PCM	Gray
3	Gravel		48	5	D	AQ		AQ	
4	Sandstone		56	8	R	AQ		AQ	Gray
5	Sandstone	W/Limestone	69	13	R	AQ		AQ	Green

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No: 3696	County: Jackson	Township: Blackman

Well ID: 38000000954

Elevation: 980 ft.
Latitude: 42.2878611064
Longitude: -84.3690467573
Method of Collection: Interpolation-Map

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active		

Distance and Direction from Road Intersection:

Well Owner: MCGILL ROAD LANDFILL

Well Address:	Owner Address:
3895 MCGILL RD JACKSON, MI 49202	3895 MCGILL RD JACKSON, MI 49202

Drilling Method: Rotary
Well Depth: 220.00 ft. **Well Use:** Household
Well Type: New **Date Completed:** 5/18/1992

Casing Type: PVC plastic **Height:** 0.00 ft. below grade
Casing Joint: Unknown
Casing Fitting: None

Diameter: 5.00 in. to 109.00 ft. depth

Borehole: 8.00 in. to 109.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:**
Manufacturer: Goulds **Pump Type:** Submersible
Model Number: **Pump Capacity:** 0 GPM
Drop Pipe Length: 100.00 ft. **Pump Voltage:**
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 70.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown
Pumping level 220.00 ft. after 1.00 hrs. at 20 GPM

Screen Installed: No **Intake:** Unknown

Formation Description	Thickness	Depth to Bottom
Sand	10.00	10.00
Clay	5.00	15.00
Gravel	10.00	25.00
Clay	10.00	35.00
Gravel	5.00	40.00
Shale	5.00	45.00
Gravel	15.00	60.00
Shale	10.00	70.00
Sandstone	50.00	120.00
Shale	25.00	145.00
Sandstone	75.00	220.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Bentonite slurry	0.00	None	0.00 ft. to 109.00 ft.

Wellhead Completion: Pitless adapter

Nearest Source of Possible Contamination:

Type	Distance	Direction
Sewer line	50 ft.	

Geology Remarks:

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Water Well Drilling Contractor **Reg No:** 23-1077
Business Name:
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: UPDATED CONTRACTOR TYPE- MR 12/08/2022
Other Remarks:

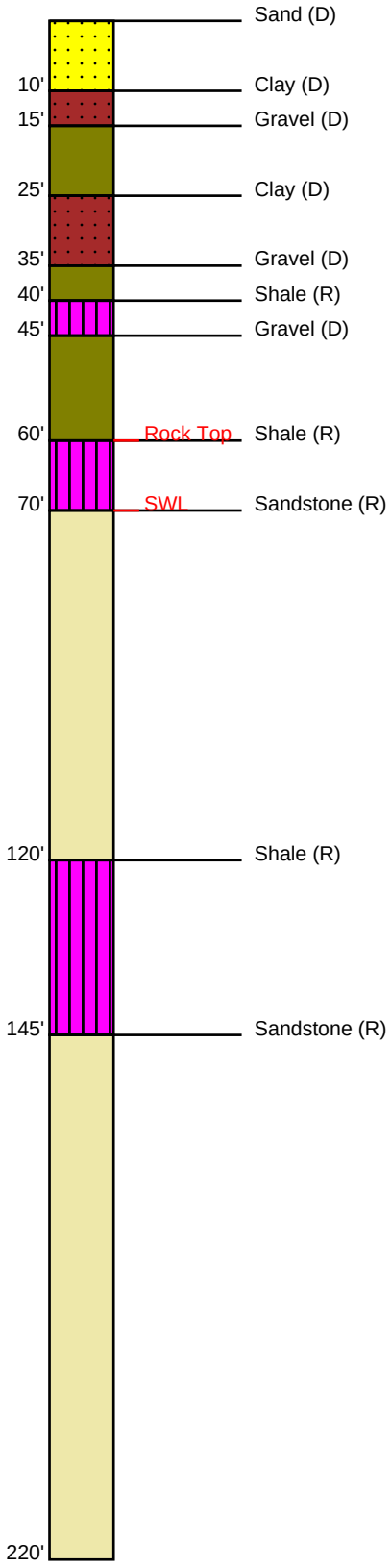
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000000954
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	ROCK
Well Depth	220
Case Depth	109
Screen From	
Screen To	
Static Water Level	70
Elevation (DEM)	978
Elevation (Well Log)	980

Well Lithology Profile



Lithology Records for 38000000954									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand		10	10	D	AQ		AQ	
2	Clay		15	5	D	CM		CM	
3	Gravel		25	10	D	AQ		AQ	
4	Clay		35	10	D	CM		CM	
5	Gravel		40	5	D	AQ		AQ	
6	Shale		45	5	R	CM		CM	
7	Gravel		60	15	D	AQ		AQ	
8	Shale		70	10	R	CM		CM	
9	Sandstone		120	50	R	AQ		AQ	
10	Shale		145	25	R	CM		CM	
11	Sandstone		220	75	R	AQ		AQ	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No: 10696	County: Jackson	Township: Blackman

Well ID: 38000005204

Elevation:
Latitude: 42.285191
Longitude: -84.369311
Method of Collection: Interpolation-Map

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active		

Distance and Direction from Road Intersection:
250FT NORTH OF SEYMORE 60FT EAST OF MCGILL

Well Owner: DARCY SUNKLE

Well Address:	Owner Address:
3641 MCGILL RD JACKSON, MI 49201	3641 MCGILL RD JACKSON, MI 49201

Drilling Method: Rotary
Well Depth: 132.00 ft. **Well Use:** Household
Well Type: New **Date Completed:** 6/20/2002

Casing Type: PVC plastic **Height:** 1.00 ft. above grade
Casing Joint: Solvent welded/glued
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 98.00 ft. depth

Borehole: 9.00 in. to 98.00 ft. depth

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 52.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 70.00 ft. after 1.00 hrs. at 30 GPM

Screen Installed: No **Intake:** Unscreened Sand/Gravel

Formation Description	Thickness	Depth to Bottom
Brown Clay	20.00	20.00
Sand	10.00	30.00
Brown Clay Soft	6.00	36.00
Brown Clay	5.00	41.00
Gray Clay	15.00	56.00
Sand	7.00	63.00
Gray Clay Soft	7.00	70.00
Unidentified Consolidated Fm W/Gravel Broken	10.00	80.00
Sand	10.00	90.00
Unidentified Consolidated Fm W/Sand Broken	8.00	98.00
Unidentified Consolidated Fm Water Bearing	34.00	132.00

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing

Grouting Material	Bags	Additives	Depth
Bentonite slurry	7.00	None	0.00 ft. to 98.00 ft.

Geology Remarks:

Wellhead Completion: 12 inches above grade

Drilling Machine Operator Name: RICK FREY
Employment: Employee

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	50 ft.	East

Contractor Type: Water Well Drilling Contractor **Reg No:** 13-1593
Business Name: KATZ WELL DRILLING INC
Business Address: 1479 E MICH AVE, Battle Creek, MI, 49014

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks: Map Scale:Unknown

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	**Permit No:** 11251	**County:** Jackson		**Township:** Blackman
Town/Range: 02S 01W	**Section:** 24	**Well Status:** Active	**WSSN:**	**Source ID/Well No:**

Well ID: 38000005894

Elevation: 948 ft.
Latitude: 42.287305
Longitude: -84.372488
Method of Collection: Interpolation-Satellite Imagery

Distance and Direction from Road Intersection:
1/8 MILE NORTH OF O'LEARY ON EASTSIDE OF ST MARK

Well Owner: GAIL WHITING

Well Address:	**Owner Address:**
3711 ST MARK JACKSON, MI 49201	3711 ST MARK JACKSON, MI 49201

Drilling Method: Rotary
Well Depth: 100.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 10/10/2002

Casing Type: PVC plastic **Height:** 1.00 ft. above grade
Casing Joint: Solvent welded/glued
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 65.00 ft. depth

Borehole: 9.00 in. to 65.00 ft. depth

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 45.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 60.00 ft. after 1.00 hrs. at 30 GPM

Screen Installed: No **Intake:** Unscreened Sand/Gravel

Formation Description	Thickness	Depth to Bottom
Brown Clay W/Sand	14.00	14.00
Brown Clay	21.00	35.00
Gray Clay	10.00	45.00
Sand	5.00	50.00
Sandstone & Limestone Broken	15.00	65.00
Sand & Stones Water Bearing	35.00	100.00

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing

Grouting Material	Bags	Additives	Depth
Bentonite slurry	4.00	None	0.00 ft. to 65.00 ft.

Geology Remarks:

Wellhead Completion: 12 inches above grade

Drilling Machine Operator Name: RICK FREY
Employment: Employee

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	50 ft.	East

Contractor Type: Water Well Drilling Contractor **Reg No:** 13-1593
Business Name: KATZ WELL DRILLING INC
Business Address: 1479 E MICH AVE, Battle Creek, MI, 49014

Abandoned Well Plugged: No
Reason Not Plugged: Well being plugged by another driller

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No: 0661002LW06	**Permit No:** 11381	**County:** Jackson		**Township:** Blackman
		Town/Range: 02S 01W	**Section:** 24	**Well Status:** Active	**WSSN:**	**Source ID/Well No:**

Well ID: 38000006015

Elevation:

Latitude: 42.287287

Longitude: -84.371482

Method of Collection: Interpolation-Satellite Imagery

Distance and Direction from Road Intersection:
25 FEET EAST OF ST MATHEWS; 3715; 45 FEET SOUTH OF ST BERNARD

Well Owner: ROY & SUSAN MCCALL

Well Address:	**Owner Address:**
3715 SAINT MATTHEW DR JACKSON, MI 49201	3715 SAINT MATTHEW DR JACKSON, MI

Drilling Method: Rotary
Well Depth: 103.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 12/16/2002

Casing Type: PVC plastic **Height:** 2.00 ft. above grade
Casing Joint: Unknown
Casing Fitting: None

Diameter: 5.00 in. to 76.00 ft. depth

Borehole: 8.75 in. to 74.00 ft. depth
4.50 in. to 103.00 ft. depth

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 48.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 65.00 ft. after 1.00 hrs. at 30 GPM

Screen Installed: No **Intake:** Bedrock Well

Formation Description	Thickness	Depth to Bottom
Loam W/Sand W/Gravel	7.00	7.00
Stones	1.00	8.00
Brown Clay	6.00	14.00
Clay & Gravel	21.00	35.00
Sand & Gravel Coarse	24.00	59.00
Black Shale	1.00	60.00
White Shale & Sandstone	9.00	69.00
Gray Sandstone	17.00	86.00
Limestone	9.00	95.00
Green Sandstone Hard	4.00	99.00
Sandstone & Limestone	4.00	103.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Neat cement	21.00	None	0.00 ft. to 74.00 ft.

Geology Remarks:

Wellhead Completion: Pitless adapter

Drilling Machine Operator Name: R HEILER
Employment: Employee

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	75 ft.	East

Contractor Type: Water Well Drilling Contractor **Reg No:** 33-1686
Business Name: HART WELL DRLG CO
Business Address:

Abandoned Well Plugged: No
Reason Not Plugged: Owner is plugging well

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks: EMPLOYEE: C DIETZ; INVOICED TO MURPHS PUMP; OWNER TO ABANDON OLD WELL

Other Remarks:

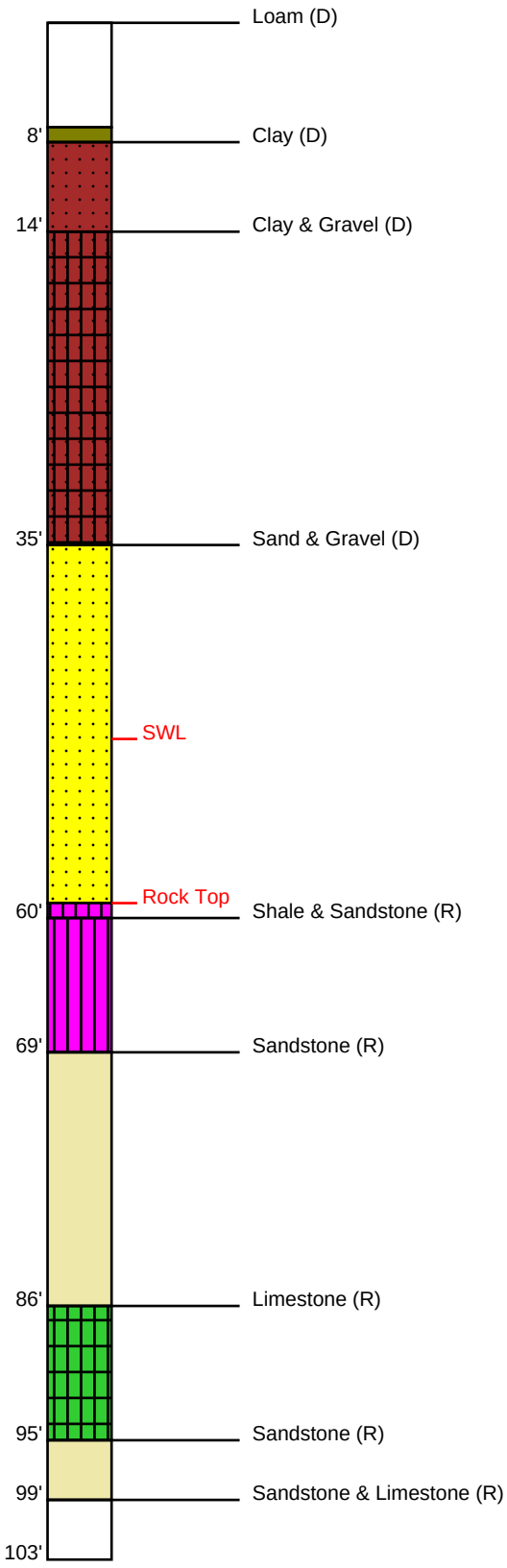
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000006015
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	ROCK
Well Depth	103
Case Depth	76
Screen From	
Screen To	
Static Water Level	48
Elevation (DEM)	958
Elevation (Well Log)	

Well Lithology Profile



GeoWebFace

Wellogic with Lithology

Lithology Records for 38000006015									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Loam	W/Sand	7	7	D	NA	-1	NA	
2	Stones		8	1	D	AQ		AQ	
3	Clay		14	6	D	CM		CM	Brown
4	Clay & Gravel		35	21	D	PCM		PCM	
5	Sand & Gravel		59	24	D	AQ		AQ	
6	Shale		60	1	R	CM		CM	Black
7	Shale & Sandstone		69	9	R	MAQ		MAQ	White
8	Sandstone		86	17	R	AQ		AQ	Gray
9	Limestone		95	9	R	MAQ		MAQ	
10	Sandstone	Hard	99	4	R	AQ		AQ	Green
11	Sandstone & Limestone		103	4	R	MAQ		MAQ	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No: W12138	County: Jackson	Township: Blackman

Well ID: 38000007026

Elevation:
Latitude: 42.286211
Longitude: -84.369477
Method of Collection: Interpolation-Satellite Imagery

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active		

Distance and Direction from Road Intersection:
1/4 MILE NORTH OF OLEARY ON EAST SIDE OF MCCGILL

Well Owner:

Well Address:	Owner Address:
3657 MCGILL JACKSON, MI	BOB SUTHUBY

Drilling Method: Rotary
Well Depth: 140.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 9/15/2003

Casing Type: PVC plastic **Height:**
Casing Joint: Unknown
Casing Fitting: Drive shoe

Diameter: 5.00 in. to 107.00 ft. depth

Borehole: 8.50 in. to 107.00 ft. depth
4.50 in. to 140.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:** 0.50
Manufacturer: Fairbanks-Morse **Pump Type:** Submersible
Model Number: **Pump Capacity:** 10 GPM
Drop Pipe Length: 100.00 ft. **Pump Voltage:**
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: Yes
Pressure Tank Type: Unknown
Manufacturer: Well-Mate
Model Number: WM6 **Tank Capacity:** 20.0 Gallons
Pressure Relief Valve Installed: No

Static Water Level: 6.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 100.00 ft. after 1.00 hrs. at 20 GPM

Screen Installed: No **Intake:** Bedrock Well

Formation Description	Thickness	Depth to Bottom
Brown Sand	25.00	25.00
Sand & Gravel	10.00	35.00
Sand	15.00	50.00
Gray Clay	40.00	90.00
Gravel	13.00	103.00
White Sandstone	37.00	140.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Bentonite slurry	7.00	None	0.00 ft. to 107.00 ft.

Wellhead Completion: Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	60 ft.	East

Abandoned Well Plugged: Yes

Casing Diameter: 1.25 in. **Casing Removed:** No
Plugging Material: Bentonite chips/pellets
No. of Bags: 1.00 **Well Depth:** 70 ft.

Geology Remarks:

Drilling Machine Operator Name: DENNIS C
Employment: Employee

Contractor Type: Water Well Drilling Contractor **Reg No:** 78-2272
Business Name: J&M
Business Address:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:
Other Remarks:

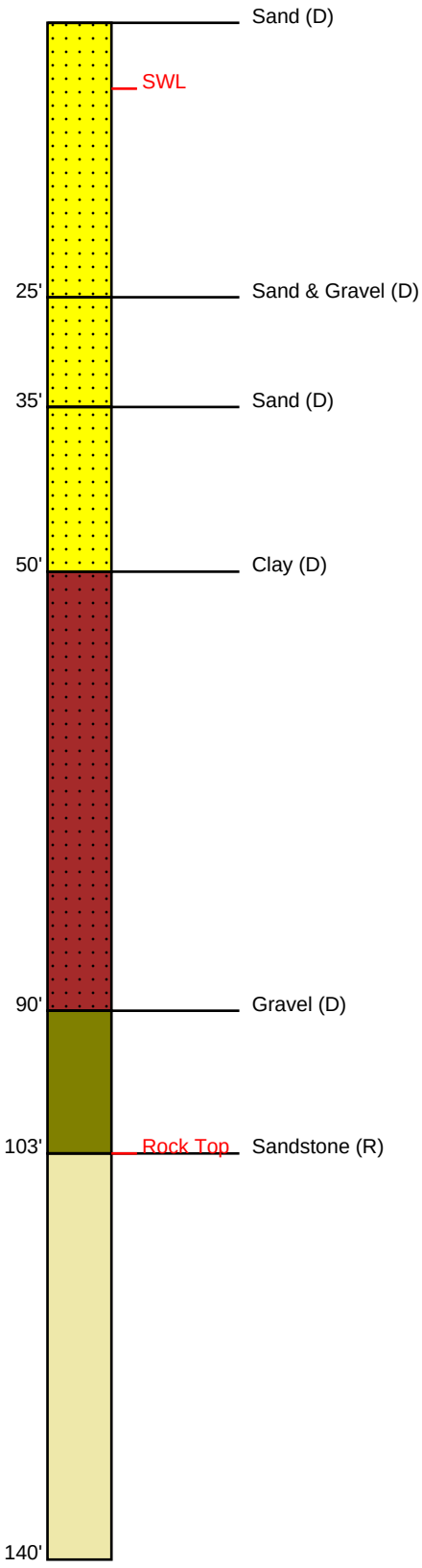
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000007026
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	ROCK
Well Depth	140
Case Depth	107
Screen From	
Screen To	
Static Water Level	6
Elevation (DEM)	1004
Elevation (Well Log)	

Well Lithology Profile



GeoWebFace

Wellogic with Lithology

Lithology Records for 38000007026									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand		25	25	D	AQ		AQ	Brown
2	Sand & Gravel		35	10	D	AQ		AQ	
3	Sand		50	15	D	AQ		AQ	
4	Clay		90	40	D	CM		CM	Gray
5	Gravel		103	13	D	AQ		AQ	
6	Sandstone		140	37	R	AQ		AQ	White

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No: W12138	County: Jackson	Township: Blackman

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
02S 01W	24	Active		

Well ID: 38000007027

Elevation:

Latitude: 42.286175

Longitude: -84.369476

Method of Collection: Interpolation-Satellite Imagery

Distance and Direction from Road Intersection:
1/4 MILE NORTH OF OLEARY ON EAST SIDE OF MCGILL

Well Owner: BOB SOUTHERBY

Well Address:	Owner Address:
3657 MCGILL ROAD JACKSON, MI	3657 MCGILL ROAD JACKSON, MI

Drilling Method: Rotary
Well Depth: 101.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 9/11/2003

Casing Type: PVC plastic **Height:**
Casing Joint: Unknown
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 95.00 ft. depth

Borehole: 8.50 in. to 101.00 ft. depth

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 7.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 95.00 ft. after 1.00 hrs. at 3 GPM

Screen Installed: Yes **Filter Packed:** Yes
Screen Diameter: 4.00 in. **Blank:** 2.00 ft. Above
Screen Material Type: PVC-slotted
Screen Installation Type: Telescoped

Slot	Length	Set Between
15.00	6.00 ft.	95.00 ft. and 101.00 ft.

Fittings: Neoprene packer

Formation Description	Thickness	Depth to Bottom
Brown Sand	12.00	12.00
Gravel	9.00	21.00
Brown Clay	29.00	50.00
Sand	7.00	57.00
Gray Clay	18.00	75.00
Clay & Stones	8.00	83.00
Gray Clay	7.00	90.00
Gravel	7.00	97.00
Gravel W/Sandstone	4.00	101.00

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Bentonite slurry	5.00	None	0.00 ft. to 95.00 ft.

Geology Remarks:

Wellhead Completion: Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	60 ft.	East

Drilling Machine Operator Name: DAVE
Employment: Employee

Contractor Type: Water Well Drilling Contractor **Reg No:** 78-2272
Business Name: J&M
Business Address:

Abandoned Well Plugged: Yes

Casing Diameter: 5 in. **Casing Removed:** No
Plugging Material: Bentonite chips/pellets
No. of Bags: 19.00 **Well Depth:** 101 ft.

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks:

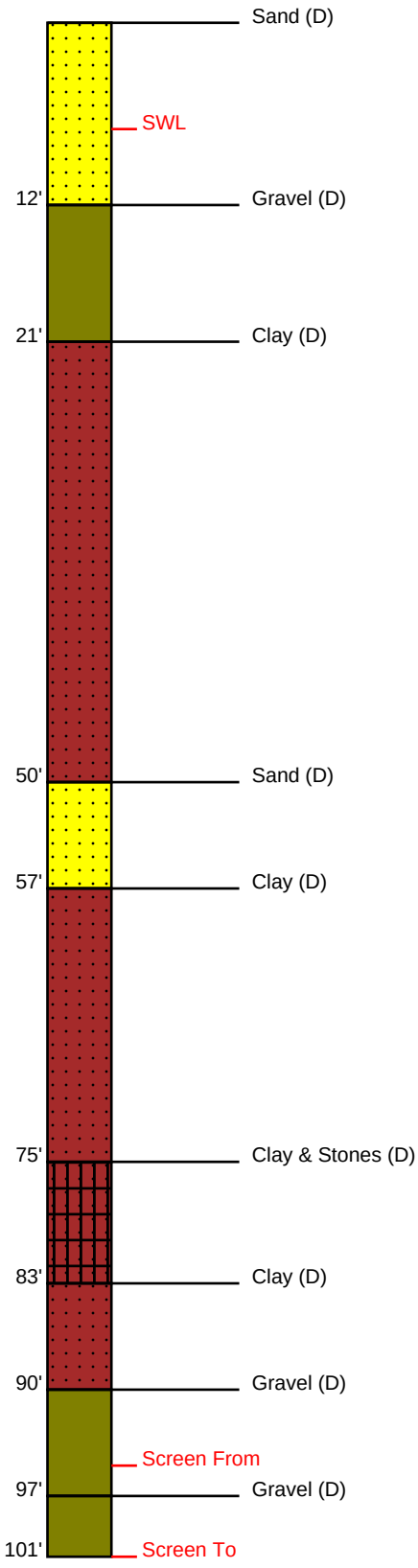
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000007027
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	DRIFT
Well Depth	101
Case Depth	95
Screen From	95
Screen To	101
Static Water Level	7
Elevation (DEM)	981
Elevation (Well Log)	

Well Lithology Profile



GeoWebFace

Wellogic with Lithology

Lithology Records for 38000007027									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand		12	12	D	AQ		AQ	Brown
2	Gravel		21	9	D	AQ		AQ	
3	Clay		50	29	D	CM		CM	Brown
4	Sand		57	7	D	AQ		AQ	
5	Clay		75	18	D	CM		CM	Gray
6	Clay & Stones		83	8	D	PCM		PCM	
7	Clay		90	7	D	CM		CM	Gray
8	Gravel		97	7	D	AQ		AQ	
9	Gravel	W/Sandstone	101	4	D	AQ	-1	AQ	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No:	**Permit No:** 15458	**County:** Jackson		**Township:** Blackman
Town/Range: 02S 01W	**Section:** 24	**Well Status:** Active	**WSSN:**	**Source ID/Well No:**

Well ID: 38000011007

Elevation:

Latitude: 42.28628

Longitude: -84.37056

Method of Collection: GPS Std Positioning Svc SA Off

Distance and Direction from Road Intersection:
200 Yards North of O'leary on the East side of St Luke

Well Owner: Robert Shilling

Well Address:	**Owner Address:**
3660 St Luke Jackson, MI 49201	4775 Wellman Rd Parma, MI 49269

Drilling Method: Rotary
Well Depth: 120.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 3/12/2008

Casing Type: PVC plastic **Height:** 1.00 ft. above grade
Casing Joint: Solvent welded/glued
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 96.00 ft. depth SDR: 21.00

Borehole: 8.75 in. to 95.00 ft. depth
4.50 in. to 120.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: 3/21/2008 **HP:** 0.50
Manufacturer: AquaDuty **Pump Type:** Submersible
Model Number: T5S4108Xv **Pump Capacity:** 10 GPM
Drop Pipe Length: 60.00 ft. **Pump Voltage:**
Drop Pipe Diameter: 1.00 in. **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 35.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Air
Pumping level 38.00 ft. after 0.50 hrs. at 40 GPM

Screen Installed: No **Intake:** Bedrock Well

Formation Description	Thickness	Depth to Bottom
Brown Sand	30.00	30.00
Gray Clay	7.00	37.00
Brown Clay & Stones	50.00	87.00
Gray Sandstone	33.00	120.00

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing

Grouting Material	Bags	Additives	Depth
Bentonite slurry	5.00	None	0.00 ft. to 96.00 ft.

Geology Remarks:

Wellhead Completion: Pitless adapter

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	60 ft.	South-Southeast

Drilling Machine Operator Name: Anthony Sebastian
Employment: Employee
Pump Installer: Joel Tevelde

Contractor Type: Water Well Drilling Contractor **Reg No:** 13-1559
Business Name: Sebastian & Sons Well Drilling
Business Address: 28731 U Drive North, Springport, MI, 49284

Abandoned Well Plugged: Yes

Casing Removed:

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks:

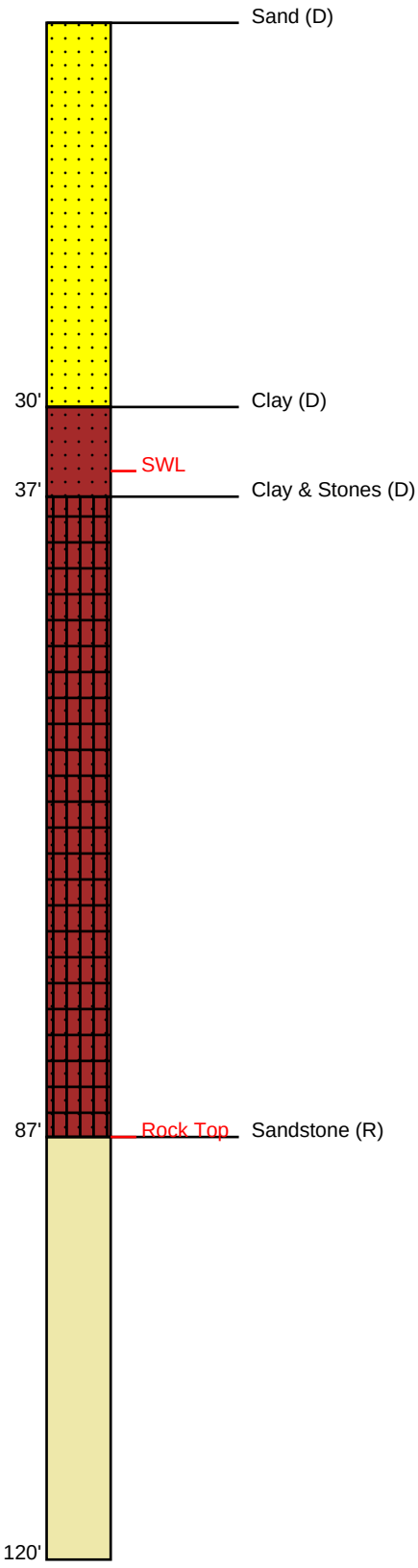
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000011007
County	Jackson
Township	Blackman
Town	02S
Range	01W
Section	24
Owner	
Well Status	ACT
Aquifer Type	ROCK
Well Depth	120
Case Depth	96
Screen From	
Screen To	
Static Water Level	35
Elevation (DEM)	981
Elevation (Well Log)	

Well Lithology Profile



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Wellogic with Lithology

Lithology Records for 38000011007									
SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand		30	30	D	AQ		AQ	Brown
2	Clay		37	7	D	CM		CM	Gray
3	Clay & Stones		87	50	D	PCM		PCM	Brown
4	Sandstone		120	33	R	AQ		AQ	Gray

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID:

Tax No: 000091917600500	**Permit No:** 15961	**County:** Jackson		**Township:** Leoni
		Town/Range: 02S 01E	**Section:** 19	**Well Status:** Active	**WSSN:**	**Source ID/Well No:**

Well ID: 38000011447

Elevation:

Latitude: 42.28505

Longitude: -84.36012

Method of Collection: GPS Std Positioning Svc SA Off

Distance and Direction from Road Intersection:
600' N. of Dalton Rd. & Seymour Rd.

Well Owner: Janet Romwalter

Well Address:	**Owner Address:**
352 Dalton Rd. Jackson, MI 49201	352 Dalton Rd. Jackson, MI 49201

Drilling Method: Rotary
Well Depth: 74.00 ft. **Well Use:** Household
Well Type: Replacement **Date Completed:** 9/4/2009

Casing Type: PVC plastic **Height:** 1.00 ft. above grade
Casing Joint: Solvent welded/glued
Casing Fitting: Shale packer/trap

Diameter: 5.00 in. to 52.00 ft. depth SDR: 21.00

Borehole: 8.50 in. to 52.00 ft. depth
4.75 in. to 74.00 ft. depth

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: 9/11/2009 **HP:** 0.50
Manufacturer: F.E. Myers **Pump Type:** Submersible
Model Number: unknown **Pump Capacity:** 10 GPM
Drop Pipe Length: 25.00 ft. **Pump Voltage:**
Drop Pipe Diameter: 1.00 in. **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 12.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Test pump
Pumping level 13.00 ft. after 2.00 hrs. at 15 GPM

Screen Installed: No **Intake:** Bedrock Well

Formation Description	Thickness	Depth to Bottom
Sand & Gravel	8.00	8.00
Clay Sand Gravel	10.00	18.00
Sand & Gravel	24.00	42.00
Gray Sandstone	10.00	52.00
Green Sandstone	22.00	74.00

Well Grouted: Yes **Grouting Method:** Grout pipe outside casing

Grouting Material	Bags	Additives	Depth
Bentonite slurry	8.00	None	0.00 ft. to 52.00 ft.

Geology Remarks:

Wellhead Completion: Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:

Type	Distance	Direction
Septic tank	60 ft.	East

Drilling Machine Operator Name: Tracy Burkholder
Employment: Employee
Pump Installer: Bruce Foley

Contractor Type: Water Well Drilling Contractor **Reg No:** 38-2487
Business Name: Fox & Boley Well Drilling
Business Address: 6655 Brooklyn Rd, Jackson, MI, 49201

Abandoned Well Plugged: No
Reason Not Plugged: Owner is plugging well

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor **Date**

General Remarks:

Other Remarks:

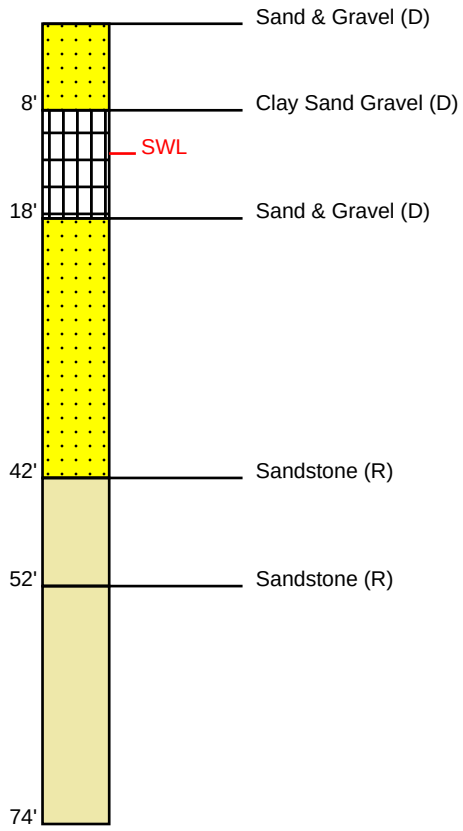
GeoWebFace

Wellogic with Lithology

Wellogic + Information

Well ID	38000011447
County	Jackson
Township	Leoni
Town	02S
Range	01E
Section	19
Owner	
Well Status	ACT
Aquifer Type	
Well Depth	74
Case Depth	52
Screen From	
Screen To	
Static Water Level	12
Elevation (DEM)	968
Elevation (Well Log)	

Well Lithology Profile



Lithology Records for 38000011447

SEQ_NUM	PRIM_LITH	LITH_MOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE	COLOR
1	Sand & Gravel		8	8	D	AQ		AQ	
2	Clay Sand Gravel		18	10	D	PCM		PCM	
3	Sand & Gravel		42	24	D	AQ		AQ	
4	Sandstone		52	10	R	AQ		AQ	Gray
5	Sandstone		74	22	R	AQ		AQ	Green



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